

**UNITED STATES  
SECURITIES AND EXCHANGE COMMISSION**

Washington, D.C. 20549

**FORM 10-K**

(Mark One)

ANNUAL REPORT PURSUANT TO SECTION 13 OR 15(d) OF THE SECURITIES EXCHANGE ACT OF 1934

For the fiscal year ended December 31, 2017

OR

TRANSITION REPORT PURSUANT TO SECTION 13 OR 15(d) OF THE SECURITIES EXCHANGE ACT OF 1934 FOR THE TRANSITION PERIOD  
FROM TO

Commission File Number 001-38324

**Casa Systems, Inc.**

(Exact name of Registrant as specified in its Charter)

Delaware  
(State or other jurisdiction of  
incorporation or organization)

100 Old River Road  
Andover, Massachusetts  
(Address of principal executive offices)

75-3108867  
(I.R.S. Employer  
Identification No.)

01810  
(Zip Code)

Registrant's telephone number, including area code: (978) 688-6706

Securities registered pursuant to Section 12(b) of the Act:

Common stock, \$0.001 par value per share  
(Title of each class)

Nasdaq Global Select Market  
(Name of each exchange on which registered)

Securities registered pursuant to Section 12(g) of the Act:

None  
(Title of class)

Indicate by check mark if the Registrant is a well-known seasoned issuer, as defined in Rule 405 of the Securities Act. YES  NO

Indicate by check mark if the Registrant is not required to file reports pursuant to Section 13 or 15(d) of the Act. YES  NO

Indicate by check mark whether the Registrant: (1) has filed all reports required to be filed by Section 13 or 15(d) of the Securities Exchange Act of 1934 during the preceding 12 months (or for such shorter period that the Registrant was required to file such reports), and (2) has been subject to such filing requirements for the past 90 days. YES  NO

Indicate by check mark whether the Registrant has submitted electronically and posted on its corporate Web site, if any, every Interactive Data File required to be submitted and posted pursuant to Rule 405 of Regulation S-T (§232.405 of this chapter) during the preceding 12 months (or for such shorter period that the Registrant was required to submit and post such files). YES  NO

Indicate by check mark if disclosure of delinquent filers pursuant to Item 405 of Regulation S-K (§229.405) is not contained herein, and will not be contained, to the best of Registrant's knowledge, in definitive proxy or information statements incorporated by reference in Part III of this Form 10-K or any amendment to this Form 10-K.

Indicate by check mark whether the registrant is a large accelerated filer, an accelerated filer, a non-accelerated filer, smaller reporting company, or an emerging growth company. See the definitions of "large accelerated filer," "accelerated filer," "smaller reporting company," and "emerging growth company" in Rule 12b-2 of the Exchange Act.

Large accelerated filer	<input type="checkbox"/>	Accelerated filer	<input type="checkbox"/>
Non-accelerated filer	<input checked="" type="checkbox"/>	Small reporting company	<input type="checkbox"/>
	(Do not check if a small reporting company)	Emerging growth company	<input checked="" type="checkbox"/>

If an emerging growth company, indicate by check mark if the registrant has elected not to use the extended transition period for complying with any new or revised financial accounting standards provided pursuant to Section 13(a) of the Exchange Act.

Indicate by check mark whether the Registrant is a shell company (as defined in Rule 12b-2 of the Exchange Act). YES  NO

As of June 30, 2017, the last day of the Registrant's most recently completed second fiscal quarter, there was no public market for the Registrant's Common Stock. The Registrant's Common Stock began trading on the Nasdaq Global Select Market on December 15, 2017. The aggregate market value of the voting and non-voting common equity held by non-affiliates of the Registrant, based on the closing price of the shares of Common Stock on The Nasdaq Global Select Market on February 28, 2018 was \$398.7 million.

The number of shares of Registrant's Common Stock outstanding as of February 28, 2018 was 81,580,281.

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## Cautionary Note Regarding Forward-Looking Statements

This Annual Report on Form 10-K contains forward-looking statements within the meaning of Section 27A of the Securities Act of 1933, as amended, and Section 21E of the Securities Exchange Act of 1934, as amended. All statements other than statements of historical fact contained in this Annual Report on Form 10-K, including statements regarding our future results of operations and financial position, business strategy and plans and objectives of management for future operations, are forward-looking statements. These statements involve known and unknown risks, uncertainties and other important factors that may cause our actual results, performance or achievements to be materially different from any future results, performance or achievements expressed or implied by the forward-looking statements.

In some cases, you can identify forward-looking statements by terms such as “may,” “might,” “should,” “expects,” “plans,” “anticipates,” “would,” “could,” “intends,” “target,” “projects,” “contemplates,” “believes,” “estimates,” “predicts,” “potential” or “continue” or the negative of these terms or other similar expressions. The forward-looking statements in this Annual Report on Form 10-K are only predictions. We have based these forward-looking statements largely on our current expectations and projections about future events and financial trends that we believe may affect our business, financial condition and results of operations. These forward-looking statements speak only as of the date of this Annual Report on Form 10-K and are subject to a number of risks, uncertainties and assumptions described in the “Risk Factors” section and elsewhere in this Annual Report on Form 10-K. Because forward-looking statements are inherently subject to risks and uncertainties, some of which cannot be predicted or quantified, you should not rely on these forward-looking statements as predictions of future events. The events and circumstances reflected in our forward-looking statements may not be achieved or occur and actual results could differ materially from those projected in the forward-looking statements. Some of the key factors that could cause actual results to differ from our expectations include:

- our ability to anticipate technological shifts;
- our ability to generate positive returns on our research and development;
- changes in the rate of broadband service providers’ deployment of, and investment in, ultra-broadband network capabilities;
- the lack of predictability of revenue due to lengthy sales cycles and the volatility in capital expenditure budgets of broadband service providers;
- our ability to maintain and expand gross profit and net income;
- the sufficiency of our cash resources and needs for additional financing;
- our ability to further penetrate our existing customer base and obtain new customers;
- changes in our pricing policies, whether initiated by us or as a result of competition;
- the amount and timing of operating costs and capital expenditures related to the operation and expansion of our business;
- the actual or rumored timing and success of new product and service introductions by us or our competitors or any other change in the competitive landscape of our industry, including consolidation among our competitors or customers;
- our ability to successfully expand our business domestically and internationally;
- insolvency or credit difficulties confronting our customers, which could adversely affect their ability to purchase or pay for our products and services, or confronting our key suppliers, which could disrupt our supply chain;
- our inability to fulfill our customers’ orders due to supply chain delays, access to key commodities or technologies or events that impact our manufacturers or their suppliers;
- future accounting pronouncements or changes in our accounting policies;
- stock-based compensation expense;
- the cost and possible outcomes of any potential litigation matters;
- our overall effective tax rate, including impacts caused by the relative proportion of foreign to U.S. income, the amount and timing of certain employee stock-based compensation transactions, changes in the valuation of our deferred tax assets and any new legislation or regulatory developments;

- increases or decreases in our expenses caused by fluctuations in foreign currency exchange rates;
- general economic conditions, both domestically and in foreign markets;
- our ability to obtain and maintain intellectual property protection for our products; and
- our use of proceeds from our initial public offering.

Except as required by applicable law, we do not plan to publicly update or revise any forward-looking statements contained herein, whether as a result of any new information, future events or otherwise.

**Item 1. Business.****Our Vision**

Our products help our customers provide and manage broadband connectivity. We believe consumers and enterprises should be able to enjoy ultra-fast speeds and enhanced digital content experiences through their phones, tablets, computers, TVs and other connected devices at home or on the go. We believe that connectivity should be ubiquitous and seamless; it should not matter whether the user is accessing the Internet through wireless or fixed connections, and it should not matter whether that service is being provided by a cable operator, fixed telecom carrier or wireless services provider. Our innovative, software-centric products are designed to help achieve this vision.

**Overview**

We offer solutions for next-generation centralized, distributed and virtualized architectures for cable broadband, fixed-line broadband and wireless networks. Our innovative solutions enable customers to cost-effectively and dynamically increase network speed, add bandwidth capacity and new services for consumers and enterprises, reduce network complexity and reduce operating and capital expenditures. Our solutions include a suite of software-centric infrastructure solutions that allow cable service providers to deliver voice, video and data services over a single platform at multi-gigabit speeds.

We focus our development efforts on innovation and being the first to market with new products at each generational shift in network technology. For example, we pioneered the use of a software-centric approach to leverage the programmability of field programmable gate arrays, or FPGAs, and general purpose processors for use in the cable industry. In addition, we believe we were the first to provide each of the following to our customers: a solution enabling cable service providers to deliver Internet Protocol, or IP, voice, digital video and data over a single port; a solution enabling cable service providers to deliver multi-gigabit speeds to their subscribers; and a remote node solution to enable distributed broadband cable access at gigabit speeds.

We have created a software-centric, multi-service portfolio that enables a broad range of core and access network functions for fixed and wireless networks. These networks share a common set of core and access network functions that enable network services such as subscriber management, session management, transport security and radio frequency, or RF, management. Our Axyom software architecture allows each of these network functions to be provided and controlled by a distinct segment of software, which can be integrated or combined together in a building block-style fashion with the segments of software responsible for each other network function. This allows us to offer network architectures that can be efficiently tailored to meet each customer's specific requirements, both as they exist at the time of initial implementation and as they evolve over time. While we initially focused on providing solutions for cable service providers due to our founders' experience in the cable industry, the commonalities between fixed and wireless network architectures have allowed us to expand our solutions into the wireless market as cable service providers have increasingly sought to add wireless capabilities to their service offerings.

We offer a scalable solution that can meet the evolving bandwidth needs of our customers and their subscribers. Our first installation in a service provider's network frequently involves deploying our broadband products in only a portion of the provider's network and with only a fraction of the capacity of our products enabled at the time of initial installation. Over time, our customers have generally expanded the use of our solutions to other areas of their networks to increase network capacity. Capacity expansions are accomplished either by deploying additional systems or line cards, or by our remote enablement of additional channels through the use of software. Sales of additional line cards and software-based capacity expansions generate higher gross margins than our initial hardware-based deployments.

Our solutions are commercially deployed in over 75 countries by more than 450 customers, including regional service providers as well as some of the world's largest Tier 1 broadband service providers, serving millions of subscribers. Our principal customers include Charter/Time Warner Cable, Rogers and Mediacom in North America; Televisa/IZZI Mexico, Megacable Mexico and Claro Telmex Colombia in Latin America; Liberty Global, Vodafone and DNA Oyj in Europe; and Jupiter Communications and Beijing Gehua CATV Networks in Asia-Pacific.

We have achieved significant growth in revenue and profitability. Our revenue for the years ended December 31, 2017, 2016, 2015 and 2014 was \$351.6 million, \$316.1 million, \$272.5 million and \$211.3 million, respectively, representing a compound annual growth rate of 18%. Our net income for the years ended December 31, 2017, 2016, 2015 and 2014 was \$88.5 million, \$88.7 million, \$67.9 million and \$59.7 million, respectively. As of December 31, 2017, 2016 and 2015, our total assets were \$469.7 million, \$583.0 million and \$283.1 million, respectively.

## **Industry Background and Broadband Service Provider Challenges**

As broadband service providers look to address the rapidly evolving demands of consumers and enterprises, we believe they must address several key challenges.

### ***Rapidly Increasing Bandwidth Demand***

Bandwidth demand has grown substantially and is expected to continue to increase. Key drivers of this increased demand include:

- more users with more connected devices and applications;
- more time spent online by users;
- the increased use of bandwidth-intensive streaming media services, such as Amazon Prime Video, Netflix and YouTube; cloud applications, such as iCloud and Dropbox; and augmented and virtual reality applications;
- Internet of Things, or IoT, solutions, as already seen in connected homes, business and industries; connected devices such as Amazon Alexa or Google Assistant; machine-to-machine connectivity; car connectivity and smart cities;
- the backhaul demand by wireless service providers; and
- the rise of data consumption by enterprises with strict latency requirements on mission-critical and public safety-related applications.

According to a June 2017 Cisco Systems Visual Networking Index report, global IP traffic per month is forecasted to grow from 96 exabytes in 2016 (1 exabyte = 1,000,000,000 GB) to 278 exabytes in 2021, representing a 24% compound annual growth rate in global IP traffic; global IP traffic per capita is expected to increase from 13GB in 2016 to 35GB in 2021; and the number of connected devices is forecast to be three times the global population by 2021.

### ***Competition Fueled by Increasing Breadth of Service Offerings***

Consumers and enterprises enjoy increased choice among broadband service providers, including cable service providers such as Charter and Comcast, diversified telecommunications companies such as AT&T and Verizon, and mobile-only network operators such as Sprint and T-Mobile. As a result, broadband service providers are facing increasing pressure to develop differentiated service offerings with higher levels of performance at lower cost to consumers and enterprises. They are also under competitive pressure to offer a wider range of services, from Internet access, television, telephone and wireless services to additional services such as voice over Wi-Fi, video calling and, in general, smart Internet and security-related services. Moreover, the increasing popularity of over-the-top services puts additional pressure on the traditional video business of broadband service providers. In this new environment, fixed service providers have deployed fiber and Wi-Fi networks and have been exploring ways to provide mobile service offerings.

### ***Increasing Network Complexity***

Historically, broadband service providers have deployed separate systems within their fixed broadband networks for video and data services and have operated separate networks for fixed, Wi-Fi and mobile services. This traditional model requires service providers to maintain separate network infrastructure and personnel for each service. As network capacity and coverage have increased, and the diversity of service offerings has grown, the lack of interoperability of these separate networks has resulted in increasing network complexity and inefficient parallel network infrastructure.

### ***Need to Control Operating and Capital Expenditures***

The operation of network infrastructure is space, power and personnel intensive. In addition, the lack of interoperability between networks means that broadband service providers cannot optimize bandwidth usage by allocating traffic from networks experiencing high demand to those experiencing low demand, which can result in unused capacity and an unsatisfactory user experience.

Hardware-centric networks can also be expensive to update or replace. With frequent technology shifts and introductions of new service offerings, competition in the broadband industry is constantly changing. To remain competitive, service providers are regularly required to incur significant capital expenditures to upgrade existing equipment.

## **Opportunity to Transform Broadband Networks**

Given the challenges they face, broadband service providers are undertaking three key technology initiatives to help build next-generation networks.

### ***Densification***

Increasing demand for bandwidth and user expectations for ubiquitous and seamless connectivity require, among other things, the addition of more end points for users to access broadband networks, also known as network densification. Consequently, broadband service providers are shifting from centralized to more distributed architectures. Densification requires extending network connectivity and distributing access aggregation solutions closer to end users. This results in the deployment of additional hardware, such as access aggregation nodes, small cells and related gateways.

### ***Network Convergence***

Many traditional service providers have historically either operated just one network type or operated fixed and wireless networks as separate businesses. However, more and more service providers that may have started out providing just fixed or wireless services are recognizing the benefits, especially those associated with quality of experience, of being able to provide both services to their subscribers. For example, cable service providers in the United States have formed a joint consortium, Cable WiFi, that provides Wi-Fi access to broadband cable subscribers at over 500,000 access points. Continued acquisition activity, such as Altice's acquisitions of Cablevision and SuddenLink and Vodafone's acquisition of Kabel Deutschland, has accelerated fixed and wireless convergence. This consolidation trend has caused a heightened focus on the economics of maintaining two networks. Broadband service providers are seeking to integrate their separate delivery modes with all-IP architectures, shared transport and a common suite of software-centric core and access network functions.

### ***Virtualization***

Service providers are rethinking traditional network architectures and moving toward more software-driven architectures. The use of software permits a fundamental change in the way broadband service providers deliver critical network functions. Software-enabled architectures that are decoupled from underlying hardware allow for increased efficiencies, upgradability, configuration flexibility, service agility and scalability not feasible with hardware-centric approaches.

## **Our Solutions**

We offer solutions for fixed and wireless networks. Our software-centric, multi-service broadband platform, Axyom, enables ultra-broadband delivery and convergence.

We engineered our platform from the ground-up to be high performance, flexible and adaptable, and to allow our customers to seamlessly address the growing demand for bandwidth and connectivity and competitive need for service agility. Axyom also enables our customers to efficiently manage their networks and provide their subscribers with additional services.

Our software-centric broadband platform provides the following key benefits to broadband service providers:

### ***Addition of Critical Bandwidth Capacity***

Our solutions enable broadband service providers to offer multi-gigabit speeds to meet the growing demand for bandwidth. Our platform permits software-centric expansion of network capacity to enable rapid bandwidth and service provisioning, helping broadband service providers to respond flexibly to increased customer demands.

### ***Flexibility to Add New and Expand Existing Services***

Our platform provides us with the flexibility to adapt to changing industry standards and customer needs. We designed our Axyom software platform using what we refer to as Network Function Virtualization 2.0, or NFV 2.0, principles, which allow us to provide and control each needed network function through a distinct segment of software, which can be integrated or combined together in a building block-style fashion with the segments of software responsible for each other network function. This allows us to offer network architectures that can be efficiently tailored to meet each customer's specific

requirements, both as they exist at the time of initial implementation and as they evolve over time. When possible, we also seek to implement new features and enhanced customization through the use of FPGAs, which can be reprogrammed in the field as service needs evolve. This software-centric approach enables our customers, in turn, to commercialize new features faster than they could with hardware-centric solutions. For example, our solutions enable broadband service providers to efficiently add new services and features, such as wholesale connectivity services for wireless service providers, enterprise-class connectivity services and interactive communication services, such as voice over Wi-Fi and video calling.

#### ***Ability to Upgrade Networks Remotely***

Our programmable architecture allows us to deploy technology updates to our customers remotely without the expense, disruption or network downtime caused by hardware replacements or field visits by personnel, while minimizing network downtime. Similarly, we can remotely turn on additional features or capacity in order to scale our solutions to meet the needs of our customers as they look to broaden the use and capabilities of our products. Similarly, we are often able to troubleshoot and assist our customers with technical issues through seamless software updates.

#### ***Reduced Network Complexity, Operating Costs and Capital Expenditures***

Our converged software platform allows broadband service providers to significantly reduce the complexity and costs of their networks by reducing parallel and otherwise redundant network architecture. The large capacity increases that our solutions enable, and the ability of our solutions to deliver voice, video and data over a single platform, mean fewer pieces of equipment in the network, and lower energy usage, operating costs and capital expenditures. For example, our solutions permit our customers to transition from Data Over Cable Service Interface Specification, or DOCSIS, 3.0 to DOCSIS 3.1 with less network downtime and fewer hardware replacements that result in lower costs than those of our competitors.

#### ***Ability to Densify Networks***

Our products help broadband service providers deploy more capacity at the network edge, closer to where end users and devices are accessing the network, thereby increasing available bandwidth and reducing latency to improve quality of service. For example, our solutions allow cable service providers to take advantage of new technologies and standards such as distributed access architectures, including passive optical networking, or PON, architectures, allowing cable service providers to move fiber closer to the network edge.

#### ***Common Platform Capabilities to Address the Needs of Both Fixed and Wireless Networks***

Our software-centric, multi-service platform enables a broad range of network services for fixed and wireless networks, allowing for the delivery of diverse consumer and enterprise applications. Both fixed and wireless networks share a common set of core and access network functions that enable network services, such as subscriber management, session management, transport security, access aggregation and RF management. Our Axyom software architecture allows each of these network functions to be provided and controlled by a distinct segment of software, which can be integrated or combined together in a building block-style fashion with the segments of software responsible for each other network function. This allows us to offer network architectures that can be efficiently tailored to meet each customer's specific requirements, both as they exist at the time of initial implementation and as they evolve over time.

### **Our Competitive Strengths**

The following competitive strengths have helped us become a market leader:

#### ***Highly Flexible, Software-Centric Architecture***

We have designed our product portfolio from the ground-up to be software-centric and modular in nature. Our proprietary software is at the heart of our products. Our software-centric architecture allows us to virtualize core network and access functions allowing these functions to be decoupled from underlying hardware, which is not feasible with hardware-centric approaches. As a result, our software-centric architecture allows for increased efficiencies, upgradability, configuration flexibility, service agility and scalability while increasing the potential service life of the underlying hardware. Our software allows us to leverage the programmability of FPGAs and general purpose processors in our solutions.



### ***Proven Engineering and Product Development Track Record***

We have a proven history of anticipating network evolutions and developing solutions that enable next-generation networks. Our forward-looking design and investment approach, coupled with our proven product development track record, has enabled us to deliver fully featured next-generation solutions in advance of competitors. For example, we believe we were:

- first to market (2005) with a software-centric cable solution leveraging the programmability of FPGAs and general purpose processors;
- first to market (2008) with a commercially deployed, fully qualified DOCSIS 3.0 cable modem termination system, or CMTS;
- first to market (2012) with a commercially deployed converged cable access platform, or CCAP, delivering IP voice, digital video and data over a single port;
- first to market (2015) with commercially deployed DOCSIS 3.1-compliant solutions supporting speeds of up to 10 gigabits per second; and
- first to market (2016) with a commercially deployable remote-PHY solution.

### ***Strong Management and Engineering Team with a Culture of Innovation***

We pride ourselves on our culture of innovation, which is driven by our management team of experienced executives and engineers with deep industry expertise. As of December 31, 2017, approximately 86% of our employees were engineers or had other technical backgrounds. With our talented and passionate engineering-led organization, we aim to be an industry visionary and are committed to delivering products based on next-generation technology before our competitors do. By providing customers with direct access to our engineers for product feedback and assistance, we believe our engineering expertise contributes to an enhanced customer experience.

### ***Customer Focus***

We have a passion to serve our customers and the agility and flexibility to offer solutions to meet their evolving requirements. Our sales, sales engineering, development and support teams work directly with customers to design, develop and implement new solutions and to resolve customer problems, even if another provider is the root cause of the problem. Our product development roadmap is based on our vision for the future but heavily influenced by near-term and mid-term customer requirements. This market insight helps us meet customer demands and achieve faster time to market with new features.

### ***Diversified and Established Customer Base***

Our solutions are commercially deployed in more than 75 countries by more than 450 customers, including regional service providers as well as some of the largest Tier 1 broadband service providers, serving millions of subscribers. According to S&P Global Intelligence, our market share by channels shipped in the CCAP and CMTS market grew from 6% in 2012 to 21% in 2014 to 27% in 2016. Our wireless solutions have been purchased by several customers, including Tier 1 mobile operators such as Sprint and China Mobile, and we are in negotiations with several broadband service providers for the purchase of our wireless solutions. In addition, our wireless solutions are currently in over 30 trials with over 25 prospective customers.

### **Market Opportunity**

We believe that the shift to software-centric ultra-broadband networks and fixed and wireless convergence presents us with a compelling market opportunity. Because fixed and wireless networks share a common set of core and access network functions, our platform is capable of addressing the needs of both fixed and wireless networks.

Our current CCAP solution addresses the service delivery needs of cable service providers. As fixed and wireless networks continue to converge, we believe there is an opportunity for us to take advantage of this fundamental shift. Although we currently generate the majority of our revenue from the fixed broadband CCAP market, we expect to generate increased revenue in the future from sales of both wireless and PON solutions to new and existing customers. Our current wireless products consist of small cells, Wi-Fi and related gateways as well as evolved packet core products. Our small cells and related products enable wireless access, routing and traffic management functions to support the delivery of a number of

services to end users. Our evolved packet core products enable subscriber and session management, security and data exchange between the core wireless network and wireless subscribers. Our PON solutions enable cable service providers to push fiber closer to the network edge while leveraging their existing network assets and existing industry-standard protocols.

According to S&P Global Market Intelligence, the CCAP market (including both centralized and distributed solutions) is projected to grow from \$2.0 billion in 2017 to \$2.7 billion in 2021, representing a 6% compound annual growth rate. This market currently accounts for the majority of our revenue.

- In addition, we believe the global market for our small cell, evolved packet core and PON solutions will grow from \$7.2 billion in 2017 to \$16.0 billion 2021, representing a 22% compound annual growth rate. Our small cell-related solutions have been purchased by several customers, including Tier 1 mobile operators, and our small cell-related solutions, components of our evolved packet core application and our PON solutions are currently in trials with numerous prospective customers.

## **Our Growth Strategy**

The key elements of our growth strategy are:

### ***Continue to Innovate and Extend Technology Leadership Through R&D Investment***

We believe that we offer market-leading broadband infrastructure products today. We intend to continue to enhance our existing products and develop new products in both our current and adjacent markets. For example, we have invested in and launched distributed access architecture solutions to allow our cable customers to densify their networks, providing higher bandwidth, which enhances user experience.

### ***Further Penetrate Existing Customers***

Our customers often deploy our products in a specific region or for a specific application, which may only account for a portion of their overall network infrastructure needs. We plan to expand our footprint within the networks of existing customers as they realize the technological and financial benefits of our solutions. Our software-centric approach, which is embedded in our products already deployed in our customers' networks, allows those customers to expand network capacity to address increasing bandwidth demand and serve additional users through software.

### ***Expand Our Customer Base***

We intend to continue to invest in our sales and marketing organization to increase awareness of our products and services and expand our customer base. We believe our focus on hiring, training and retaining a knowledgeable and technical sales team helps us build better relationships with customers. We added approximately 40 customers in 2017.

### ***Expand the Breadth of Solutions Sold to Customers***

We intend to sell additional products and solutions to our growing installed base of broadband service providers. We have invested in developing a virtualized platform that allows us to rapidly provide new applications and services to our customers.

### ***Leverage Our Core Technology for the Cable Industry into Adjacent Wireless Markets***

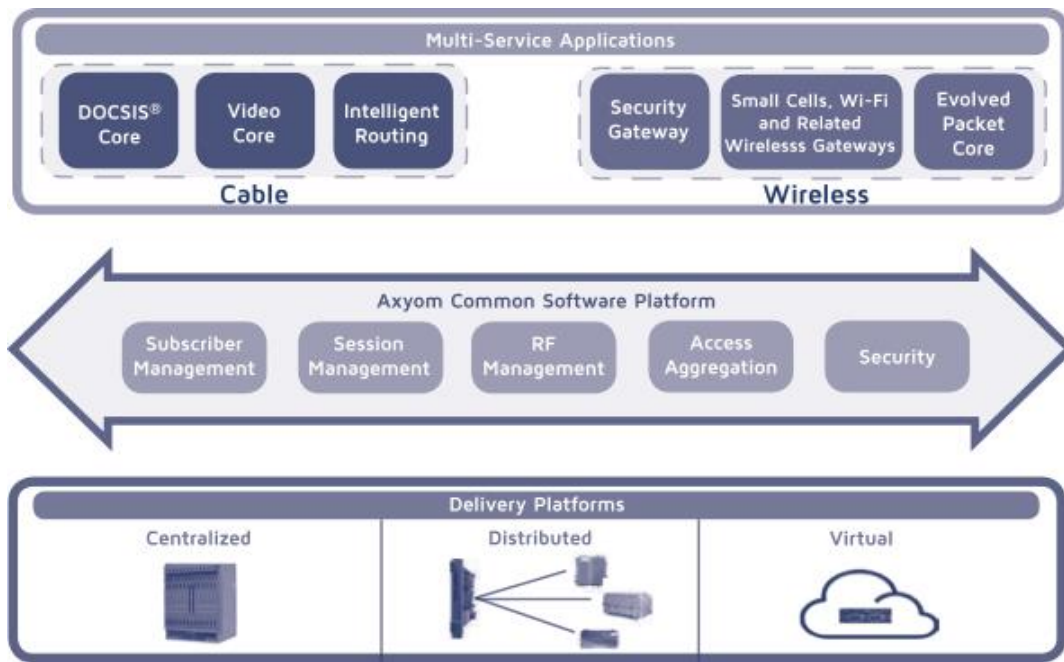
While we initially focused on providing solutions for cable service providers due to our founders' experience in the cable industry, the commonalities between fixed and wireless network architectures have allowed us to expand our solutions into the wireless market as cable service providers have increasingly sought to add wireless capabilities to their service offerings. Our wireless solutions have been purchased by several customers, including Tier 1 mobile operators such as Sprint and China Mobile, and we are in negotiations with several broadband service providers for the purchase of our wireless solutions. In addition, our wireless solutions are currently in over 30 trials with over 25 prospective customers.

### ***Invest in Our Platform through Selective Acquisitions***

We may selectively pursue acquisitions that enhance our existing platform capabilities and are consistent with our overall growth strategy.

## Products and Technology

We offer physical and virtual network solutions that enable our customers to provide fixed and wireless broadband services to consumers and enterprises.



### ***Axyom Software Platform***

Our Axyom software platform is central to our multi-service, ultra-broadband delivery architecture, integrating multiple core and access network functions. Axyom is 5G-ready and is designed to provide high performance, programmability, scalability and flexibility. We designed Axyom using NFV 2.0 principles, which allow us to provide and control each needed network function through a distinct segment of software, which can be integrated or combined together in a building block-style fashion with the segments of software responsible for each other network function. This allows us to offer network architectures that can be efficiently tailored to meet each customer's specific requirements, both as they exist at the time of initial implementation and as they evolve over time. Axyom has predominantly been integrated into our physical products to date and is increasingly being deployed in virtual environments.

Our Axyom software platform performs several critical network services:

- *Subscriber Management.* Enables dynamic management of subscriber authentication, provisioning, policy enforcement and allocation of network resources based on specific end-user service requirements to enhance quality of service
- *Session Management.* Intelligently manages application layer data streams to enable service creation and delivery and enhance quality of service
- *RF Management.* Efficiently manages RF signal generation (modulation/demodulation) while reducing noise to increase available RF spectrum and maximize data throughput over the network link in both fixed and wireless applications
- *Access Aggregation.* Manages and combines high volume data streams, regardless of connection type, including fixed broadband, Wi-Fi, LTE and 5G
- *Security.* Enables end-to-end secure connectivity between users, devices and networks without sacrificing performance

Axyom can be deployed on a centralized basis on one of our hardware chassis, over distributed network hardware or as a virtualized solution, allowing operators to place network functions where they choose, whether close to the network edge or at a centralized location or data center.

### ***Delivery Platforms***

Depending on customer preference, network requirements and current network configuration, our solutions can be deployed in a centralized, distributed or virtual environment. While centralized deployments allow our customers to deploy all critical CCAP functions in a single location, distributed and virtual deployments enable our customers to densify the access network by distributing access deeper into the network, away from existing data centers.

*Centralized Deployment.* Our C100G CCAP combines CMTS functionality that enables IP data transport from data centers to end-users over cable networks, including voice over IP and edge-quadrature amplitude modulation, or Edge-QAM, functionality to enable video delivery over cable networks in one integrated chassis. We believe our C100G CCAP solution was the industry's first fully integrated CCAP and DOCSIS 3.1 solution. Our C100G CCAP is capable of supporting downstream speeds of 10 gigabits per second. Our C100G CCAP also features high downstream and upstream channel capacity, and low space and energy consumption requirements. Using our C100G CCAP, our customers whose networks are configured for DOCSIS 3.0 can adopt DOCSIS 3.1 through either a software upgrade or a simple line card addition, while continuing to service their end customers who use DOCSIS 3.0 modems. We are also able to increase capacity for our C100G CCAP through channel expansions, which are remotely installed software-enabled increases in the bandwidth capacity, regardless of whether it is configured for DOCSIS 3.0 or 3.1. We believe that our software-centric approach will enable us to seamlessly provide our customers with future upgrades as standards evolve. In addition to our C100G CCAP, we also offer our C40G CCAP, that provides per rack unit performance comparable to that of our C100G CCAP, but in a smaller form factor.

*Distributed Deployment.* We offer three solutions for distributed deployment:

- *Remote-PHY Solution.* Our R-PHY solution for cable networks consists of remotely deployable hardware that primarily performs RF modulation and connects to a CCAP at the network core to provide subscriber management, session management, access aggregation and security functions. The remotely deployed R-PHY nodes aggregate end-user traffic for delivery back to the central data center. The software at the central data center can run on our C100G CCAP chassis or in a virtual environment. Our R-PHY solution allows broadband service providers that have implemented fiber-deep architectures to deploy ultra-fast fiber connections closer to the end user. By retaining software-driven network control and intelligence functions at the network core and placing physical layer functions remotely in a fiber node, broadband services providers can densify their networks to increase operational efficiencies and network capacity.
- *Remote-MAC/PHY Solution (R-MAC/PHY).* Our R-MAC/PHY solution for cable networks offers the capabilities of our R-PHY solution while also moving media access control functions from the network core to remotely deployed R-MAC/PHY nodes, allowing cable service providers to increase network throughput to serve more customers at higher speed.
- *Apex Small Cell Solution.* Our Apex small cell solution consists of remotely deployable access points that provide cellular connectivity services at the network edge in conjunction with transport security functions to address coverage and capacity challenges. It allows a number of connectivity options including LTE and 3G. The Apex small cell solution allows broadband service providers to more cost-effectively densify cellular networks.

In connection with all of our centralized and distributed deployment solutions, we offer a portfolio of PON solutions, enabling service providers to move fiber closer to the network edge and deliver a broader range of ultra-broadband services more efficiently and at higher speed. In particular, our portfolio of PON solutions includes end-to-end network elements, including optical line terminals and optical network units, and a DOCSIS Provisioning over Ethernet system for seamless integration of our PON solutions with existing DOCSIS network protocols.

*Virtual Deployment.* Using our NFV 2.0 software architecture, all of the multi-service applications supported across fixed and wireless by our Axyom software platform can be delivered on a virtualized basis utilizing commodity servers. We are in trials with numerous prospective customers to deliver multi-service applications virtually.

### ***Multi-Service Applications***

Our Axyom software platform initially focused on supporting applications enabling fixed broadband delivery. We have focused our recent development efforts on expanding Axyom's capabilities to support wireless applications. We refer to multi-service to describe a set of applications that are able to support requirements for both fixed and wireless networks.

#### ***Cable Network Applications***

We believe our C100G CCAP was the first solution offering full CCAP functionality, allowing the delivery of voice, video and data on a single platform. Our CCAP enables three key applications over a single cable network:

- *DOCSIS Core.* Provides high-speed delivery of IP data for broadband connectivity services, including voice over IP.
- *Video Core.* Delivers high speed video processing, including for HD and 4K.
- *Intelligent Routing.* Intelligently manages network traffic to optimize service quality.

#### ***Wireless Network Applications***

Our Axyom software platform also enables a number of applications addressing the evolving needs of fixed-mobile convergence as well as mobile network operators:

- *Security Gateway.* Enables secure encrypted access for subscribers roaming between trusted and untrusted networks, while providing high levels of density and performance.
- *Small Cells, Wi-Fi and Related Wireless Gateways.* Enables routing and security functions as well as traffic management to provide secure connectivity for wireless endpoints and enable broadband services such as LTE over Wi-Fi, including Wi-Fi calling.
- *Evolved Packet Core.* Enables subscriber management, session management and authentication, security and data exchange between the core network and subscribers.

### ***Capacity Expansion Products***

Our CCAP's flexible design allows our customers to rapidly increase service capabilities and tailor our solution to meet their evolving service needs.

Our software platform permits additional capacity and features to be provisioned remotely, as compared to hardware-centric solutions, which require wholesale hardware replacements. As new standards and services evolve and broadband networks become increasingly virtualized, we expect we will be able to deliver additional capabilities as software-only updates.

Our line card expansion options allow our customers to rapidly add new service interfaces and physical connection capacity without the need for chassis replacements. In addition, our expansion cards can cost-effectively enable support for our distributed access solutions utilizing the same C100G CCAP chassis.

### **Our Customers**

Our solutions are commercially deployed by more than 450 customers, including some of the world's largest Tier 1 broadband service providers:

- in North America: Charter/Time Warner Cable, Rogers, Sprint and Mediacom;
- in Latin America: Televisa/IZZI Mexico, Megacable Mexico and Claro Telmex Colombia;
- in Europe: Liberty Global, Vodafone and DNA Oyj; and
- in Asia-Pacific: Jupiter Communications and Beijing Gehua CATV Networks and China Mobile.

### **Sales and Marketing**

We sell our products and services through our direct sales force and in partnership with our resellers and sales agents. Our sales force is supported by our sales engineering team, which has deep technical expertise and the capability for

product presentations, product evaluations, trials and customer care. Each sales team is responsible for specific direct end-customer accounts and/or a geographic territory across the following regions: North America, Latin America, Asia-Pacific and Europe, Middle East and Africa. We intend to expand our sales force and our reseller and sales agent network.

Our products typically have a long sales cycle, requiring detailed discussions with prospective customers about their network requirements and technology roadmaps. To help us succeed in a market characterized by long sales cycles, we have developed strong customer relationships, which in turn provide us with insight into how our products will be deployed in our customers' networks. We involve product engineers in the sales process, enabling them to build relationships with customers that are valuable both during implementation and in post-sales customer support. These relationships also provide us with opportunities to leverage our familiarity with our customers' needs to make additional sales following the initial sale.

We also use resellers to market, sell and support our products and services, and we use sales agents to assist our direct global sales force with certain customers primarily located in the Latin America and Asia-Pacific regions.

Our marketing activities consist primarily of technology conferences, web marketing, trade shows, seminars and events, public relations, analyst relations, demand generation and direct marketing to build our brand, increase customer awareness, communicate our product advantages and generate qualified leads for our field sales force and resellers and sales agents.

## **Competition**

The broadband service provider market is highly competitive and subject to rapidly changing technology trends and shifting customer needs.

We primarily compete with larger and more established companies in the broadband service provider market, such as Arris, Cisco, Ericsson and Nokia.

The principal factors upon which we compete are:

- product capabilities;
- performance;
- scalability, flexibility and adaptability to new standards;
- ability to innovate;
- time to market;
- customer support; and
- total cost of ownership relative to performance and features.

We believe that we compete favorably with respect to these factors. Nevertheless, many of our competitors have substantial competitive advantages, including greater name recognition, longer operating histories, and substantially greater financial, technical, research and development or other resources than we do.

## **Research and Development**

Our research and development efforts are focused on developing new broadband products for the cable and wireless markets and enhancing our current products to meet the current and future needs of our customers. We aim to be first to market with deployable products and are willing to invest early in research and development and take technological risks to meet this goal. We also seek to enhance our technological innovation through our partnerships with industry standard-setting organizations and groups, such as CableLabs, 3GPP and Wi-Fi Alliance. These efforts position us to be able to advance industry standards while evolving our solutions to meet such new standards.

As of December 31, 2017, our research and development organization consisted of 399 employees worldwide, including both software and hardware engineers. Our research and development expense totaled \$60.7 million, \$49.2 million and \$37.2 million for the years ended December 31, 2017, 2016 and 2015, respectively. We plan to continue to devote substantial resources to our research and development activities.

## **Manufacturing**

We contract with multiple U.S.-based manufacturing firms, including Benchmark and Sanmina, to manufacture the hardware for our products using the designs, components and standards that we specify. After taking delivery from our contract manufacturers, we conduct final assembly and quality assurance testing at our facilities in Lawrence, Massachusetts and Limerick, Ireland. We believe our combination of local manufacturing and in-house assembly and quality assurance allows us to maintain consistency and quality in the products we ship to customers. We also believe that this manufacturing model enables us to respond quickly to technological changes and supports our engineering goal of being first to market with deployable products. We believe our inventory management enables us to offer shorter times between order and delivery to our customers as compared to our competitors.

We enter into purchase agreements with our contract manufacturers, generally with terms of one year or more. There are no minimum purchase requirements under these agreements and we purchase manufactured goods on a purchase order basis. As a result of our use of multiple contract manufacturers, we believe that we are not substantially dependent on the availability of any single contract manufacturer. Our contract manufacturers purchase the materials and components for our products through a variety of major electronics distributors. The materials and components of our solutions are generally available in adequate quantities from multiple potential suppliers.

## **Backlog**

We do not have any long-term purchase commitments from customers. Customers generally order products on an as-needed basis with short lead and delivery times on a per-purchase-order basis. We maintain substantial finished goods inventory to ensure that products can generally be shipped shortly after receipt of an order.

A portion of our customer shipments in any fiscal period relate to orders received in prior fiscal periods. As of December 31, 2017 and 2016, we had backlog of \$40.0 million and \$24.5 million, respectively. The increase in backlog over that period was due principally to the timing of shipments of our software-centric broadband products, delivery of software-based capacity expansions and the timing of maintenance and support contract renewals. Of the amount of backlog as of December 31, 2017, we expect that approximately \$36.8 million will be shipped within the following twelve months. However, because our customers utilize purchase orders containing non-binding purchase commitments and customers may cancel, change or reschedule orders without penalty at any time prior to shipment, we have no assurance that we will be able to convert our backlog into shipped orders.

## **Intellectual Property**

Our success depends to a significant degree upon our ability to protect our core technology and intellectual property. To accomplish this, we rely on a combination of trade secrets, patents, copyrights and trademarks, as well as contractual protections. To date, we have focused our efforts to protect our intellectual property primarily on trade secrets because the cable industry generally relies on non-patentable CableLabs standards and specifications that are jointly developed by market participants.

We limit access to and use of our proprietary software, technology and other confidential information through the use of internal and external controls, including nondisclosure agreements with employees, consultants, customers and vendors and other measures for maintaining trade secret protection. We generally license our software to customers pursuant to agreements that impose restrictions on the customers' ability to use the software, including prohibitions on reverse engineering and limitations on the use of copies. We also seek to avoid disclosure of our intellectual property by requiring employees and consultants with access to our proprietary information to execute nondisclosure and assignment of intellectual property agreements and by restricting access to our source code.

We also incorporate a number of third-party software programs into our solutions pursuant to license agreements. Our software is not substantially dependent on any third-party software, although in some cases it utilizes open source code.

## **Employees**

As of December 31, 2017, we employed 680 full-time employees, of which 359 were located in the United States and 321 were located outside the United States. Our workforce as of December 31, 2017, consisted of 399 employees in engineering and research and development, 122 employees in sales and marketing, 65 employees in general and administrative, 59 employees in manufacturing and 35 employees in services and support. None of our employees are



represented by unions. We consider our relationship with our employees to be good and have not experienced significant interruptions of operations due to labor disagreements.

## **Our Corporate Information**

We were incorporated in the State of Delaware on February 28, 2003. Our principal executive offices are located at 100 Old River Road, Andover, Massachusetts 01810, and our telephone number at that address is (978) 688-6706.

## **Available Information**

We maintain an internet website at [www.casa-systems.com](http://www.casa-systems.com) and make available free of charge through our website our Annual Reports on Form 10-K, Quarterly Reports on Form 10-Q, Current Reports on Form 8-K and amendments to those reports filed or furnished pursuant to Sections 13(a) and 15(d) of the Exchange Act of 1934, or the Exchange Act. We make these reports available through our website as soon as reasonably practicable after we electronically file such reports with, or furnish such reports to, the Securities and Exchange Commission, or the SEC. You can find, copy and inspect information we file at the SEC's public reference room, which is located at 100 F Street, N.E., Room 1580, Washington, DC 20549. Please call the SEC at 1-800-SEC-0330 for more information about the operation of the SEC's public reference room. You can review our electronically filed reports and other information that we file with the SEC on the SEC's web site at <http://www.sec.gov>. We also make available, free of charge on our website, the reports filed with the SEC by our executive officers, directors and 10% stockholders pursuant to Section 16 under the Exchange Act as soon as reasonably practicable after copies of those filings are provided to us by those persons. In addition, we regularly use our website to post information regarding our business, product development programs and governance, and we encourage investors to use our website, particularly the information in the section entitled "Investor Relations," as a source of information about us.

The information on our website is not incorporated by reference into this Annual Report on Form 10-K and should not be considered to be a part of this Annual Report on Form 10-K. Our website address is included in this Annual Report on Form 10-K as an inactive technical reference only.

## **Item 1A. Risk Factors.**

Our business is subject to numerous risks. The following important factors, among others, could cause our actual results to differ materially from those expressed in forward-looking statements made by us or on our behalf in this Annual Report on Form 10-K and other filings with the Securities and Exchange Commission, or the SEC, press releases, communications with investors, and oral statements. Actual future results may differ materially from those anticipated in our forward-looking statements. We undertake no obligation to update any forward-looking statements, whether as a result of new information, future events, or otherwise.

### **Risks Related to Our Business and Our Industry**

***If we do not successfully anticipate technological shifts, market needs and opportunities, and develop new products and product enhancements that meet those technological shifts, needs and opportunities, we may not be able to compete effectively.***

The broadband service provider market, including fixed and wireless, is characterized by rapid technological shifts and increasingly complex customer requirements to achieve scalable networks that accommodate rapidly increasing consumer demand for bandwidth. To compete effectively, we must continue to develop new technologies and products that address emerging technological trends and changing customer needs. The process of developing new technology is complex and uncertain, and the development of new offerings requires significant upfront investment that may not result in material improvements to existing products or result in marketable new products or costs savings or revenue for an extended period of time, if at all.

We believe that our culture of innovation is a significant factor in our ability to develop new products. If we are not able to attract and retain employees that are able to contribute to our culture of innovation, our ability to identify emerging technological trends and changing customer needs and successfully develop new products to address them could be adversely impacted.

The success of new products and enhancements also depends on many other factors, including timely completion and introduction, differentiation from products offered by competitors and previous versions of our own products and, ultimately,



market acceptance of these new products and enhancements. In addition, new technologies or standards could render our existing products obsolete or less attractive to customers. If we are unable to successfully introduce new products and enhancements, we would not be able to compete effectively and our business, financial condition, results of operations and prospects could be materially adversely affected.

***Our success depends in large part on broadband service providers' continued deployment of, and investment in, ultra-broadband network capabilities that make use of our solutions.***

A significant portion of our product and solution suite is dedicated to enabling cable service providers to deliver voice, video and data services over newer and faster ultra-broadband networks. As a result, our success depends significantly on these cable service providers' continued deployment of, and investment in, their networks, which depends on a number of factors outside of our control. These factors include capital constraints, the presence of available capacity on legacy networks, perceived subscriber demand for ultra-broadband networks, competitive conditions within the broadband service provider industry and regulatory issues. If broadband service providers do not continue deploying and investing in their ultra-broadband networks in ways that involve our solutions, for these or other reasons, our business, financial condition, results of operations and prospects could be materially adversely affected.

***We expect certain of our customers will continue to represent a substantial portion of our revenue.***

Historically, certain of our customers have accounted for a significant portion of our revenue. For example, sales to Charter, which purchased Time Warner Cable in 2016, accounted for 37%, 23% and 14% of our revenue for the years ended December 31, 2017, 2016 and 2015, respectively; sales to Liberty Global accounted for 11%, 10% and 17% of our revenue for the years ended December 31, 2017, 2016 and 2015, respectively; and sales to Rogers accounted for 19% of our revenue for the year ended December 31, 2016. Based on their historical purchasing patterns, we expect that our large customers will continue to account for a substantial portion of our revenue in future periods. However, our customers generally make purchases from us on a purchase-order basis rather than pursuant to long-term contracts, and those that do enter long-term contracts typically have the right to terminate their contracts for convenience. As a result, we generally have no assurances that these large customers will continue to purchase our solutions. We may also see consolidation of our customer base, which could result in loss of customers. In addition, some of our large customers have used, and may in the future use, the sizes and relative importance of their orders to our business to require that we enter into agreements with more favorable terms than we would otherwise agree to and obtain price concessions. The loss of a significant customer, a significant delay or reduction in purchases by large customers or significant price concessions to one or more large customers, could have a material adverse effect on our business, financial condition, results of operations and prospects.

***Timing of large orders and seasonality in our revenue may cause our quarterly revenue and results of operations to fluctuate and possibly decline materially from quarter to quarter.***

Our customers tend to make large purchases from us when initiating or upgrading services based on our solutions, followed by smaller purchases for maintenance and ongoing support. In addition, purchases by existing customers of capacity expansions can also involve large individual orders that may represent a significant portion of our revenue for a fiscal quarter, which may also have a significant impact on our quarterly gross margin due to these capacity expansions generating higher gross margins than our initial hardware-based deployments. As a result of all of these factors, our quarterly revenue and results of operations, including our gross margin, may be significantly impacted by one or a small number of large individual orders. For example, any cancellation of orders or any acceleration or delay in anticipated product purchases or the acceptance of shipped products by a large customer could materially affect our revenue and results of operations in any quarterly period. We may be unable to sustain or increase our revenue from other new or existing customers to offset the discontinuation of purchases by one of our larger customers. As a result, our quarterly revenue and results of operations are difficult to estimate and may fluctuate or decline materially from quarter to quarter.

In addition, we believe that there are significant seasonal factors which may cause revenue to be greater for the first and fourth quarters of our fiscal year as compared to the second and third quarters. We believe that this seasonality results from a number of factors, including the procurement, budgeting and deployment cycles of many of our customers. These seasonal variations may cause our quarterly revenue and results of operations to fluctuate or decline materially from quarter to quarter.

***Our sales to the broadband service provider market are volatile and our sales cycles can be long and unpredictable. As a result, our sales and revenue are difficult to predict and may vary substantially from period to period, which may cause our revenue and results of operations to fluctuate and possibly decline significantly.***

Our sales to the broadband service provider market have been characterized by large and sporadic purchases and long sales cycles. Sales activity often depends upon the stage of completion of expanding network infrastructures, the availability of funding and the extent to which broadband service providers are affected by regulatory, economic and business conditions in the countries in which they operate.

In addition, the timing of our sales and revenue recognition is difficult to forecast because of the unpredictability of our products' sales cycles. A sales cycle is the period between initial contact with a prospective customer and the sale of our products to that customer. Customer orders often involve the purchase of multiple products. These orders are complex and difficult to obtain because prospective customers generally consider a number of factors over an extended period of time before committing to purchase the products and solutions we sell. Customers, especially in the case of our large customers, often view the purchase of our products as a significant and strategic decision and require considerable time to evaluate, test and qualify our products prior to making a purchase decision and placing an order. The length of time that customers devote to their evaluation, contract negotiation and budgeting processes varies significantly, but can often exceed 24 months. During the sales cycle, we expend significant time and money on sales and marketing activities and make investments in evaluation equipment, all of which are included in our sales and marketing expenses and lower our operating margins, particularly if no sale occurs.

Even if a customer decides to purchase our products, there are many factors affecting the timing of our recognition of revenue, which makes our revenue difficult to forecast. For example, the sale of our products may be subject to acceptance testing or there may be unexpected delays in a customer's internal procurement processes, particularly for some of our larger customers, for whom our products represent a very small percentage of their total procurement activity. These factors may result in our inability to recognize revenue for months or years following a sale. In addition, other factors that are specific to particular customers can affect the timing of their purchases and the variability of our revenue recognition, including the strategic importance of a particular project to a customer, budgetary constraints and changes in their personnel. For all of these reasons, it is difficult to predict whether a sale will be completed, the particular period in which a sale will be completed and the period in which revenue from a sale will be recognized. If our sales cycles lengthen, our revenue could be lower than expected, which could have a material adverse effect on our business, financial condition, results of operations and prospects.

***We may not generate positive returns on our research and development investments.***

Developing our products is expensive, and the investment in product development may involve a long payback cycle or may result in investments in technologies or standards that do not get adopted in the timeframe we anticipate, or at all. For the years ended December 31, 2017, 2016 and 2015, our research and development expenses were \$60.7 million, or approximately 17.3% of our revenue, \$49.2 million, or approximately 15.6% of our revenue, and \$37.2 million, or approximately 13.6% of our revenue, respectively. We expect to continue to invest heavily in software development in order to expand the capabilities of our broadband and wireless infrastructure solutions, introduce new products and features and build upon our technology leadership, and we expect that our research and development expenses will continue to increase in absolute dollars and as a percentage of revenue from 2017 to 2018. Our investments in research and development may not generate positive returns in a timely fashion or at all.

***Our converged cable access platform, or CCAP, solutions currently represent a significant majority of our product sales; this concentration may limit our ability to increase our revenue, and our business would be adversely affected in the event we are unable to sell one or more of our products.***

We are heavily dependent upon the sales of our CCAP solutions. In the event we are unable to market and sell these products or any future product that represents a substantial amount of our revenue, our business, financial condition, results of operations and prospects could be materially adversely affected.

***We have invested heavily in developing wireless solutions, and we face risks in seeking to expand our platform into the wireless market.***

We have invested heavily in developing wireless solutions that have yet to generate any significant revenue. We cannot guarantee that these investments, or any of our other investments in research and development, will ever generate material revenue or become profitable for us, and the failure of these investments to generate positive returns may adversely impact

our business, financial condition, results of operations and prospects. The wireless market makes up a substantial portion of our total potential addressable market. In addition, expanding our offerings into the wireless market presents other significant risks and uncertainties, including potential distraction of management from other business operations that generate more substantial revenue, the dedication of significant research and development, sales and marketing, and other resources to this new business line at the expense of our other business operations and other risks that we may not have adequately anticipated.

***We believe the broadband service provider industry is in the early stages of a major architectural shift toward the virtualization of networks and the use of networks with distributed architectures. If the architectural shift does not occur, if it does not occur at the pace we predict, or if the products and services we have developed are not attractive to our customers after such shift takes place, our revenues could decline.***

We believe the broadband service provider industry is in the early stages of transitioning to the virtualization of networks and the use of networks with distributed architectures. We are developing products and services that we believe will be attractive to our customers and potential customers who make that shift. Our strategy depends in part on our belief that the industry shift to a software-centric cloud-based architecture and increasing densification will continue. In our experience, fundamental changes like this often take time to accelerate and the adoption rates of our customers may vary. As our customers determine their future network architectures and how to implement them, we may encounter delayed timing of orders, deferred purchasing decisions and reduced expenditures. These longer decision cycles and reduced expenditures may negatively impact our revenues, or make it difficult for us to accurately predict our revenues, either of which could materially adversely affect our business, financial condition, results of operations and prospects. Moreover, it is possible that our customers may reverse or fail to expand upon current trends toward virtualization and distributed architectures, which could result in significantly reduced demand for the products that we have developed and currently plan to develop.

***We face intense competition, including from larger, well-established companies, and we may lack sufficient financial or other resources to maintain or improve our competitive position.***

The market for broadband infrastructure solutions is intensely competitive, and we expect competition to increase in the future from established competitors and new market entrants. This competition could result in increased pricing pressure, reduced profit margins, increased sales and marketing expenses and our failure to increase, or the loss of, market share, any of which could materially adversely affect our business, financial condition, results of operations and prospects.

In the broadband service provider market, we primarily compete with larger and more established companies, such as Arris, Cisco, Ericsson and Nokia.

Many of our existing and potential competitors enjoy substantial competitive advantages, such as:

- greater name recognition and longer operating histories;
- larger sales and marketing budgets and resources;
- broader distribution and established relationships with customers;
- greater access to larger customer bases;
- greater customer support resources;
- greater manufacturing resources;
- the ability to leverage their sales efforts across a broader portfolio of products;
- the ability to leverage purchasing power with vendor subcomponents;
- the ability to incorporate additional functionality into their existing products;
- the ability to bundle offerings with other products and services;
- the ability to set more aggressive pricing policies;
- the ability to offer greater amounts of equity and more valuable equity as incentives for purchases of their products and services;
- lower labor and development costs;

- greater resources to fund research and development or otherwise acquire new product offerings;
- larger intellectual property portfolios; and
- substantially greater financial, technical, research and development or other resources.

Our ability to compete will depend upon our ability to provide a better solution than our competitors at a price that offers superior value. We may be required to make substantial additional investments in research, development, sales and marketing in order to respond to competition.

We also expect increased competition if our market continues to expand. Conditions in our market could change rapidly and significantly as a result of technological advancements or other factors. Current or potential competitors may be acquired by third parties that have greater resources available than we do. Our current or potential competitors might take advantage of the greater resources of the larger organizations resulting from these acquisitions to compete more vigorously or broadly with us. In addition, continued industry consolidation might adversely affect customers' perceptions of the viability of smaller and even medium-sized companies, such as us, and, consequently, customers' willingness to purchase from us. Further, certain large customers may develop broadband infrastructure solutions for internal use and/or to broaden their portfolios of internally developed resources, which could allow these customers to become new competitors in our market.

***If we are unable to sell additional products to our existing customers, our revenue growth will be adversely affected and our revenue could decline.***

To increase our revenue, we must sell additional products to our existing customers and add new customers. We expect that a substantial portion of our future sales will be follow-on sales to existing customers. For example, one of our sales strategies is to target sales of capacity expansions and implementation of wireless solutions at our current cable customers because they are familiar with the operational and economic benefits of our solutions. However, our existing customers may choose to use other providers for their infrastructure needs. If we fail to sell additional products to our existing customers, our business, financial condition, results of operations and prospects could be materially adversely affected.

***We may have difficulty attracting new large customers or acquiring new customers due to the high costs of switching broadband equipment.***

Broadband service providers typically need to make substantial investments when deploying network infrastructure, which can delay a purchasing decision. Once a broadband service provider has deployed infrastructure for a particular portion of its network, it is often difficult and costly to switch to another vendor's infrastructure. Unless we are able to demonstrate that our products offer significant performance, functionality or cost advantages that outweigh a customer's expense of switching from a competitor's product, it will be difficult for us to generate sales once that competitor's equipment has been deployed. Accordingly, if a customer has already deployed a competitor's product for its broadband infrastructure, it may be difficult for us to sell our products to that customer. If we fail to attract new large customers or acquire new customers, our business, financial condition, results of operations and prospects could be materially adversely affected.

***We are exposed to the credit risk of some of our customers and to credit exposures in the event of turmoil in the credit markets, which could result in material losses.***

Due to our reliance on significant customers, we are dependent on the continued financial strength of these customers. If one or more of our significant customers experience financial difficulties, it could result in uncollectable accounts receivable and our loss of such customers and anticipated revenue.

The majority of our sales are on an open credit basis, with typical payment terms of one year or less. We monitor individual customer payment capability in granting such open credit arrangements, seeking to limit such open credit to amounts we believe our customers can pay and maintain reserves we believe are adequate to cover exposure for doubtful accounts. However, there can be no assurance that our open credit customers will pay the amounts they owe to us or that the reserves we maintain will be adequate to cover such credit exposure. Our customers' failure to pay and/or our failure to maintain sufficient reserves could have a material adverse effect on our consolidated financial statements. In addition, in the event that turmoil in the credit markets makes it more difficult for some customers to obtain financing, those customers' ability to pay could be adversely impacted, which in turn could have a material adverse impact on our business and operations.

A portion of our sales is also derived through our resellers, which tend to have more limited financial resources than other customers and to present increased credit risk. Our resellers also typically have the ability to terminate their agreements with us for any reason upon advance written notice.

***We are exposed to fluctuations in currency exchange rates, which could adversely affect our business, financial condition, results of operations and prospects.***

Our sales agreements are primarily denominated in U.S. dollars. Therefore, a strengthening U.S. dollar could increase the real cost of our products to our customers outside of the U.S., and alternatively a decrease in the value of the U.S. dollar relative to foreign currencies could increase our product and operating costs in foreign locations. If we are not able to successfully hedge against the risks associated with the currency fluctuations, our business, financial condition, results of operations and prospects could be materially adversely affected.

***We generate a significant amount of revenue from sales to customers outside of the United States, and we are therefore subject to a number of risks associated with international sales and operations.***

We have extensive international operations and generate a significant amount of revenue from sales to customers in Asia-Pacific, Europe and the Latin America. Our ability to grow our business and our future success will depend to a significant extent on our ability to continue to expand our operations and customer base worldwide.

As a result of our international reach, we must hire and train experienced personnel to staff and manage our foreign operations. To the extent that we experience difficulties in recruiting, training, managing and retaining an international staff, and specifically staff related to sales management and sales personnel, we may experience difficulties in sales productivity in foreign markets. We also enter into strategic relationships with resellers and sales agents in certain international markets where we do not have a local presence. If we are not able to maintain these relationships or to recruit additional companies to enter into reseller and sales agent relationships, our future success in these international markets could be limited. Business practices in the international markets that we serve may differ from those in the U.S. and may require us in the future to include terms other than our standard terms in customer contracts. To the extent that we may enter into customer contracts in the future that include non-standard terms related to payment, warranties or performance obligations, our business, financial condition, results of operations and prospects could be materially adversely affected.

Our international sales and operations are subject to a number of risks, including the following:

- greater difficulty in enforcing contracts and accounts receivable collection and longer collection periods;
- increased expenses incurred in establishing and maintaining our international operations;
- fluctuations in exchange rates between the U.S. dollar and foreign currencies where we do business;
- greater difficulty and costs in recruiting local experienced personnel;
- wage inflation in certain growing economies;
- general economic and political conditions in these foreign markets;
- economic uncertainty around the world as a result of sovereign debt issues;
- communication and integration problems resulting from cultural and geographic dispersion;
- limitations on our ability to access cash resources in our international operations;
- ability to establish necessary business relationships and to comply with local business requirements;
- risks associated with trade restrictions and foreign legal requirements, including the importation, certification and localization of our products required in foreign countries;
- greater risk of unexpected changes in regulatory practices, tariffs and tax laws and treaties;
- the uncertainty of protection for intellectual property rights in some countries;
- delays resulting from our need to comply with foreign cybersecurity laws;
- greater risk of a failure of our operations and employees to comply with both U.S. and foreign laws and regulations, including antitrust regulations, the FCPA, privacy and data protection laws and regulations and any trade regulations ensuring fair trade practices; and

- heightened risk of unfair or corrupt business practices in certain geographies and of improper or fraudulent sales arrangements that may impact financial results and result in restatements of, or irregularities in, financial statements.

These and other factors could harm our ability to gain future international revenue and, consequently, materially adversely affect our business, financial condition, results of operations and prospects. Expanding our existing international operations and entering into additional international markets will require significant management attention and financial commitments. Our failure to successfully manage our international operations and the associated risks effectively could limit our future growth or materially adversely affect our business, financial condition, results of operations and prospects.

***We are subject to anti-corruption laws such as the U.S. Foreign Corrupt Practices Act of 1977, as amended.***

We are subject to anti-corruption laws such as the U.S. Foreign Corrupt Practices Act of 1977, as amended, or the FCPA, which generally prohibits U.S. companies and their employees and intermediaries from making corrupt payments to foreign officials for the purpose of obtaining or keeping business, securing an advantage or directing business to another individual or entity, and requires companies to maintain accurate books and records. Under the FCPA, U.S. companies may be held liable for the corrupt actions taken by directors, officers, employees, agents, or other strategic or local partners or representatives. We rely on non-employee third-party representatives and other intermediaries to develop international sales opportunities, and generally have less direct control over such third parties' actions taken on our behalf. If we or our intermediaries fail to comply with the requirements of the FCPA or similar legislation, governmental authorities in the United States and elsewhere could seek to impose civil and/or criminal fines and penalties, which could have a material adverse effect on our business, reputation, results of operations and financial condition. We intend to increase our international sales and business and, as such, the cost of complying with such laws, and the potential harm from our noncompliance, are likely to increase.

Failure to comply with anti-corruption laws, such as the FCPA and the United Kingdom Bribery Act 2010, or the Bribery Act, and similar laws associated with our activities outside the U.S., could subject us to penalties and other adverse consequences. Any violation of the FCPA, Bribery Act or similar laws could result in whistleblower complaints, adverse media coverage, investigations, loss of export privileges, severe criminal or civil sanctions suspension or debarment from U.S. government contracts, all of which could have a material adverse effect on our reputation, business, results of operations and prospects. In addition, responding to any enforcement action or related investigation may result in a materially significant diversion of management's attention and resources and significant defense costs and other professional fees.

***We are subject to governmental export and import controls that could impair our ability to compete in international markets or subject us to liability if we violate these controls.***

Our products may be subject to various export controls and because we incorporate encryption technology into certain of our products, certain of our products may be exported from various countries only with the required export license or through an export license exception. Furthermore, certain export control and economic sanctions laws prohibit the shipment of certain products, technology, software and services to embargoed countries and sanctioned governments, entities, and persons. If we fail to comply with the applicable export control laws, customs regulations, economic sanctions or other applicable laws, we could be subject to monetary damages or the imposition of restrictions which could materially adversely affect our business, financial condition, results of operations and prospects and could also harm our reputation. Further, there could be criminal penalties for knowing or willful violations, including incarceration for culpable employees and managers. Obtaining the necessary export license or other authorization for a particular sale may be time-consuming and may result in the delay or loss of sales opportunities. We recently discovered that we may have inadvertently violated certain technical provisions of the U.S. export control laws and regulations by failing to inform customers of their export control obligations and failing to make certain submissions to the Commerce Department's Bureau of Industry and Security, or BIS, in a timely and complete manner. However, we believe that the exports of our products were all to destinations and end users that would not have required licensing under the U.S. export control and sanctions laws. We have voluntarily disclosed the potential technical violations to BIS, and, although BIS may impose a penalty, we do not expect any such penalty to be material to our business, financial condition, results of operations and prospects.

In addition, various countries regulate the import of certain encryption technology and products, including through import permit and license requirements, and have enacted laws that could limit our ability to distribute our products or could limit our customers' ability to implement our products in those countries. Any change in export or import regulations, economic sanctions or related legislation, shift in the enforcement or scope of existing regulations or change in the countries, governments, persons or technologies targeted by such regulations could result in decreased use of our products by, or in our decreased ability to export or sell our products to, existing or potential customers with international operations or create

delays in the introduction of our products into international markets. Any decreased use of our products or limitation on our ability to export or sell our products could materially adversely affect our business, financial condition, results of operations and prospects.

***Our revenue growth rate in recent periods may not be indicative of our future performance.***

Our revenue growth rate in recent periods may not be indicative of our future performance. Our revenue grew 16.0% from the year ended December 31, 2015 to the year ended December 31, 2016 and grew 11.2% from the year ended December 31, 2016 to the year ended December 31, 2017. We may not achieve similar revenue growth rates in future periods. You should not rely on our revenue for any prior quarterly or annual period as any indication of our future revenue or revenue growth. If we are unable to maintain consistent revenue or revenue growth, our business, financial condition, results of operations and prospects could be materially adversely affected.

***As the majority of the growth in our revenue and income from operations has occurred since 2013, it is difficult to evaluate our future prospects.***

We were founded in 2003 and booked our first revenue in 2006. The majority of the growth in our revenue and income from operations has occurred since 2013, and it is difficult to evaluate our future prospects, including our ability to plan for and manage future growth. We have encountered and will continue to encounter risks and difficulties frequently experienced by rapidly growing companies in constantly evolving industries, including the risks described in this Annual Report on Form 10-K. If we do not address these risks successfully, our business, financial condition, results of operations and prospects could be materially adversely affected, and the market price of our common stock could decline.

***Our products are necessary for the operation of our customers' broadband service operations. Product quality problems, warranty claims, services disruptions, or other defects, errors or vulnerabilities in our products or services could harm our reputation and materially adversely affect our business, financial condition, results of operations and prospects.***

We assist our customers in the operation of their broadband service operations. Failures of our products could result in significant interruptions in our customers' capabilities to maintain their networks and operations. Further, unsatisfactory performance could cause us to lose revenue or market share, increase our service costs, cause us to incur substantial costs in analyzing, correcting or redesigning our products, cause us to lose significant customers, subject us to liability for damages and divert our resources from other tasks, any one of which could materially adversely affect our business, financial condition, results of operations and prospects.

In addition, sophisticated hardware and operating system software and applications that we produce or procure from third parties may contain defects in design or manufacture, including "bugs" and other problems that could unexpectedly interfere with the operation of our networks, system, or products. Such defects could result in warranty claims or claims by customers for losses that they sustain or, in some cases, could allow customers to claim damages. In the past, we have had to replace certain components of products that we had shipped or provide remediation in response to the discovery of defects or bugs from failures in software protocols.

Limitation of liability provisions in our standard terms and conditions of sale, and those of our resellers and sales agents, may not be enforceable under some circumstances or may not fully or effectively protect us from end-customer claims and related liabilities and costs. In some cases, including with respect to indemnification obligations under many of our agreements with customers and resellers, our contractual liability may be uncapped. The sale and support of our products also entail the risk of product liability claims. We maintain insurance to protect against certain types of claims associated with the use of our products, but our insurance coverage may not adequately cover any such claims. In addition, even claims that ultimately are unsuccessful could result in expenditures of funds in connection with litigation and divert management's time and other resources.

***Our products must interoperate with operating systems, software applications and hardware, and comply with industry standards, that are developed by others, and if we are unable to devote the necessary resources for our products to interoperate with such software and hardware and comply with such standards, we may lose or fail to increase market share and experience a weakening demand for our products.***

Generally, our products comprise only a part of and must interoperate with our customers' existing infrastructure, specifically their networks, servers, software and operating systems, which may be manufactured by a wide variety of vendors and original equipment manufacturers. Our products must also comply with industry standards, such as Data Over Cable Service Interface Specification, or DOCSIS, 3.0 and 3.1, which are established by third parties, in order to interoperate



with such servers, storage, software and other networking equipment such that all systems function efficiently together. We may depend on other vendors to support prevailing industry standards. Also, some industry standards may not be widely adopted or implemented uniformly, and competing standards and other approaches may emerge that may be preferred by our customers.

In addition, when new or updated versions of these industry standards, software systems or applications are introduced, we must sometimes develop updated versions of our software so that our products will interoperate properly. We may not accomplish these development efforts quickly, cost-effectively or at all. These development efforts require capital investment and the devotion of engineering resources. If we fail to maintain compatibility with these systems and applications, our customers may not be able to adequately utilize our products, and we may lose or fail to increase market share and experience a weakening in demand for our products, among other consequences, which could materially adversely affect our business, financial condition, results of operations and prospects.

***Our ability to sell our products is highly dependent on the quality of our support and services offerings, and our failure to offer high-quality support and services could have a material adverse effect on our business, financial condition, results of operations and prospects.***

Once our products are deployed within our customers' networks, our customers depend on our support organization to resolve any issues relating to our products. Our provision of high-quality support is critical for the successful marketing and sale of our products. If we do not assist our customers in deploying our products effectively, do not succeed in helping our customers resolve post-deployment issues quickly or do not provide adequate ongoing support, it could adversely affect our ability to sell our products to existing customers and could harm our reputation with potential customers. In addition, our standard sales contracts require us to provide minimum service requirements to our customers on an ongoing basis and our failure to satisfy these requirements could expose us to claims under these contracts. Our failure to maintain high-quality support and services, including compliance with our contractual minimum service obligations, could have a material adverse effect on our business, financial condition, results of operations and prospects.

***We base our inventory requirements on our forecasts of future sales. If these forecasts are materially inaccurate, we may procure inventory that we may be unable to use in a timely manner or at all.***

We and our contract manufacturers procure components and build our products based on our forecasts. These forecasts are based on estimates of future demand for our products, which are in turn based on historical trends and analyses from our sales and marketing organizations, adjusted for overall market conditions. To the extent our forecasts are materially inaccurate or if we otherwise do not need such inventory, we may under- or over-procure inventory, and such inaccuracies in our forecasts could subject us to contractual damages and otherwise materially adversely affect our business, financial condition, results of operations and prospects.

***Because we depend on third-party manufacturers to build our hardware, we are susceptible to manufacturing delays and pricing fluctuations that could prevent us from delivering customer orders on time, if at all, or on a cost-effective basis, which may result in the loss of sales and customers.***

We depend on third-party contract manufacturers to manufacture our product hardware. A significant portion of our cost of revenue consists of payments to these third-party contract manufacturers. Our reliance on these third-party contract manufacturers reduces our control over the manufacturing process, quality assurance, product costs and product supply and timing, which exposes us to risk. To the extent that our products are manufactured at facilities in foreign countries, we may be subject to additional risks associated with complying with local rules and regulations in those jurisdictions. If we are unable to manage our relationships with our third-party contract manufacturers effectively, or if these third-party manufacturers suffer delays or disruptions for any reason, experience increased manufacturing lead times, capacity constraints or quality control problems in their manufacturing operations or fail to meet our future requirements for timely delivery, our ability to ship products to our customers would be severely impaired, and our business, financial condition, results of operations and prospects could be materially adversely affected.

Our contract manufacturers typically fulfill our supply requirements on the basis of individual orders. We do not have long-term contracts with our third-party manufacturers that guarantee capacity, the continuation of particular pricing terms or the extension of credit limits. Accordingly, they are not obligated to continue to fulfill our supply requirements, which could result in supply shortages, and increases in the prices for manufacturing services on short notice. We may not be able to develop alternate contract manufacturers in a timely manner, or at all. If we add or change contract manufacturers, or change any manufacturing plant locations within a contract manufacturer network, we would add additional complexity and risk to our supply chain management.



In addition, we may be subject to significant challenges in ensuring that quality, processes and costs, among other issues, are consistent with our expectations and those of our customers. A new contract manufacturer or manufacturing location may not be able to scale its production of our products at the volumes or quality we require. This could also adversely affect our ability to meet our scheduled product deliveries to our customers, which could damage our customer relationships and cause the loss of sales to existing or potential customers, late delivery penalties, delayed revenue or an increase in our costs which could adversely affect our gross margins. This could also result in increased levels of inventory subjecting us to increased excess and obsolete charges that could have a negative impact on our results of operations.

***Because some of the key components in our products come from limited sources of supply, we are susceptible to supply shortages or supply changes, which could disrupt or delay our scheduled product deliveries to our customers and may result in the loss of sales and customers.***

Our products rely on key components that our contract manufacturers purchase on our behalf from a limited number of suppliers, including Altera, Analog Devices, Bell Power, Broadcom, Maxim, Mini-Circuits, Qorvo, TTM Technologies and Xilinx. We do not have guaranteed supply contracts with any of our component suppliers, and our suppliers could delay shipments or cease manufacturing such products or selling them to us at any time. The development of alternate sources for those components is time-consuming, difficult and costly. If we are unable to obtain a sufficient quantity of these components on commercially reasonable terms or in a timely manner, sales of our products could be delayed or halted entirely or we may be required to redesign our products. Any of these events could result in lost sales and damage to our customer relationships, which would adversely impact our business, financial condition, results of operations and prospects. In the event of a shortage or supply interruption from our component suppliers, we may not be able to develop alternate or second sources in a timely manner, on commercially reasonable terms or at all. In addition, certain of our customer contracts require us to notify our customers of any discontinuation of the products that we supply to them and to provide support for discontinued products, and lack of supply from our suppliers could leave us unable to fulfill our customer support obligations. Adverse changes to our relationships with our sole suppliers could result in lost sales and damage to our customer relationships, which would adversely impact our business, financial condition, results of operations and prospects.

***We rely on resellers and sales agents to sell our products into certain international markets, and the loss of such resellers and sales agents could delay or harm our ability to deliver our products to our customers.***

We rely upon resellers and sales agents to coordinate sales and distribution of our products in certain international markets. We provide our resellers and sales agents with specific training and programs to assist them in selling our products, but these steps may not be effective. In addition, our resellers and sales agents may be unsuccessful in marketing, selling and supporting our products and services. If we are unable to develop and maintain effective sales incentive programs for our resellers and sales agents, we may not be able to incentivize these resellers and sales agents to sell our products to customers. Any of our resellers and sales agents could elect to consolidate or enter into a strategic partnership with one of our competitors, which could reduce or eliminate our future opportunities with that reseller or sales agent. Our agreements with our resellers and sales agents may generally be terminated for any reason by either party with advance notice. We may be unable to retain these resellers and sales agents or secure additional or replacement resellers and sales agents. The replacement of one or more of our significant resellers or sales agents requires extensive training, and any new or expanded relationship with a reseller or sales agent may take several months or more to achieve productivity. Any of these events could materially adversely affect our business, financial condition, results of operations and prospects.

***Our business and operations have experienced rapid growth in recent years, and if we do not appropriately manage any future growth or are unable to improve our systems and processes, our business, financial condition, results of operations and prospects will be adversely affected.***

We have experienced rapid growth and increased demand for our products in recent years, which have placed a strain on our management, administrative, operational and financial infrastructure. For example, our revenue increased from \$272.5 million for the year ended December 31, 2015 to \$316.1 million for the year ended December 31, 2016 and to \$351.6 million for the year ended December 31, 2017. To handle this growth and increase in demand, we have significantly expanded our headcount, from 481 as of December 31, 2015 to 604 as of December 31, 2016 and to 680 as of December 31, 2017, and we expect to continue to increase our headcount. As we have grown, we have had to manage an increasingly larger and more complex array of internal systems and processes to scale with all aspects of our business, including our software development, contract manufacturing and purchasing, logistics and fulfillment and sales, maintenance and support. Our success will depend in part upon our ability to manage our growth effectively. To do so, we must continue to increase the productivity of our existing employees and continue to hire, train and manage new employees as needed. To manage domestic and international growth of our operations and personnel, we will need to continue to improve our operational, financial and management controls and our reporting processes and procedures and implement more extensive and integrated

financial and business information systems. We may not be able to successfully implement these or other improvements to our systems and processes in an efficient or timely manner, and we may discover deficiencies in their capabilities or effectiveness. Our failure to improve our systems and processes, or their failure to operate effectively and in the intended manner, may result in disruption of our current operations and customer relationships, our inability to manage the growth of our business and our inability to accurately forecast our revenue, expenses and earnings.

***If we are unable to hire, retain, train and motivate qualified personnel and senior management, including in particular our founders, our business, financial condition, results of operations and prospects could be adversely affected.***

Our future success depends, in part, on our ability to continue to attract and retain highly skilled personnel, particularly software engineering and sales personnel. Competition for highly skilled personnel is often intense, particularly in the greater Boston region where we are headquartered, and we may not be able to attract and retain the highly skilled employees that we need to support our business. Many of the companies with which we compete for experienced personnel have greater resources than we have to provide more attractive compensation packages and other amenities. Research and development personnel are aggressively recruited by startup and growth companies, which are especially active in many of the technical areas and geographic regions in which we conduct product development. In addition, in making employment decisions, particularly in the high-technology industry, job candidates often consider the value of the stock-based compensation they are to receive in connection with their employment. Declines in the market price of our stock could adversely affect our ability to attract, motivate or retain key employees. If we are unable to attract or retain qualified personnel, or if there are delays in hiring required personnel, our business, financial condition, results of operations and prospects could be materially adversely affected.

Also, to the extent we hire personnel from competitors, or from certain customers or other third parties whose employees we have agreed not to solicit, we may be subject to allegations that such personnel have been improperly solicited, that such personnel have divulged proprietary or other confidential information or that former employers own certain inventions or other work product. Such claims could result in litigation.

Our future performance also depends on the continued services and continuing contributions of our founders and senior management to execute our business plan and to identify and pursue new opportunities and product innovations. Our employment arrangements with our employees do not require that they continue to work for us for any specified period, and therefore, they could terminate their employment with us at any time. In particular, the loss of Jerry Guo, our President and Chief Executive Officer, and Weidong Chen, our Chief Technology Officer, could have a material adverse impact on our business. Further, the loss of other members of our senior management team, sales and marketing team or engineering team, or any difficulty attracting or retaining other highly qualified personnel in the future, could significantly delay or prevent the achievement of our development and strategic objectives, which could materially adversely affect our business, financial condition, results of operations and prospects. Except with respect to Mr. Guo, we do not maintain “key person” life insurance on our officers, directors or key employees.

***If we do not effectively expand and train our direct sales force, we may be unable to increase sales to our existing customers or add new customers, and our business will be adversely affected.***

We depend on our direct sales force to increase sales with existing customers and to obtain new customers. As such, we have invested and will continue to invest substantially in our sales organization. In recent periods, we have been adding personnel to our sales function as we focus on growing our business, entering new markets and increasing our market share, and we expect to incur significant additional expenses in expanding our sales personnel in order to achieve revenue growth. There is significant competition for sales personnel with the skills and technical knowledge that we require. Our ability to achieve significant revenue growth will depend, in large part, on our success in recruiting, training, retaining and integrating sufficient numbers of sales personnel to support our growth, particularly in international markets. In addition, we have significantly increased the number of personnel in our sales and marketing departments in recent periods, with headcount growing from 94 as of December 31, 2015 to 114 as of December 31, 2016 and to 122 as of December 31, 2017. New hires require significant training and may take significant time before they achieve full productivity. Our recent hires and planned hires may not become productive as quickly as we expect, and we may be unable to hire, retain or integrate into our corporate culture sufficient numbers of qualified individuals in the markets where we do business or plan to do business. If we are unable to hire, integrate and train a sufficient number of effective sales personnel, or the sales personnel we hire are not successful in obtaining new customers or increasing sales to our existing customer base, our business, financial condition, results of operations and prospects could be materially adversely affected.

***Adverse economic conditions or reduced broadband infrastructure spending may adversely affect our business, financial condition, results of operations and prospects.***

Our business depends on the overall demand for broadband connectivity. Weak domestic or global economic conditions, fear or anticipation of such conditions or a reduction in broadband infrastructure spending even if economic conditions improve, could materially adversely affect our business, financial condition, results of operations and prospects in a number of ways, including longer sales cycles, lower prices for our products and services, reduced sales and lower or no growth. Continued turmoil in the geopolitical environment in many parts of the world may also affect the overall demand for our products and services. Deterioration in global economic or political conditions could materially adversely affect our business, financial condition, results of operations and prospects in the future. A prolonged period of economic uncertainty or a downturn may also significantly affect the availability of capital and the terms and conditions of financing arrangements, including the overall cost of financing as well as the financial health or creditworthiness of our customers. Circumstances may arise in which we need, or desire, to raise additional capital, and such capital may not be available on commercially reasonable terms, or at all.

***Breaches of our cybersecurity systems and measures could degrade our ability to conduct our business operations and deliver products and services to our customers, delay our ability to recognize revenue, compromise the integrity of our products, result in significant data losses and the theft of our intellectual property, damage our reputation, expose us to liability to third parties and require us to incur significant additional costs to maintain the security of our networks and data.***

We increasingly depend upon our IT systems to conduct virtually all of our business operations, ranging from our internal operations and product development activities to our marketing and sales efforts and communications with our customers and business partners. Certain persons and entities may attempt to penetrate our network and systems, or of the systems hosting our website, and may otherwise seek to misappropriate our proprietary or confidential information or cause interruptions of our service. Because the techniques used by such persons and entities to access or sabotage networks and systems change frequently and may not be recognized until launched against a target, we may be unable to anticipate these techniques. We have also outsourced a number of our business functions to third-parties, including our manufacturers and logistics providers, and our business operations also depend, in part, on the success of these third parties' own cybersecurity measures. Additionally, we depend upon our employees and independent contractors to appropriately handle confidential data and deploy our IT resources in a safe and secure fashion that does not expose our network systems to security breaches and the loss of data. Accordingly, if any of our cybersecurity systems, processes or policies, or those of any of our manufacturers, logistics providers, customers or independent contractors fail to protect against unauthorized access, sophisticated hacking or terrorism and the mishandling, misuse, or misappropriation of data by employees, contractors or other persons or entities, our ability to conduct our business effectively could be damaged in a number of ways, including:

- sensitive data regarding our business, including intellectual property, personal information and other confidential and proprietary data, could be stolen;
- our electronic communications systems, including email and other methods, could be disrupted, and our ability to conduct our business operations could be seriously damaged until such systems can be restored;
- our ability to process customer orders and electronically deliver products and services could be degraded, and our distribution channels could be disrupted, resulting in delays in revenue recognition, damage to our relationships with customers and prospective customers and damage to our reputation;
- defects and security vulnerabilities could be introduced into our software, products, network and systems, thereby damaging our reputation and perceived reliability and security of our products and potentially making the systems of our customers vulnerable to data loss and cyber incidents; and
- personally identifiable data relating to various parties, including end users, employees and business partners could be compromised.

Should any of the above events occur, we could be subject to significant claims for liability from our customers, employees or others and regulatory investigations or actions from governmental agencies. In addition, our ability to protect our intellectual property rights could be compromised and our reputation and competitive position could be significantly harmed. Any regulatory, contractual or other actions, litigations, investigations, fines, penalties and liabilities relating to any actual or alleged misuse or misappropriation of personal data or other confidential or proprietary information could be significant in terms of monetary exposure and reputational impact and necessitate changes to our business operations that may be disruptive to us. Additionally, we could incur significant costs in order to upgrade our cybersecurity systems, processes, policies and procedures and remediate damages. Consequently, our financial performance and results of operations could be materially adversely affected.

***If we are unable to obtain, maintain or protect our intellectual property rights, our competitive position could be harmed or we could be required to incur significant expenses to enforce our rights.***

Our success depends, in part, on our ability to protect our proprietary technology. We rely on trade secret, patent, copyright and trademark laws and confidentiality agreements with employees and third parties to protect and enforce our rights to our proprietary technology, all of which offer only limited protection.

In order to protect our proprietary information, we rely in significant part on confidentiality arrangements with our employees, licensees, independent contractors, advisers and customers. These arrangements may not be effective to prevent disclosure of confidential information, including trade secrets, and may not provide an adequate remedy in the event of unauthorized disclosure of confidential information. In addition, if others independently discover our trade secrets, we would not be able to assert trade secret rights against such parties. Effective trade secret protection may not be available in every country in which our services are available or where we have employees or independent contractors. The loss or unavailability of trade secret protection could make it easier for third parties to compete with our products by copying functionality. In addition, any changes in, or unexpected interpretations of, the trade secret and employment laws in any country in which we operate may compromise our ability to enforce our intellectual property rights. Costly and time-consuming litigation could be necessary to enforce and determine the scope of our proprietary rights, and failure to obtain or maintain trade secret protection could adversely affect our competitive business position.

We also rely on patents to protect certain aspects of our proprietary technology in the United States. The process of obtaining patent protection is expensive and time-consuming, and we may not be able to prosecute all necessary or desirable patent applications at a reasonable cost or in a timely manner. We may choose not to seek patent protection for certain innovations and may choose not to pursue patent protection in certain jurisdictions. Further, we cannot guarantee that any of our pending patent applications will result in the issuance of patents or that any patents that do issue from such applications will have adequate scope to provide us with a competitive advantage. There is no assurance that all potentially relevant prior art relating to our patents and patent applications has been found. To the extent that additional patents are issued from our patent applications, which is not certain, third parties may challenge their validity, enforceability or scope, which may result in such patents being narrowed or invalidated. If third parties have prepared and filed patent applications in the United States that also claim technology to which we have rights, we may have to participate in interference proceedings in the United States Patent and Trademark Office to determine priority of invention for patent applications filed before March 16, 2013, or in derivation proceedings to determine inventorship for patent applications filed after such date. In addition, patents have a limited lifespan. In the United States, the natural expiration of a patent is generally 20 years after its effective filing date. Even if patents covering our products are obtained by us or by our licensors, once such patents expire, we may be vulnerable to competition from similar products. Moreover, the rights granted under any issued patents may not provide us with adequate protection or competitive advantages, and, as with any technology, competitors may be able to develop similar or superior technologies to our own now or in the future.

Despite our efforts, the steps we have taken to protect our proprietary rights may not be adequate to preclude misappropriation of our proprietary information or infringement of our intellectual property rights, and our ability to police such misappropriation or infringement is uncertain, particularly in countries outside of the United States. Competitors may use our technologies in jurisdictions where we have not obtained or are unable to adequately enforce intellectual property protection to develop their own products. We are also restricted from asserting our intellectual property rights against certain customers under our contracts with them.

Detecting and protecting against the unauthorized use of our products, technology and proprietary rights is expensive, difficult and, in some cases, impossible. Litigation may be necessary in the future to enforce or defend our intellectual property rights, to protect our trade secrets or to determine the validity and scope of the proprietary rights of others. Such litigation could result in substantial costs and diversion of management resources, either of which could materially adversely affect our business, financial condition, results of operations and prospects, and there is no guarantee that we would be successful. Furthermore, many of our current and potential competitors have the ability to dedicate substantially greater resources to protecting their technology or intellectual property rights than we do. Accordingly, despite our efforts, we may not be able to prevent third parties from infringing upon or misappropriating our intellectual property, which could result in a substantial loss of our market share. Even if we did succeed in enforcing our intellectual property through litigation, this may be costly and divert management resources.

Finally, certain of our license agreements with our third-party licensors provide for joint ownership of developments or inventions that we create that are related to the subject matter of the license. Other agreements to which we are subject, including member agreements with standards bodies and research and development consortia, may require us to disclose and/or grant licenses to technology that is related to the subject matter of the standards body or the consortium and included in our contributions to specifications established by these bodies. These agreements could result in third parties having ownership or license rights to important intellectual property that we otherwise may have elected to maintain exclusive ownership of.

***If our trademarks and trade names are not adequately protected, then we may not be able to build name recognition in our markets of interest and our business may be adversely affected.***

We have not applied for trademark registration for our name and logo in all geographic markets. In those markets where we have applied for trademark registration, failure to secure those registrations could adversely affect our ability to enforce and defend our trademark rights and result in indemnification claims. Our registered or unregistered trademarks or trade names, as well as the registered or unregistered trademarks or trade names used by our resellers or distributors associated with our products, may be challenged, infringed, circumvented or declared generic or determined to be infringing on other marks. Any claim of infringement by a third party, even those claims without merit, could cause us to incur substantial costs defending against such claim, could divert management attention from our business and could require us to cease use of such intellectual property in certain geographic markets. Over the long term, if we, or our resellers or distributors, are unable to establish name recognition based on our trademarks and trade names, then our business may be adversely affected.

***Assertions by third parties of infringement or other violations by us of their intellectual property rights, or other lawsuits asserted against us, could result in significant costs and materially adversely affect our business, financial condition, results of operations and prospects.***

Patent and other intellectual property disputes are common in the broadband infrastructure industry and have resulted in protracted and expensive litigation for many companies. Many companies in the broadband infrastructure industry, including our competitors and other third parties, as well as non-practicing entities, own large numbers of patents, copyrights, trademarks and trade secrets, which they may use to assert claims of patent infringement, misappropriation or other violations of intellectual property rights against us. From time to time, they have or may in the future also assert such claims against our customers whom we typically indemnify against claims that our products infringe, misappropriate or otherwise violate the intellectual property rights of third parties.

As the number of products and competitors in our market increases and overlaps occur, claims of infringement, misappropriation and other violations of intellectual property rights may increase. Any claim of infringement, misappropriation or other violations of intellectual property rights by a third party, even those without merit, could cause us to incur substantial costs defending against the claim, distract our management from our business and require us to cease use of such intellectual property, which may impact important elements of our business. In addition, some claims for patent infringement may relate to subcomponents that we purchase from third parties. If these third parties are unable or unwilling to indemnify us for these claims, we could be substantially harmed.

The patent portfolios of most of our competitors are larger than ours. This disparity may increase the risk that our competitors may sue us for patent infringement and may limit our ability to counterclaim for patent infringement or settle through patent cross-licenses. In addition, future assertions of patent rights by third parties, and any resulting litigation, may involve patent holding companies or other adverse patent owners who have no relevant product revenue and against whom our own patents may therefore provide little or no deterrence or protection. We cannot guarantee that we are not infringing or otherwise violating any third-party intellectual property rights.

The third-party asserters of intellectual property claims may be unreasonable in their demands, or may simply refuse to settle, which could lead to expensive settlement payments, prolonged periods of litigation and related expenses, additional burdens on employees or other resources, distraction from our business, supply stoppages and lost sales. Moreover, in recent years, individuals and groups that are non-practicing entities, commonly referred to as “patent trolls,” have purchased patents and other intellectual property assets for the purpose of making claims of infringement in order to extract settlements. In the past, we have received threatening letters or notices and have been the subject of claims that our solutions and underlying technology infringe or violate the intellectual property rights of others. Responding to such claims, regardless of their merit, can be time-consuming, costly to defend in litigation, divert management’s attention and resources, damage our reputation and brand, and cause us to incur significant expenses.

An adverse outcome of a dispute may require us to pay substantial damages including treble damages if we are found to have willfully infringed a third party’s patents; cease making, licensing or using solutions that are alleged to infringe or misappropriate the intellectual property of others; expend additional development resources to attempt to redesign our products or services or otherwise to develop non-infringing technology, which may not be successful; enter into potentially unfavorable royalty or license agreements in order to obtain the right to use necessary technologies or intellectual property rights; and indemnify our partners and other third parties. Any damages or royalty obligations we may become subject to as a result of an adverse outcome, and any third-party indemnity we may need to provide, could materially adversely affect our business, financial condition, results of operations and prospects. Royalty or licensing agreements, if required or desirable, may be unavailable on terms acceptable to us, or at all, and may require significant royalty payments and other expenditures. Further, there is little or no information publicly available concerning market or fair values for license fees, which can lead to overpayment of license or settlement fees. In addition, some licenses may be non-exclusive, and therefore our competitors may have access to the same technology licensed to us. Suppliers subject to third-party intellectual property claims also may choose or be forced to discontinue or alter their arrangements with us, with little or no advance notice to us. Any of these events could materially adversely affect our business, financial condition, results of operations and prospects.

***Unavailability, termination or breach of licenses to third-party software and other intellectual property could materially harm our business.***

Many of our products and services include software or other intellectual property licensed from third parties, and we otherwise use software and other intellectual property licensed from third parties in our business. We exercise no control over our third-party licensors, and the failure or unsuitability of their software or other intellectual property exposes us to risks that we will have little ability to control. For example, a licensor may have difficulties keeping up with technological changes or may stop supporting the software or other intellectual property that it licenses to us; our licensors may also have the ability to terminate our licenses if the licensed technology becomes the subject of a claim of intellectual property infringement. Also, it will be necessary in the future to renew licenses, expand the scope of existing licenses or seek new licenses, relating to various aspects of these products and services or otherwise relating to our business, which may result in increased license fees. Any new licenses may not be available on acceptable terms, if at all. In addition, a third party may assert that we or our customers are in breach of the terms of a license, which could, among other things, give such third party the right to terminate a license or seek damages from us, or both. The inability to obtain or maintain certain licenses or other rights or to obtain or maintain such licenses or rights on favorable terms, or the need to engage in litigation regarding these matters, could result in delays in releases of products and services and could otherwise disrupt our business, until equivalent technology can be identified, licensed or developed, if at all, and integrated into our products and services or otherwise in the conduct of our business. Moreover, the inclusion in our products and services of software or other intellectual property licensed from third parties on a nonexclusive basis may limit our ability to differentiate our products from those of our competitors. Any of these events could have a material adverse effect on our business, financial condition, results of operations and prospects.

***Our products contain third-party open source software components, and failure to comply with the terms of the underlying open source software licenses could restrict our ability to sell our products.***

Our products contain software modules licensed to us by third-party authors under “open source” licenses. Use and distribution of open source software may entail greater risks than use of third-party commercial software, as open source licensors generally do not provide warranties or other contractual protections regarding infringement claims or the quality of the code. Some open source licenses contain requirements that we make available source code for modifications or derivative works we create based upon the type of open source software that we use. If we combine our software with open source software in a certain manner, we could, under certain open source licenses, be required to release portions of the source code of our software to the public. This would allow our competitors to create similar products with lower development effort and time and ultimately could result in a loss of product sales for us.

Although we monitor our use of open source software to avoid subjecting our products to undesirable conditions, we do not have a formal open source policy in place that gives our developers written guidance on what open source licenses we deem “safe.” Further, even where we believe an open source license may have acceptable conditions, the terms of many open source licenses have not been interpreted by U.S. courts, and these licenses could be construed in a way that could impose unanticipated conditions or restrictions on our ability to commercialize our products. Moreover, we cannot assure you that our informal processes for controlling our use of open source software in our products will be effective or that our compliance with open source licenses, including notice and attribution requirements, are adequate. If we are held to have breached the terms of an open source software license, we could be required to seek licenses from third parties to continue offering our products on terms that are not economically feasible, to re-engineer our products, to discontinue the sale of our products if re-engineering could not be accomplished on a timely or commercially reasonable basis or to make generally available, in source code form, our proprietary code. We also could face infringement claims. Any of the foregoing could materially adversely affect our business, financial condition, results of operations and prospects.

***Our failure to adequately protect personal data and to comply with related laws and regulations could result in material liability.***

A wide variety of provincial, state, national, foreign, and international laws and regulations apply to the collection, use, retention, protection, disclosure, transfer (including across national boundaries), and other processing of personal data. These data protection and privacy-related laws and regulations are evolving and being tested in courts and may result in ever-increasing regulatory and public scrutiny and escalating levels of enforcement and sanctions.

Any failure by us to comply with applicable laws and regulations, or to protect such data, could result in enforcement action against us, including fines, imprisonment of company officials, public censure, claims for damages by end customers and other affected persons and entities, damage to our reputation and loss of goodwill, and other forms of injunctive or operations-limiting relief, any of which could have a material adverse effect on our operations, financial performance, and business.

Definitions of personal data and personal information, and requirements relating to the same under applicable laws and regulations within the European Union, the United States, and elsewhere, change frequently and are subject to new and different interpretations by courts and regulators. Because the interpretation and application of laws and other obligations relating to privacy and data protection are uncertain, it is possible that existing or future laws, regulations, and other obligations may be interpreted and applied in a manner that is inconsistent with our data management practices. We may be required to expend significant resources to modify our products and otherwise adapt to these changes, which we may be unable to do on commercially reasonable terms or at all, and our ability to develop new products and features could be limited. These developments could harm our business, financial condition and results of operations. Even if not subject to legal challenge, the perception of privacy concerns, whether or not valid, may harm our reputation and inhibit adoption of our products by current and prospective customers.

***Failure to comply with governmental laws and regulations could materially adversely affect our business, financial condition, results of operations and prospects.***

Our business is subject to regulation by various federal, state, local and foreign governmental agencies, including agencies responsible for monitoring and enforcing employment and labor laws, workplace safety, product safety, environmental laws, consumer protection laws, anti-bribery laws, import/export controls, federal securities laws and tax laws and regulations. In certain jurisdictions, these regulatory requirements may be more stringent than those in the United States. From time to time, we may receive inquiries from such governmental agencies or we may make voluntary disclosures regarding our compliance with applicable governmental regulations or requirements. Noncompliance with applicable government regulations or requirements could subject us to sanctions, mandatory product recalls, enforcement actions,



disgorgement of profits, fines, damages, civil and criminal penalties or injunctions. If any governmental sanctions are imposed, or if we do not prevail in any possible civil or criminal litigation, our business, financial condition, results of operations and prospects could be materially adversely affected. In addition, responding to any action will likely result in a significant diversion of management's attention and resources and an increase in professional fees. Enforcement actions and sanctions could materially adversely affect our business, financial condition, results of operations and prospects.

***We may invest in or acquire other businesses, which could require significant management attention, disrupt our business, dilute stockholder value and adversely affect our business, financial condition, results of operations and prospects.***

As part of our growth strategy, we may make investments in or acquire complementary companies, products or technologies. We do not have experience in making investments in other companies nor have we made any acquisitions to date, and as a result, our ability as an organization to evaluate and/or complete investments or acquire and integrate other companies, products or technologies in a successful manner is unproven. We may not be able to find suitable investment or acquisition candidates, and we may not be able to complete such investments or acquisitions on favorable terms, if at all. If we do complete investments or acquisitions, we may not ultimately strengthen our competitive position or achieve our goals, and any investments or acquisitions we complete could be viewed negatively by our customers, investors and securities analysts.

In addition, investments and acquisitions may result in unforeseen operating difficulties and expenditures. For example, if we are unsuccessful at integrating any acquisitions or retaining key talent from those acquisitions, or the technologies associated with such acquisitions, into our company, the business, financial condition, results of operations and prospects of the combined company could be materially adversely affected. Any integration process may require significant time and resources, and we may not be able to manage the process successfully. We may not successfully evaluate or utilize the acquired technology or personnel or accurately forecast the financial effects of an acquisition transaction, including accounting charges. We may have to pay cash, incur debt or issue equity securities to pay for any such investment or acquisition, each of which could adversely affect our financial condition or the market price of our common stock. The sale of equity or issuance of debt to finance any such acquisitions could result in dilution to our stockholders. The incurrence of indebtedness would result in increased fixed obligations and could also include covenants or other restrictions that would impede our ability to manage our operations. Moreover, if the investment or acquisition becomes impaired, we may be required to take an impairment charge, which could adversely affect our financial condition or the market price of our common stock.

***Our international operations may give rise to potentially adverse tax consequences.***

We are expanding our international operations and staff to better support our growth into the international markets. We generally conduct our international operations through wholly owned subsidiaries and report our taxable income in various jurisdictions worldwide based upon our business operations in those jurisdictions. Our corporate structure and associated transfer pricing policies contemplate the business flows and future growth into the international markets, and consider the functions, risks and assets of the various entities involved in the intercompany transactions. The amount of taxes we pay in different jurisdictions may depend on the application of the tax laws of the various jurisdictions, including the United States, to our international business activities, changes in tax rates, new or revised tax laws or interpretations of existing tax laws and policies and our ability to operate our business in a manner consistent with our corporate structure and intercompany arrangements. The taxing authorities of the jurisdictions in which we operate may challenge our methodologies for pricing intercompany transactions, which are required to be computed on an arm's-length basis pursuant to the intercompany arrangements or disagree with our determinations as to the income and expenses attributable to specific jurisdictions. If such a challenge or disagreement were to occur, and our position was not sustained, we could be required to pay additional taxes, interest and penalties, which could result in one-time tax charges, higher effective tax rates, reduced cash flows and lower overall profitability of our operations. Our financial statements could fail to reflect adequate reserves to cover such a contingency.

On December 22, 2017, the President signed into law new U.S. federal income tax legislation that contains significant changes to corporate taxation, including the transition of U.S. international taxation to a modified territorial system and the imposition of a one-time transition tax on a deemed repatriation of certain foreign earnings and profits. The overall impact of this new legislation is uncertain, and our business and financial condition could be adversely affected. In addition, further changes in the tax laws of foreign jurisdictions could arise, including as a result of the base erosion and profit shifting project undertaken by the Organisation for Economic Co-operation and Development, or the OECD. The OECD, which represents a coalition of member countries, has issued recommendations that, in some cases, make substantial changes to numerous long-standing tax positions and principles; many of these changes have been adopted or are under active consideration by OECD members and/or other countries.



Recent changes to the U.S. tax laws impact the tax treatment of foreign earnings by, among other things, creating limits on the ability of taxpayers to claim and utilize foreign tax credits, imposing minimum effective rates of current tax on certain classes of foreign income, and imposing additional taxes in connection with specified payments to related foreign recipients. We are unable to determine at this time what effect such changes, or others that may be enacted in the future, may have on our business. Due to our existing, and anticipated expansion of, our international business activities, any changes in the U.S. or foreign taxation of such activities may increase our worldwide effective tax rate and adversely affect our financial condition and operating results.

***Taxing authorities may successfully assert that we should have collected or in the future should collect sales and use, value added or similar taxes, and we could be subject to liability with respect to past or future sales, which could adversely affect our operating results.***

We do not collect sales and use, value added or similar taxes in all jurisdictions in which we have sales, and we have been advised that such taxes are not applicable to our products and services in certain jurisdictions. Sales and use, value added and similar tax laws and rates vary greatly by jurisdiction. Certain jurisdictions in which we do not collect such taxes may assert that such taxes are applicable, which could result in tax assessments, penalties and interest, to us or our end-customers for the past amounts, and we may be required to collect such taxes in the future. If we are unsuccessful in collecting such taxes from our end-customers, we could be held liable for such costs. Such tax assessments, penalties and interest, or future requirements may adversely affect our operating results.

***If we needed to raise additional capital to expand our operations and invest in new products, our failure to do so on favorable terms could reduce our ability to compete and could materially adversely affect our business, financial condition, results of operations and prospects.***

We expect that our existing cash and cash equivalents will be sufficient to meet our anticipated cash needs for at least the next 12 months. However, if we need to raise additional funds to expand our operations and invest in new products, we may not be able to obtain additional debt or equity financing on favorable terms, if at all. If we raise additional equity financing, our stockholders may experience significant dilution of their ownership interests, and the market price of our common stock could decline.

***Our business is subject to the risks of fire, power outages, floods and other catastrophic events and to interruption by manmade problems such as terrorism.***

Our corporate headquarters and the operations of our key manufacturing vendors, as well as many of our customers, are located in areas exposed to risks of natural disasters such as fires and floods. A significant natural disaster, such as a fire, flood or other catastrophic events such as a disease outbreak, could have a material adverse effect on our or their business, which could in turn materially adversely affect our business, financial condition, results of operations and prospects. For example, in the event our manufacturing or logistics abilities are hindered by any of the events discussed above, shipments could be delayed, which could result in missed financial targets, such as revenue and shipment targets, for a particular quarter. Further, if a natural disaster occurs in a region from which we derive a significant portion of our revenue, customers in that region may delay or forego purchases of our products, which could materially adversely affect our business, financial condition, results of operations and prospects. In addition, acts of terrorism could cause disruptions in our business or the business of our manufacturers, logistics providers, partners or customers or the economy as a whole. All of the aforementioned risks may be compounded if our disaster recovery plans and those of our manufacturers, logistics providers or partners prove to be inadequate. To the extent that any of the above results in delays or cancellations of customer orders, or delays in the manufacture, deployment or shipment of our products, our business, financial condition, results of operations and prospects would be adversely affected.

***Regulations affecting broadband infrastructure could reduce demand for our products.***

Laws and regulations governing the Internet and electronic commerce are emerging but remain largely unsettled, even in the areas where there has been some legislative action. Regulations may focus on, among other things, assessing access or settlement charges, or imposing tariffs or regulations based on the characteristics and quality of products, either of which could restrict our business or increase our cost of doing business. Government regulatory policies are likely to continue to have a major impact on the pricing of existing and new network services and, therefore, are expected to affect demand for those services and the communications products, including our products, supporting those services.

Any changes to existing laws or the adoption of new regulations by federal or state regulatory authorities or any legal challenges to existing laws or regulations affecting IP networks could materially adversely affect the market for our products. Moreover, customers may require us, or we may otherwise deem it necessary or advisable, to alter our products to address actual or anticipated changes in the regulatory environment. Our inability to alter our products or address any regulatory changes could have a material adverse effect on our consolidated financial position, results of operations or cash flows.

***We have outstanding debt that could limit our ability to make expenditures and investments in the conduct of our business and adversely impact our ability to obtain future financing.***

We have outstanding debt. Our indebtedness increases the possibility that we may be unable to generate cash sufficient to pay when due the principal of, interest on or other amounts due in respect of our indebtedness. We may be required to dedicate significant cash flows from operations to make such payments, which could limit our ability to make other expenditures and investments in the conduct of our business. Our indebtedness may also reduce our flexibility in planning for or reacting to changes in our business and market conditions. Our indebtedness also exposes us to interest rate risk, since our debt obligations generally bear interest at variable rates. In addition, we may incur additional indebtedness in the future to meet future financing needs. If we add new debt, the risks described above could increase.

***Our credit facility contains restrictive and financial covenants that may limit our operating flexibility.***

Our credit facility contains certain restrictive covenants that either limit our ability to, or require a mandatory prepayment in the event we, incur additional indebtedness and liens, merge with other companies or consummate certain changes of control, acquire other companies, engage in new lines of business, change business locations, make certain investments, make any payments on any subordinated debt, transfer or dispose of assets, amend certain material agreements, and enter into various specified transactions. We, therefore, may not be able to engage in any of the foregoing transactions unless we obtain the consent of our lender or prepay the outstanding amount under the credit facility. The credit facility also contains certain financial covenants and financial reporting requirements. Our obligations under the credit facility are secured by substantially all of our assets, excluding intellectual property and investments in foreign subsidiaries. We may not be able to generate or sustain sufficient cash flow or sales to meet the financial covenants or pay the principal and interest under the credit facility. Furthermore, our future working capital, borrowings or equity financing could be unavailable to repay or refinance the amounts outstanding under the credit facility. In the event of a liquidation, our lender would be repaid all outstanding principal and interest prior to distribution of assets to unsecured creditors, and the holders of our common stock would receive a portion of any liquidation proceeds only if all of our creditors, including our lender, were first repaid in full.

## **Risks Related to Our Common Stock**

***Our results of operations are likely to vary significantly from period to period and be unpredictable. If we fail to meet the expectations of analysts or investors, the market price of our common stock could decline substantially.***

Our results of operations have historically varied from period to period, and we expect that this trend will continue. As a result, you should not rely upon our past financial results for any period as indicators of future performance. Our results of operations in any given period can be influenced by a number of factors, many of which are outside of our control and may be difficult to predict, including the factors described above as well as:

- changes in our pricing policies, whether initiated by us or as a result of competition;
- the amount and timing of operating costs and capital expenditures related to the operation and expansion of our business;
- changes in the growth rate of the broadband services market;
- the actual or rumored timing and success of new product and service introductions by us or our competitors or any other change in the competitive landscape of our industry, including consolidation among our competitors or customers;
- our ability to successfully expand our business geographically;
- insolvency or credit difficulties confronting our customers, which could adversely affect their ability to purchase or pay for our products and services, or confronting our key suppliers, including our sole source suppliers, which could disrupt our supply chain;
- our inability to fulfill our customers' orders due to supply chain delays, access to key commodities or technologies or events that impact our manufacturers or their suppliers;

- the cost and possible outcomes of any potential litigation matters;
- our overall effective tax rate, including impacts caused by any changes in the valuation of our deferred tax assets and any new legislation or regulatory developments;
- increases or decreases in our expenses caused by fluctuations in foreign currency exchange rates; and
- general economic conditions, both domestically and in foreign markets.

Any one of the factors above or the cumulative effect of several of the factors described above may result in significant fluctuations in our financial and other results of operations. This variability and unpredictability could result in our failure to meet expectations of securities analysts or investors for a particular period. If we fail to meet or exceed such expectations for these or any other reasons, the market price of our common stock could decline substantially, and we could face costly lawsuits, including securities class action suits.

***An active trading market for our common stock may not be sustained.***

Our common stock began trading on the Nasdaq Global Select Market on December 15, 2017. Given the limited trading history of our common stock, there is a risk that an active trading market for our shares may not be sustained, which could put downward pressure on the market price of our common stock and thereby affect the ability of our stockholders to sell their shares at attractive prices, at the times that they would like to sell them, or at all.

***The market price of our common stock may be volatile, which could result in substantial losses for investors.***

The market price of our common stock could be subject to significant fluctuations. Some of the factors that may cause the market price of our common stock to fluctuate include:

- price and volume fluctuations in the overall stock market from time to time;
- volatility in the market price and trading volume of comparable companies;
- actual or anticipated changes in our earnings or fluctuations in our results of operations or in the expectations of securities analysts;
- announcements of technological innovations, new products, strategic alliances, or significant agreements by us or by competitive vendors;
- announcements by our customers regarding significant increases or decreases in capital expenditures;
- departure of key personnel;
- litigation involving us or that may be perceived as having an impact on our business;
- changes in general economic, industry and market conditions and trends;
- investors' general perception of us;
- sales of large blocks of our stock; and
- announcements regarding further industry consolidation.

In the past, following periods of volatility in the market price of a company's securities, securities class action litigation has often been brought against that company. Because of the potential volatility of our stock price, we may become the target of securities litigation in the future. Securities litigation could result in substantial costs and divert management's attention and resources from our business.

***We have broad discretion in the use of our cash reserves and may not use them effectively.***

Our management has broad discretion to use our cash reserves and could use our cash reserves in ways that do not improve our results of operations or enhance the value of our common stock. The failure by our management to apply these funds effectively could adversely affect our ability to operate and grow our business. Pending their use, we may invest our cash reserves in a manner that does not produce income or that loses value.

***If securities or industry analysts cease publishing research or reports about us, our business or our market, or if they publish negative evaluations of our stock or the stock of other companies in our industry, the price of our stock and trading volume could decline.***

The trading market for our common stock will be influenced by the research and reports that industry or securities analysts may publish about us, our business, our market or our competitors. If one or more of the industry analysts covering our business downgrade their evaluations of our stock or the stock of other companies in our industry, the price of our stock could decline. If one or more of these analysts cease to cover our stock, we could lose visibility in the market for our stock, which in turn could cause our stock price to decline.

***Because we do not expect to declare any dividends on our common stock for the foreseeable future, investors in our common stock may never receive a return on their investment.***

Although we declared special dividends on five occasions prior to our initial public offering, we do not anticipate that we will declare any cash dividends to holders of our common stock in the foreseeable future, and investors should not rely on an investment in our common stock to provide dividend income. Instead, we plan to retain any earnings to maintain and expand our existing operations. Accordingly, investors must rely on sales of their common stock after price appreciation, which may never occur, as the only way to realize any return on their investment. As a result, investors seeking cash dividends should not purchase our common stock.

***Insiders have substantial control over us, which could limit your ability to influence the outcome of key transactions, including a change of control.***

As of February 28, 2018, our directors and executive officers and their affiliates beneficially owned, in the aggregate, approximately 74.3% of our outstanding common stock, as disclosed in the beneficial ownership table included in Item 12 of this Annual Report on Form 10-K. As a result, these stockholders could have significant influence over the outcome of matters submitted to our stockholders for approval, including the election of directors and any merger, consolidation or sale of all or substantially all of our assets, and over the management and affairs of our company. This concentration of ownership may have the effect of delaying or preventing a change in control of our company and might affect the market price of our common stock.

***A significant portion of our total outstanding shares may be sold into the public market in the near future, which could cause the market price of our common stock to drop significantly, even if our business is doing well.***

Sales of a substantial number of shares of our common stock in the public market could occur at any time after the expiration of the lock-up agreements on June 13, 2018, which were executed in connection with the initial public offering of our common stock. These sales, or the market perception that the holders of a large number of shares intend to sell shares, could reduce the market price of our common stock. As of February 28, 2018, 75,030,281 shares, or 92.0% of our outstanding shares, are restricted as a result of securities laws or lock-up agreements but will be able to be sold, subject to any applicable volume limitations under federal securities laws with respect to affiliate sales in the near future.

In addition, as of February 28, 2018, there were 15,533,195 shares subject to outstanding options, 404,546 shares subject to outstanding restricted stock unit awards, or RSUs, and an additional 9,362,901 shares reserved for future issuance under our equity incentive plans that will become eligible for sale in the public market to the extent permitted by any applicable vesting requirements, lock-up agreements and Rules 144 and 701 under the Securities Act of 1933, as amended. Moreover, holders of an aggregate of approximately 43,274,870 shares of our common stock as of February 28, 2018, will have rights, subject to some conditions, to require us to file registration statements covering their shares or to include their shares in registration statements that we may file for ourselves or other stockholders. We also intend to register all shares of common stock that we may issue under our equity incentive plans. Once we register these shares, they can be freely sold in the public market upon issuance, subject to the lock-up agreements and the restrictions imposed on our affiliates under Rule 144.

***Anti-takeover provisions in our restated certificate of incorporation and our amended and restated bylaws, as well as provisions of Delaware law, might discourage, delay or prevent a change in control of our company or changes in our management and, therefore, depress the trading price of our common stock.***

Our restated certificate of incorporation and amended and restated bylaws and Delaware law contain provisions that may discourage, delay or prevent a merger, acquisition or other change in control that stockholders may consider favorable, including transactions in which you might otherwise receive a premium for your shares of our common stock. These provisions may also prevent or delay attempts by our stockholders to replace or remove our management. Our corporate governance documents include provisions:

- establishing a classified board of directors with staggered three-year terms so that not all members of our board are elected at one time;
- providing that directors may be removed by stockholders only for cause and only with a vote of the holders of at least 75% of the issued and outstanding shares of common stock;
- limiting the ability of our stockholders to call and bring business before special meetings and to take action by written consent in lieu of a meeting;
- requiring advance notice of stockholder proposals for business to be conducted at meetings of our stockholders and for nominations of candidates for election to our board of directors;
- authorizing blank check preferred stock, which could be issued with voting, liquidation, dividend and other rights superior to our common stock; and
- limiting the liability of, and providing indemnification to, our directors and officers.

As a Delaware corporation, we are also subject to provisions of Delaware law, including Section 203 of the Delaware General Corporation Law, which limits the ability of stockholders holding more than 15% of our outstanding common stock from engaging in certain business combinations with us. Any provision of our restated certificate of incorporation or amended and restated bylaws or Delaware law that has the effect of delaying or deterring a change in control could limit the opportunity for our stockholders to receive a premium for their shares of our common stock, and could also affect the price that some investors are willing to pay for our common stock.

The existence of the foregoing provisions and anti-takeover measures could limit the price that investors might be willing to pay in the future for shares of our common stock. They could also deter potential acquirers of our company, thereby reducing the likelihood that you could receive a premium for your common stock in an acquisition.

***Our restated certificate of incorporation provides that the Court of Chancery of the State of Delaware will be the exclusive forum for substantially all disputes between us and our stockholders. Our restated certificate of incorporation further provides that the federal district courts of the United States are the sole and exclusive forum for the resolution of any complaint asserting a cause of action arising under the Securities Act. These choice of forum provisions could limit our stockholders' ability to obtain a more favorable judicial forum for disputes with us or our directors, officers or employees.***

Our restated certificate of incorporation provides that the Court of Chancery of the State of Delaware is the exclusive forum for any derivative action or proceeding brought on our behalf; any action asserting a breach of fiduciary duty; any action asserting a claim against us arising pursuant to the Delaware General Corporation Law, our certificate of incorporation or our bylaws; or any action asserting a claim against us that is governed by the internal affairs doctrine. Our restated certificate of incorporation further provides that, unless we consent in writing to the selection of an alternative forum, the federal district courts of the United States shall, to the fullest extent permitted by law, be the sole and exclusive forum for the resolution of any complaint asserting a cause of action arising under the Securities Act. These choice of forum provisions may limit a stockholder's ability to bring a claim in a judicial forum that it finds favorable for disputes with us or our directors, officers or other employees, which may discourage such lawsuits against us and our directors, officers and other employees. Alternatively, if a court were to find the choice of forum provisions contained in our certificate of incorporation to be inapplicable or unenforceable in an action, we may incur additional costs associated with resolving such action in other jurisdictions, which could materially adversely affect our business, financial condition, results of operations and prospects.

***We are an “emerging growth company,” and the reduced disclosure requirements applicable to emerging growth companies may make our common stock less attractive to investors.***

We are an “emerging growth company,” as defined in the Jumpstart Our Business Startups Act of 2012, or the JOBS Act, and may remain an emerging growth company until the last day of our fiscal year following the fifth anniversary of our initial public offering, subject to specified conditions. For so long as we remain an emerging growth company, we are permitted, and intend, to rely on exemptions from certain disclosure requirements that are applicable to other public companies that are not emerging growth companies. These exemptions include being permitted to provide reduced disclosure regarding executive compensation and exemptions from the requirements to hold non-binding advisory votes on executive compensation and golden parachute payments, not being required to comply with the auditor attestation requirements of Section 404 of the Sarbanes-Oxley Act of 2002 related to our internal control over financial reporting, and not being required to comply with any requirement that may be adopted by the Public Company Accounting Oversight Board regarding a supplement to the auditor’s report providing additional information about the audit and the financial statements. In this Annual Report on Form 10-K, we have not included all of the executive compensation related information that would be required if we were not an emerging growth company. We cannot predict whether investors will find our common stock less attractive if we rely on these exemptions. If some investors find our common stock less attractive as a result, there may be a less active trading market for our common stock and our stock price may be more volatile.

Further, Section 102(b)(1) of the JOBS Act exempts emerging growth companies from being required to comply with new or revised financial accounting standards until private companies (that is, companies that have not filed a pending registration statement under the Securities Act, had a Securities Act registration statement declared effective or do not have a class of securities registered under the Securities Exchange Act of 1934, as amended, or the Exchange Act) are required to comply with the new or revised financial accounting standards. The JOBS Act provides that a company can elect to opt out of the extended transition period and comply with the requirements that apply to non-emerging growth companies, but any such an election to opt out is irrevocable. We have elected not to opt out of such extended transition period, which means that when a standard is issued or revised and it has different application dates for public or private companies, we will adopt the new or revised standard at the time private companies adopt the new or revised standard, provided that we continue to be an emerging growth company. This may make comparison of our financial statements with the financial statements of another public company that is not an emerging growth company, or an emerging growth company that has opted out of using the extended transition period, difficult or impossible because of the potential differences in accounting standards used.

We will remain an emerging growth company until the last day of the fiscal year following the fifth anniversary of our initial public offering or such earlier time that we are no longer an emerging growth company. We would cease to be an emerging growth company if we have more than \$1.07 billion in annual revenue, we have more than \$700 million in market value of our stock held by non-affiliates (and we have been a public company for at least 12 months and have filed one Annual Report on Form 10-K) or we issue more than \$1 billion of non-convertible debt securities over a three-year period.

***We have elected to rely on certain phase-in provisions of the Nasdaq Stock Market rules, and, as a result, we will not immediately be subject to certain corporate governance requirements otherwise required of Nasdaq-listed companies.***

We are currently relying on the phase-in provisions of the Nasdaq rules for certain corporate governance requirements, including the requirements that we have:

- a majority of independent directors on our board of directors;
- an audit committee that is composed entirely of independent directors; and
- a compensation committee that is composed entirely of independent directors.

Under the phase-in provisions of the Nasdaq rules, a majority of the members of our board of directors must be independent within one year of the date of our initial public offering, and we must comply with the following independence requirements with respect to our audit committee and our compensation committee: (1) one independent member of each committee beginning at the time of our initial public offering, (2) a majority of independent members of each committee within 90 days following the date of our initial public offering and (3) all independent members of each committee within one year of the date of our initial public offering. As of February 28, 2018, only two members of our board of directors had been determined to be independent, only one member of our audit committee had been determined to be independent and only one member of our compensation committee had been determined to be independent. During the phase-in periods, our stockholders will not have the same protections afforded to stockholders of companies that comply with Nasdaq’s independence requirements without reliance on the phase-in periods. We will be required to recruit new directors in order to comply with Nasdaq’s independence requirements, and the resultant changes in our board and committee membership may

influence our future corporate strategy and operating philosophies and may result in deviations from our current strategy. Additionally, if, during the phase-in periods, we are unable to recruit a sufficient number of new directors who qualify as independent or otherwise comply with Nasdaq rules, we may be subject to delisting by Nasdaq.

***Our management team has limited experience managing a public company.***

Most members of our management team have limited experience managing a publicly traded company, interacting with public company investors and complying with the increasingly complex laws pertaining to public companies. Our management team may not successfully or efficiently manage our transition to being a public company subject to significant regulatory oversight and reporting obligations under the federal securities laws and the scrutiny of securities analysts and investors. These new obligations and constituents will require significant attention from our management team and could divert their attention away from the day-to-day management of our business, which could materially adversely affect our business, financial condition, results of operations and prospects.

***The requirements of being a public company may strain our resources, divert management's attention and affect our ability to attract and retain qualified board members.***

As a public company, we are subject to the reporting requirements of the Exchange Act, the listing requirements of the Nasdaq Stock Market and other applicable securities rules and regulations. Compliance with these rules and regulations will increase our legal and financial compliance costs, make some activities more difficult, time-consuming or costly, and increase demand on our systems and resources, particularly after we are no longer an emerging growth company. Among other things, the Exchange Act requires that we file annual, quarterly and current reports with respect to our business and results of operations and maintain effective disclosure controls and procedures and internal control over financial reporting. In order to maintain and, if required, improve our disclosure controls and procedures and internal control over financial reporting to meet this standard, significant resources and management oversight may be required. As a result, management's attention may be diverted from other business concerns, which could harm our business and results of operations. Although we have already hired additional employees to comply with these requirements, we may need to hire even more employees in the future, which will increase our costs and expenses.

We are currently evaluating our internal controls, including to identify and remediate any deficiencies in those internal controls. We may not be able to complete our evaluation, testing and any required remediation in a timely fashion. During the evaluation and testing process, if we identify one or more material weaknesses in our internal control over financial reporting that we are unable to remediate before the end of the same fiscal year in which the material weakness is identified, we will be unable to assert that our internal controls are effective. If we are unable to assert that our internal control over financial reporting is effective, or if our auditors are unable to attest to management's report on the effectiveness of our internal controls, which will be required after we are no longer an emerging growth company, we could lose investor confidence in the accuracy and completeness of our financial reports, which would cause the price of our common stock to decline.

In addition, changing laws, regulations and standards relating to corporate governance and public disclosure are increasing legal and financial compliance costs and making some activities more time-consuming. We intend to invest resources to comply with evolving laws, regulations and standards, and this investment may result in increased general and administrative expense and a diversion of management's time and attention from revenue-generating activities to compliance activities. If our efforts to comply with new laws, regulations and standards differ from the activities intended by regulatory or governing bodies, regulatory authorities may initiate legal proceedings against us and our business may be harmed.

We also expect that being a public company will make it more expensive for us to obtain director and officer liability insurance, and we may be required to accept reduced coverage or incur substantially higher costs to obtain coverage. These factors could also make it more difficult for us to attract and retain qualified members of our board of directors and qualified executive officers.

We estimate that we will incur approximately \$2.0 to \$3.0 million of incremental annual costs associated with being a publicly traded company, which we expect will be included in general and administrative expenses. However, it is possible that our actual incremental costs of being a publicly traded company will be higher than we currently estimate. In estimating these costs, we took into account expenses related to insurance, legal, accounting and compliance activities.

**Item 1B. Unresolved Staff Comments.**

None.

**Item 2. Properties.****Facilities**

Our corporate headquarters is located in Andover, Massachusetts and consists of approximately 122,000 square feet of space. We own the property constituting our corporate headquarters, subject to an \$8.0 million mortgage loan. The annual interest rate on the loan is 3.5%, and the loan is repayable in 60 monthly installments of principal and interest based on a 20-year amortization schedule. The remaining amount of unpaid principal under the loan is due on the maturity date of July 1, 2020. The loan terms include annual affirmative, negative and financial covenants, including a requirement that we maintain a minimum debt service ratio. We were in compliance with all annual covenants of the mortgage loan as of December 31, 2017. As of December 31, 2017, outstanding borrowings under the mortgage loan were \$7.3 million.

We lease additional facilities in Lawrence, Massachusetts and Limerick, Ireland that we use for manufacturing, testing, logistics, and customer support. We also lease a facility in Guangzhou, China that we use for manufacturing, testing, logistics, research and development and technical support and a facility in Valencia, Spain that we use primarily for research and development.

We believe that our current facilities are adequate to meet our current needs. We anticipate expanding our facilities as we add employees and enter new geographic markets. We believe that suitable additional or alternative space will be available on acceptable terms as needed to accommodate future growth.

**Item 3. Legal Proceedings.**

From time to time, we are a party to various litigation matters and subject to claims that arise in the ordinary course of business including, for example, patent infringement lawsuits by non-practicing entities. In addition, third parties may from time to time assert claims against us in the form of letters and other communications. There is no pending or threatened legal proceeding to which we are a party that, in our opinion, is likely to have a material adverse effect on our financial condition or results of operations. However, litigation is inherently unpredictable. Regardless of the outcome, litigation can adversely affect us because of defense and settlement costs, diversion of management resources and other factors.

**Item 4. Mine Safety Disclosures.**

Not applicable.



**Item 5. Market for Registrant’s Common Equity, Related Stockholder Matters and Issuer Purchases of Equity Securities.****Market Information**

Our common stock trades on the Nasdaq Global Select Market under the symbol “CASA”. Trading of our common stock on the Nasdaq Global Select Market commenced on December 15, 2017 in connection with our initial public offering, or IPO. Prior to that time, there was no established public trading market for our common stock. As a result, we have only set forth quarterly information with respect to the high and low prices for our common stock for the period following our IPO. The following table sets forth on a per share basis, for the period indicated, the high and low sale prices of our common stock as reported by the Nasdaq Global Select Market.

<i>Fiscal Year Ended December 31, 2017</i>	<u>High</u>	<u>Low</u>
Fourth quarter (beginning December 15, 2017)	\$ 17.78	\$ 13.25

**Holders of Record**

As of February 28, 2018, there were 65 holders of record of our common stock. Because many of our shares are held by brokers and other institution on behalf of stockholders, we are not able to estimate the number of stockholders represented by these record holders.

**Dividend Policy**

Prior to our initial public offering, we declared special dividends in November 2014, June 2016, December 2016, May 2017 and November 2017. The November 2014 special dividend totaled \$27.6 million in cash payments to our stockholders. In connection with the November 2014 special dividend, our board of directors also approved cash payments totaling \$2.4 million to be made to holders of our stock options and stock appreciation rights as equitable adjustments to the holders of such instruments in accordance with the provisions of our equity incentive plans. The June 2016 special dividend totaled \$43.1 million in cash payments to our stockholders. In connection with the June 2016 special dividend, our board of directors also approved cash payments totaling \$6.9 million to be made to holders of our stock options, stock appreciation rights and restricted stock units as equitable adjustments to the holders of such instruments in accordance with the provisions of our equity incentive plans. The December 2016 special dividend totaled \$171.4 million in cash payments to our stockholders. In connection with the December 2016 special dividend, our board of directors also approved cash payments totaling \$28.6 million to be made to holders of our stock options, stock appreciation rights and restricted stock units as equitable adjustments to the holders of such instruments in accordance with the provisions of our equity incentive plans. The May 2017 special dividend totaled \$87.1 million in cash payments to our stockholders. In connection with the May 2017 special dividend, our board of directors also approved cash payments totaling \$12.9 million to be made to holders of our stock options, stock appreciation rights and restricted stock units as equitable adjustments to the holders of such instruments in accordance with the provisions of our equity incentive plans. The November 2017 special dividend totaled \$43.0 million in cash payments to our stockholders. In connection with the November 2017 special dividend, our board of directors also approved cash payments totaling \$7.0 million to be made to holders of our stock options, stock appreciation rights and restricted stock units as equitable adjustments to the holders of such instruments in accordance with the provisions of our equity incentive plans.

Although we have declared and paid the special dividends described above, we do not anticipate declaring cash dividends in the foreseeable future. Any future determination to declare dividends will be made at the discretion of our board of directors and will depend on a number of factors, including future earnings, capital requirements, financial conditions, future prospects, contractual restrictions and covenants and other factors that our board of directors may deem relevant. Our credit facility contains covenants that limit our ability to pay dividends on our capital stock.

## Recent Sales of Unregistered Equity Securities

Set forth below is information regarding shares of capital stock issued by us during the fiscal year ended December 31, 2017 that were not registered under the Securities Act of 1933, as amended, or the Securities Act. Also included is the consideration received by us for such shares and information relating to the section of the Securities Act, or rule of the Securities and Exchange Commission, under which exemption from registration was claimed.

- (1) Under our 2011 Stock Incentive Plan, we granted stock options to purchase an aggregate of 1,260,920 shares of our common stock to employees, directors and consultants, with exercise prices ranging from \$11.25 to \$12.24 per share, and we issued 76,905 shares of common stock pursuant to the exercise of stock options for aggregate consideration of \$247,810.
- (2) Under our 2011 Stock Incentive Plan, we granted an aggregate of 191,090 restricted stock units to be settled in shares of our common stock to certain of our employees and we issued 418,330 shares of common stock upon the vesting of restricted stock units.
- (3) Under our 2011 Stock Incentive Plan, we granted an aggregate of 110,000 stock appreciation rights to be settled in cash to certain of our employees.
- (4) Under our 2003 Stock Incentive Plan, we issued 54,170 shares of common stock upon the exercise of stock options at a weighted-average exercise price of \$0.10 per share, for aggregate consideration of \$5,417.

None of the foregoing transactions involved any underwriters, underwriting discounts or commissions, or any public offering. The stock options and the common stock issued upon the exercise of such options, and the restricted stock units and the common stock issued upon the vesting of such restricted stock units described in paragraphs (1), (2) and (3) above were issued under our 2011 Stock Incentive Plan in reliance on the exemption provided by Rule 701 promulgated under the Securities Act. The common stock issued upon the exercise of the stock options described in paragraph (4) above was issued under our 2003 Stock Incentive Plan in reliance on the exemption provided by Rule 701 promulgated under the Securities Act. Each of the recipients of securities in these transactions had adequate access, through employment, business or other relationships, to information about us. The sales of these securities were made without any general solicitation or advertising.

## Issuer Repurchases of Equity Securities

Under our equity incentive plans, certain participants may exercise options prior to vesting, subject to a right of a repurchase by us. During the fiscal year ended December 31, 2017 we made no repurchases of unvested shares of our common stock made pursuant to our equity incentive plans as a result of our exercising our rights nor pursuant to any publicly announced plan or program.

## Securities Authorized for Issuance Under Equity Compensation Plans

The information required by this item with respect to our equity compensation plans is incorporated by reference to the section entitled "Securities authorized for issuance under equity compensation plans" in Item 12 of Part III of this Annual Report on Form 10-K.

## Use of Proceeds

On December 19, 2017, we closed our initial public offering of 6,900,000 shares of our common stock, including 900,000 shares of our common stock pursuant to the full exercise by the underwriters of an option to purchase additional shares, at a public offering price of \$13.00 per share for an aggregate offering of approximately \$89.7 million. The offer and sale of all of the shares in the offering were registered under the Securities Act pursuant to a registration statement on Form S-1 (File No. 333-221658), which was declared effective by the Securities and Exchange Commission, or the SEC, on December 14, 2017. Morgan Stanley & Co. LLC and Barclays Capital Inc. acted as joint book-running managers for the offering, with Raymond James & Associates, Inc., Stifel, Nicolaus & Company, Incorporated, Macquarie Capital (USA) Inc., Northland Securities, Inc. and William Blair & Company, L.L.C. acting as co-managers. The offering commenced on December 14, 2017 and did not terminate until all of the shares offered had been sold.

The net offering proceeds to us from the offering, after deducting underwriting discounts of \$6.3 million and offering expenses payable by us totaling \$4.1 million, were approximately \$79.3 million. No offering discounts, commissions or expenses were paid directly or indirectly to any of our directors or officers (or their associates) or persons owning 10.0% or more of any class of our equity securities or to any other affiliates.

As of December 31, 2017, we had not used any of the net offering proceeds and we have invested the proceeds into an investment portfolio with the primary objective of preserving principal and providing liquidity without significantly increasing risk. There has been no material change in the planned use of proceeds from our initial public offering as described in our final prospectus filed with the SEC on December 15, 2017 pursuant to Rule 424(b)(4).

**Item 6. Selected Financial Data.**

The selected consolidated statements of operations data for the years ended December 31, 2017, 2016 and 2015 and the consolidated balance sheet data as of December 31, 2017 and 2016 are derived from our audited financial statements appearing in Item 8, “Financial Statements and Supplementary Data,” of this Annual Report on Form 10-K. The selected consolidated statements of operations data for the year ended December 31, 2014, and the consolidated balance sheet data as of December 31, 2015 and 2014 are derived from audited financial statements not included in this Annual Report on Form 10-K. Our historical results are not necessarily indicative of the results to be expected in the future.

The following selected consolidated financial data below should be read in conjunction with Item 7, “Management's Discussion and Analysis of Financial Condition and Results of Operations,” our Consolidated financial statements, and the accompanying notes appearing in Item 8, “Financial Statements and Supplementary Data,” of this Annual Report on Form 10-K to fully understand factors that may affect the comparability of the information presented below.

	Year Ended December 31,			
	2017	2016	2015	2014
	(in thousands, except per share amounts)			
<b>Consolidated Statement of Operations Data:</b>				
Revenue:				
Product	\$ 311,896	\$ 279,223	\$ 247,588	\$ 194,358
Service	39,679	36,905	24,862	16,920
Total revenue	<u>351,575</u>	<u>316,128</u>	<u>272,450</u>	<u>211,278</u>
Cost of revenue <sup>(1)</sup> :				
Product	88,538	89,340	74,349	59,088
Service	4,973	8,477	5,265	5,917
Total cost of revenue	<u>93,511</u>	<u>97,817</u>	<u>79,614</u>	<u>65,005</u>
Gross profit	<u>258,064</u>	<u>218,311</u>	<u>192,836</u>	<u>146,273</u>
Operating expenses:				
Research and development <sup>(1)</sup>	60,677	49,210	37,155	25,481
Sales and marketing <sup>(1)</sup>	39,602	36,114	36,157	21,409
General and administrative <sup>(1)</sup>	21,563	18,215	16,453	10,346
Total operating expenses	<u>121,842</u>	<u>103,539</u>	<u>89,765</u>	<u>57,236</u>
Income from operations	136,222	114,772	103,071	89,037
Other income (expense), net	(13,404)	921	(1,408)	(2,942)
Income before provision for income taxes	122,818	115,693	101,663	86,095
Provision for income taxes	34,318	27,025	33,742	26,387
Net income	<u>\$ 88,500</u>	<u>\$ 88,668</u>	<u>\$ 67,921</u>	<u>\$ 59,708</u>
Cash dividends declared per common share or common share equivalent	<u>\$ 1.7576</u>	<u>\$ 2.9197</u>	<u>\$ —</u>	<u>\$ 0.3835</u>
Net income (loss) attributable to common stockholders:				
Basic	<u>\$ 11,849</u>	<u>\$ (35,119)</u>	<u>\$ 27,302</u>	<u>\$ 23,287</u>
Diluted	<u>\$ 11,849</u>	<u>\$ (35,119)</u>	<u>\$ 30,402</u>	<u>\$ 23,843</u>
Net income (loss) per share attributable to common stockholders:				
Basic	<u>\$ 0.34</u>	<u>\$ (1.07)</u>	<u>\$ 0.86</u>	<u>\$ 0.78</u>
Diluted	<u>\$ 0.26</u>	<u>\$ (1.07)</u>	<u>\$ 0.78</u>	<u>\$ 0.73</u>
Weighted-average shares used to compute net income (loss) per share attributable to common stockholders:				
Basic	<u>35,359</u>	<u>32,864</u>	<u>31,740</u>	<u>29,983</u>
Diluted	<u>44,972</u>	<u>32,864</u>	<u>38,809</u>	<u>32,683</u>

(1) Includes stock-based compensation expense related to stock options, stock appreciation rights and restricted stock units granted to employees and non-employee consultants as follows:

	Year Ended December 31,			
	2017	2016	2015	2014
	(in thousands)			
Cost of revenue	\$ 306	\$ 237	\$ 143	\$ 161
Research and development expense	2,864	2,306	1,843	852
Sales and marketing expense	1,112	1,147	775	598
General and administrative expense	4,854	4,614	4,560	380
Total stock-based compensation expense	<u>\$ 9,136</u>	<u>\$ 8,304</u>	<u>\$ 7,321</u>	<u>\$ 1,991</u>

	As of December 31,			
	2017	2016	2015	2014
	(in thousands)			
<b>Consolidated Balance Sheet Data:</b>				
Cash, cash equivalents and marketable securities	\$ 260,820	\$ 343,946	\$ 92,496	\$ 77,155
Working capital <sup>(1)</sup>	324,710	286,652	162,981	99,237
Total assets	469,697	583,035	283,097	230,815
Long-term debt, including current portion, net of unamortized debt issuance costs	297,615	299,751	7,795	—
Total liabilities	419,541	557,259	103,160	124,636
Convertible preferred stock	—	97,479	97,479	97,479
Total stockholders' equity (deficit)	50,156	(71,703)	82,458	8,700

(1) We define working capital as current assets less current liabilities.

## Item 7. Management's Discussion and Analysis of Financial Condition and Results of Operations.

*The following discussion of our financial condition and results of operations should be read together with our consolidated financial statements and related notes and other financial information included elsewhere in this Annual Report on Form 10-K. The following discussion contains forward-looking statements that reflect our plans, estimates and beliefs. Our actual results could differ materially from those discussed in the forward-looking statements. Factors that could cause or contribute to these differences include those discussed below and elsewhere in this Annual Report on Form 10-K, particularly in the section titled "Risk Factors."*

### Overview

We offer solutions for next-generation centralized, distributed and virtualized architectures in cable broadband, fixed-line broadband and wireless networks. Our innovative solutions enable customers to cost-effectively and dynamically increase network speed, add bandwidth capacity and new services for consumers and enterprises, reduce network complexity and reduce operating and capital expenditures. Our solutions include a suite of software-centric infrastructure solutions that allow cable service providers to deliver voice, video and data services over a single platform at multi-gigabit speeds.

We have created a software-centric, multi-service portfolio that enables a broad range of core and access network functions for fixed and wireless networks. These networks share a common set of core and access network functions that enable network services such as subscriber management, session management, transport security and radio frequency, or RF, management. Our Axyom software architecture allows each of these network functions to be provided and controlled by a distinct segment of software, which can be integrated or combined together in a building block-style fashion with the segments of software responsible for each other network function. This allows us to offer network architectures that can be efficiently tailored to meet each customer's specific requirements, both as they exist at the time of initial implementation and as they evolve over time. While we initially focused on providing solutions for cable service providers due to our founders' experience in the cable industry, the commonalities between fixed and wireless network architectures have allowed us to expand our solutions into the wireless market as cable service providers have increasingly sought to add wireless capabilities to their service offerings.

We offer a scalable solution that can meet the evolving bandwidth needs of our customers and their subscribers. Our first installation in a service provider's network frequently involves deploying our broadband products in only a portion of the provider's network and with only a fraction of the capacity of our products enabled at the time of initial installation. Over time, our customers have generally expanded the use of our solutions to other areas of their networks to increase network capacity. Capacity expansions are accomplished either by deploying additional systems or line cards, or by our remote enablement of additional channels through the use of software. Sales of additional line cards and software-based capacity expansions generate higher gross margins than our initial hardware-based deployments.

We believe that the shift to software-centric ultra-broadband networks and fixed and wireless network convergence presents us with a compelling market opportunity. We intend to maintain our technological leadership through the enhancement of existing products and the development of new products in both our current and adjacent markets. By investing in research and development, we believe we will be well positioned to continue our rapid growth and take advantage of the large market opportunity across fixed and wireless networks. We also intend to continue to expand our sales and marketing initiatives in key geographies.

We have achieved significant growth in revenue and profitability. Our revenue has increased from \$211.3 million in 2014 to \$351.6 million in 2017, representing a compound annual growth rate of 18%. Our income from operations has increased from \$89.0 million in 2014 to \$136.2 million in 2017, representing a compound annual growth rate of 15%. Our solutions are commercially deployed in more than 75 countries by more than 450 customers, including regional service providers as well as some of the world's largest Tier 1 broadband service providers, serving millions of subscribers.

### Our Business Model

We derive revenue from sales of our products and services. The majority of our product revenue is derived from sales of our broadband products, particularly our C100G converged cable access platform, or CCAP, solution. We generate service revenue primarily from sales of maintenance and support services, which end customers typically purchase in conjunction with our products, and, to a lesser extent, from sales of professional services and extended warranty services.

Since shipping our first products in 2005, our cumulative end-customer base has grown significantly. Our revenue and installed base of equipment has increased significantly with the introduction of our CCAP solution in 2012 and our Data Over Cable Service Interface Specification, or DOCSIS, 3.1 capabilities in 2015, both of which run on our Axyom software platform.

We offer a scalable solution that can meet the evolving bandwidth needs of our customers and their subscribers.

Our sales model focuses on the following key areas:

- **Adding New Customers.** With several thousand broadband service providers existing globally, we believe that we have opportunities for growth by acquiring new customers in all of the geographic regions in which we compete. Potential new customers include broadband service providers that provide fixed or wireless services or both. We intend to add new customers over time by continuing to invest in our technology and our sales team to capitalize on these new opportunities. Our sales team works closely with prospective customers to educate them on and demonstrate to them the technical and business merits of our products, including the ability to capture new revenue opportunities and realize cost savings through the use of our broadband solutions. We build relationships with prospective customers at multiple levels and within numerous departments in a customer's organization and, through the sales process, we strive to be a strategic business partner for our customers. We believe that the technological strengths and capabilities of our broadband solutions and the introduction and implementation of next-generation standards have been and will continue to be an important factor in our ability to add new customers.
- **Expanding Sales to Our Existing Customer Base.** Our first installation in a service provider's network frequently involves deploying our broadband products in only a portion of the provider's network and with only a fraction of the capacity of our products enabled at the time of initial installation. Over time, our customers have generally expanded the use of our solutions to other areas of their networks to increase network capacity. Capacity expansions are accomplished either by deploying additional systems or line cards, or by our remote enablement of additional channels through the use of software. Sales of additional line cards and software-based capacity expansions generate higher gross margins than our initial hardware-based deployments.

We work with our existing customers to identify expansion and cross-selling opportunities. Existing customers are familiar with and have benefited from the operational and economic benefits of our broadband products, and therefore, sales cycles for existing customers are generally shorter. We believe expansion and cross-selling opportunities with existing customers are significant given their existing and expected infrastructure spend as service providers leverage their investment in our platform to deliver new services to their customers.

Our solutions are commercially deployed in over 75 countries by more than 450 customers. We expect that a substantial portion of our future sales will be follow-on sales to existing customers. During the years ended December 31, 2017, 2016 and 2015, sales to existing customers represented 97%, 74% and 63% of our revenue, respectively. Our business and results of operations will depend on our ability to sell additional products to our existing customer base.

- **Selling New Products.** Our results of operations have been, and we believe will continue to be, affected by our ability to quickly and effectively design and sell products with improved performance and increased functionality. As networks and standards for broadband solutions evolve, we aim to deliver new products prior to our competition. For example, the introduction of our DOCSIS 3.0 broadband solution, our CCAP solution and our DOCSIS 3.1 capabilities allowed us to obtain new customers, increase our sales to existing customers, increase our revenue and capture market share. We aim to increase our revenue by enabling customers to transition from previously deployed data and video solutions to our integrated CCAP solutions, which can incorporate DOCSIS 3.1 standards as well as our remote-PHY distributed access solution. Over the last several years, we have made substantial investments to extend our Axyom software platform to serve the wireless market, and we expect to generate increased revenue in the future from sales of wireless solutions to new and existing customers. We have also developed solutions for telecommunications service providers. Our ability to sustain our revenue growth will depend, in part, upon our sales of new products.



We market and sell our products and services through our direct global sales force, supported by sales agents, and through resellers. A majority of our revenue is derived from direct sales, which generate higher gross margins than sales made through resellers. Our sales organization includes systems engineers with deep technical expertise that provide pre-sales technical support. These systems engineers also assist with post-sales support. Our resellers receive an order from an end customer prior to placing an order with us, and we confirm the identification of or are aware of the end customer prior to accepting such orders. We use sales agents to assist our direct global sales force in the sales process with certain customers primarily located in the Latin America and Asia-Pacific regions. If a sales agent is engaged in the sales process, we receive the order directly from and sell the products and services directly to the end customer, and we pay a commission to the sales agent, calculated as a percentage of the related customer payment.

Each of our sales teams is responsible for a geographic territory and/or has responsibility for a number of major direct end-customer accounts. We have a diverse, global customer base and our revenue by geographic region fluctuates from period to period based on the timing of customer projects. The percentages of our revenue derived from customers in each geographic region were as follows:

	Year Ended December 31,		
	2017	2016	2015
Revenue by geographic region:			
North America	57.4%	58.2%	20.0%
Latin America	11.5%	15.0%	32.1%
Europe, Middle East and Africa	17.5%	14.3%	27.8%
Asia-Pacific	13.6%	12.5%	20.1%
Total	<u>100.0%</u>	<u>100.0%</u>	<u>100.0%</u>

## Key Components of Our Results of Operations

### Revenue

We generate product revenue from sales of our software-centric broadband products, including our CCAP solution and our DOCSIS 3.1 capabilities. The majority of our revenue is derived from sales of our CCAP solutions, particularly our C100G CCAP. We also generate product revenue from sales of additional line cards and software-based capacity expansions.

We generate service revenue from sales of initial maintenance and support services contracts, which are typically purchased by end customers in conjunction with our products, and from our customers' subsequent annual renewals of those contracts. We offer maintenance and support services under renewable, fee-based contracts, which include telephone support and unspecified software upgrades and updates provided on a when-and-if-available basis. To a lesser extent, we generate service revenue from sales of professional services, such as installation and configuration, and extended warranty services.

The sale of our software-centric broadband products generally includes a 90-day warranty on the software and a one-year warranty on the hardware component of the products, which includes repair or replacement of the applicable hardware. We record a warranty accrual for the initial software and hardware warranty included with our product sales and do not defer revenue. In addition, in conjunction with customers' renewals of maintenance and support services contracts, we offer an extended warranty for periods typically of one to three years for agreed-upon fees, which we record as service revenue.

### Cost of Revenue

Our cost of product revenue consists primarily of the costs of procuring goods, such as chassis and line cards embedded with FPGAs, from our contract manufacturers and other suppliers. In addition, cost of product revenue includes salary and benefit expenses, including stock-based compensation, for manufacturing and supply-chain management personnel, allocated facilities-related costs, estimated warranty costs, third-party logistics costs, and estimated costs associated with excess and obsolete inventory.

Our cost of service revenue includes salary and benefit expenses, including stock-based compensation, for our maintenance and support services and professional services personnel, fees incurred for subcontracted professional services provided to our customers, and allocated facilities-related costs.

### **Gross Profit**

Our product gross profit and gross margin have been, and may in the future be, influenced by several factors, including changes in the volume of our software-centric broadband products sold, product configuration, sales of capacity expansions, geographic location of our customers, pricing due to competitive pressure, estimated warranty costs, inventory obsolescence, and favorable and unfavorable changes in inventory production volume and component costs. As some products mature, the average selling prices of those products may decline. Our service gross profit and gross margin have been, and may in the future be, influenced by the amount and timing of renewals of maintenance and support services contracts by customers, pricing due to competitive pressure and, to a lesser extent, the amount of professional services ordered by customers and performed by us. We expect that our gross margin will remain relatively stable in the near term, subject to quarter-to-quarter fluctuation, due to changes in the amount of our software-centric broadband products and capacity expansions sold.

### **Operating Expenses**

Our operating expenses consist of research and development, sales and marketing, and general and administrative expenses.

#### *Research and Development Expenses*

Research and development expenses consist primarily of salary and benefit expenses, including stock-based compensation, for our employees engaged in research, design and development activities. Research and development expenses also include project-specific engineering services purchased from external vendors, prototype costs, depreciation expense, amortization of purchased intellectual property, allocated facilities-related costs and travel expenses.

We expect that our research and development costs will continue to increase in absolute dollars while remaining relatively stable as a percentage of revenue in the near term as we continue to make significant investments to enhance our software-centric broadband products and develop new software-centric broadband products and technologies, including our new wireless solutions.

#### *Sales and Marketing Expenses*

Sales and marketing expenses include salary and benefit expenses, including stock-based compensation, for employees and costs for contractors engaged in sales and marketing activities. Sales and marketing expenses also include commissions, calculated as a percentage of the related customer payment, to sales agents that assist us in the sales process with certain customers primarily located in the Latin America and Asia-Pacific regions. These sales agent commissions fluctuate from period to period based on the amount and timing of sales to the customers subject to sales agent commissions. Sales and marketing expenses also include marketing activities, such as trade shows, marketing programs and promotional materials, as well as allocated facilities-related costs. We are also establishing a new sales force to sell and undertake new marketing programs to promote our new wireless solutions.

We expect that our sales and marketing expenses will increase in absolute dollars while remaining relatively stable as a percentage of revenue in the near term as we continue to make investments in our sales and marketing organizations and expand our marketing programs and efforts to increase the market awareness and sales of our products and services.

#### *General and Administrative Expenses*

General and administrative expenses include salary and benefit expenses, including stock-based compensation, for employees engaged in general and administrative activities, as well as professional service fees, allocated facilities-related costs, insurance, travel and bad debt expenses related to accounts receivable.

We expect that our general and administrative expenses will increase in absolute dollars while remaining relatively stable as a percentage of revenue in the near term primarily due to our continued growth and the increased cost associated with being a public company.

### ***Other Income (Expense), Net***

Other income (expense), net consists of interest income from our investments in short-term financial instruments, such as certificates of deposit, money market mutual funds and commercial paper, and interest expense associated with our term loan facility, the mortgage on our corporate office and debt maintenance costs related to our revolving credit facility. Other income (expense), net also includes realized and unrealized gains and losses from foreign currency transactions. We hedge certain significant transactions denominated in currencies other than the U.S. dollar, and we expect to continue to do so to minimize our exposure to foreign currency fluctuations.

### ***Provision for Income Taxes***

We are subject to income taxes in the United States and the foreign jurisdictions in which we do business. These foreign jurisdictions have statutory tax rates different from those in the United States. Our effective tax rates will vary depending on the relative proportion of foreign to U.S. income, the utilization of foreign tax credits and research and development tax credits, changes in corporate structure, the amount and timing of certain employee stock-based compensation transactions, changes in the valuation of our deferred tax assets and changes in tax laws and interpretations. We plan to regularly assess the likelihood of outcomes that could result from the examination of our tax returns by the U.S. Internal Revenue Service, or IRS, and other tax authorities to determine the adequacy of our income tax reserves and expense. Should actual events or results differ from our then-current expectations, charges or credits to our provision for income taxes may become necessary. Any such adjustments could have a significant effect on our results of operations.

On December 22, 2017, the Tax Cuts and Jobs Act, or the TCJA, was enacted which, among other things, lowered the U.S. corporate income tax rate to 21% from 35% and established a modified territorial system requiring a mandatory deemed repatriation tax on undistributed earnings of foreign subsidiaries. Beginning in 2018, the TCJA also requires a minimum tax on certain future earnings generated by foreign subsidiaries while providing for future tax-free repatriation of such earnings through a 100% dividends-received deduction. While the reduction in the U.S. corporate tax rate under the TCJA is not effective until 2018, under GAAP, changes in tax rates are accounted for in the period enacted. Therefore, in accordance with Accounting Standards Codification, or ASC, Topic 740, *Income Taxes*, and Staff Accounting Bulletin 118, we recognized a provisional income tax charge in the fourth quarter of 2017 of \$14.1 million related to the TCJA based on our initial analysis using available information and estimates. The provisional charge is comprised of \$10.0 million related to the one-time deemed repatriation of accumulated earnings of foreign subsidiaries and related withholding taxes and \$4.1 million related primarily to the remeasurement of net deferred tax assets as a result of the reduction in the U.S. corporate income tax rate effected by the TCJA. As a result, applicable U.S. corporate and foreign income taxes have been provided on substantially all of our accumulated earnings of foreign subsidiaries previously considered indefinitely reinvested. Given the significant complexity of the TCJA, anticipated guidance from the U.S. Treasury Department about implementing the TCJA and the potential for additional guidance from the Securities and Exchange Commission, or the SEC, or the Financial Accounting Standards Board, or the FASB, related to the TCJA or additional information becoming available, our provisional income tax charge may be adjusted during 2018 and is expected to be finalized no later than the fourth quarter of 2018. Other provisions of the TCJA that impact future tax years are still being assessed.

In the third quarter of 2016, we began the process of restructuring our international operations, which over time is expected to reduce our effective tax rate; however, due to the timing of this restructuring program, the impact on our effective tax rate in 2016 was not fully realized. In addition, our 2016 effective tax rate and provision for income taxes reflected a non-recurring tax benefit for equitable adjustment payments to holders of our stock-based awards in connection with dividends declared by our board of directors. Our 2017 effective tax rate reflects the benefit of our international restructuring, and charges related to the TCJA, as well as a non-recurring tax benefit for equitable adjustment payments to holders of our stock based awards in connection with dividends declared by our board of directors. We expect that the favorable impact of the restructuring of our international operations on our effective tax rates will continue in future periods, subject to period to period variability related to the geographic distribution of earnings in foreign jurisdictions with statutory tax rates different from those in the United States.

## Results of Operations

The following tables set forth our consolidated results of operations in dollar amounts and as percentage of total revenue for the periods shown:

	Year Ended December 31,		
	2017	2016	2015
	(in thousands)		
<b>Revenue:</b>			
Product	\$ 311,896	\$ 279,223	\$ 247,588
Service	39,679	36,905	24,862
Total revenue	<u>351,575</u>	<u>316,128</u>	<u>272,450</u>
<b>Cost of revenue<sup>(1)</sup>:</b>			
Product	88,538	89,340	74,349
Service	4,973	8,477	5,265
Total cost of revenue	<u>93,511</u>	<u>97,817</u>	<u>79,614</u>
Gross profit	<u>258,064</u>	<u>218,311</u>	<u>192,836</u>
<b>Operating expenses:</b>			
Research and development <sup>(1)</sup>	60,677	49,210	37,155
Sales and marketing <sup>(1)</sup>	39,602	36,114	36,157
General and administrative <sup>(1)</sup>	21,563	18,215	16,453
Total operating expenses	<u>121,842</u>	<u>103,539</u>	<u>89,765</u>
Income from operations	136,222	114,772	103,071
Other income (expense), net	(13,404)	921	(1,408)
Income before provision for income taxes	122,818	115,693	101,663
Provision for income taxes	34,318	27,025	33,742
Net income	<u>\$ 88,500</u>	<u>\$ 88,668</u>	<u>\$ 67,921</u>

(1) Includes stock-based compensation expense related to stock options, stock appreciation rights and restricted stock units granted to employees and non-employee consultants as follows:

	Year Ended December 31,		
	2017	2016	2015
	(in thousands)		
Cost of revenue	\$ 306	\$ 237	\$ 143
Research and development expense	2,864	2,306	1,843
Sales and marketing expense	1,112	1,147	775
General and administrative expense	4,854	4,614	4,560
Total stock-based compensation expense	<u>\$ 9,136</u>	<u>\$ 8,304</u>	<u>\$ 7,321</u>

	Year Ended December 31,		
	2017	2016	2015
	(as a percentage of total revenue)		
<b>Revenue:</b>			
Product	89%	88%	91%
Service	11	12	9
Total revenue	100	100	100
<b>Cost of revenue:</b>			
Product	25	28	27
Service	1	3	2
Total cost of revenue	27	31	29
Gross profit	73	69	71
<b>Operating expenses:</b>			
Research and development	17	16	14
Sales and marketing	11	11	13
General and administrative	6	6	6
Total operating expenses	35	33	33
Income from operations	39	36	38
Other income (expense), net	(4)	—	(1)
Income before provision for income taxes	35	37	37
Provision for income taxes	10	9	12
Net income	25%	28%	25%

Percentages in the table above are based on actual values. As a result, some totals may not sum due to rounding.

**Year Ended December 31, 2017 Compared to Year Ended December 31, 2016**

	Year Ended December 31,				Change	
	2017		2016		Amount	%
	Amount	% of Total	Amount	% of Total		
(dollars in thousands)						
<b>Revenue:</b>						
Product	\$ 311,896	88.7%	\$ 279,223	88.3%	\$ 32,673	11.7%
Service	39,679	11.3%	36,905	11.7%	2,774	7.5%
Total revenue	\$ 351,575	100.0%	\$ 316,128	100.0%	\$ 35,447	11.2%
<b>Revenue by geographic region:</b>						
North America	\$ 201,856	57.4%	\$ 183,941	58.2%	\$ 17,915	9.7%
Latin America	40,347	11.5%	47,314	15.0%	(6,967)	(14.7)%
Europe, Middle East and Africa	61,458	17.5%	45,205	14.3%	16,253	36.0%
Asia-Pacific	47,914	13.6%	39,668	12.5%	8,246	20.8%
Total revenue	\$ 351,575	100.0%	\$ 316,128	100.0%	\$ 35,447	11.2%

The increase in product revenue was primarily due to an increase in sales of our products to existing customers in North America, Asia-Pacific and Europe, Middle East and Africa as a result of an increase in the deployment of our software-centric broadband products in their networks and increased sales of software-enabled capacity expansions to provide their subscribers with greater bandwidth capacity. These increases were partially offset by a decrease in sales of our software-centric broadband products in Latin America, which we believe was primarily due to the timing of customer expenditures on network upgrades.

The increase in service revenue was primarily due to a \$3.8 million increase in maintenance and support services revenue due to an increase in our installed base of customers through the addition of new customers and from customers renewing their maintenance and support service contracts, partially offset by a \$1.1 million decrease in professional services revenue due to a decrease in customer projects requiring our assistance.

## Cost of Revenue and Gross Profit

	Year Ended December 31,		Change	
	2017	2016	Amount	%
(dollars in thousands)				
<b>Cost of revenue:</b>				
Product	\$ 88,538	\$ 89,340	\$ (802)	(0.9)%
Service	4,973	8,477	(3,504)	(41.3)%
Total cost of revenue	<u>\$ 93,511</u>	<u>\$ 97,817</u>	<u>\$ (4,306)</u>	<u>(4.4)%</u>

The decrease in cost of product revenue was primarily due to a decrease in the proportion of our revenue derived from our hardware-based broadband products.

The decrease in cost of service revenue was primarily due to a \$2.1 million decrease in subcontracted professional services and a \$1.6 million decrease in personnel-related costs as a result of the transfer of certain personnel from our service and support department to our research and development department.

	Year Ended December 31,		Change			
	2017	2016	Amount	Gross Margin (bps)		
(dollars in thousands)						
<b>Gross profit:</b>						
Product	\$ 223,358	71.6%	\$ 189,883	68.0%	\$ 33,475	360
Service	34,706	87.5%	28,428	77.0%	6,278	1,050
Total gross profit	<u>\$ 258,064</u>	<u>73.4%</u>	<u>\$ 218,311</u>	<u>69.1%</u>	<u>\$ 39,753</u>	<u>430</u>

The increase in product gross margin was primarily due to an increase in the proportion of our product revenue derived from higher margin software-based capacity expansions.

The increase in service gross margin was due to an increase in maintenance and support services revenue and a decrease in lower-margin professional services revenue.

## Research and Development

	Year Ended December 31,		Change	
	2017	2016	Amount	%
(dollars in thousands)				
Research and development	\$ 60,677	\$ 49,210	\$ 11,467	23.3%
Percentage of revenue	17.3%	15.6%		

The increase in research and development expense was due to a \$8.5 million increase in personnel-related costs (including the effect of a \$0.6 million increase in stock-based compensation expense) as a result of the increase in the headcount of our research and development personnel from 328 to 399 to support the development of our new wireless and software-centric broadband products and to enhance our existing software-centric broadband products, a \$1.4 million increase in depreciation expense for research and development related assets, a \$1.1 million increase in prototype development costs for new broadband products and a \$0.5 million increase in facilities and infrastructure expenses.

## Sales and Marketing

	Year Ended December 31,		Change	
	2017	2016	Amount	%
(dollars in thousands)				
Sales and marketing	\$ 39,602	\$ 36,114	\$ 3,488	9.7%
Percentage of revenue	11.3%	11.4%		

The increase in sales and marketing expense was due to a \$3.4 million increase in sales agent commissions and a \$1.0 million increase in personnel-related costs due to an increase in headcount, which were partially offset by a \$0.7 million decrease in marketing costs related to a reduction in trade show and event expenses and a \$0.2 million decrease in facilities and infrastructure expenses.

#### General and Administrative

	Year Ended December 31,		Change	
	2017	2016	Amount	%
	(dollars in thousands)			
General and administrative	\$ 21,563	\$ 18,215	\$ 3,348	18.4%
Percentage of revenue	6.1%	5.8%		

The increase in general and administrative expense was primarily due to a \$3.3 million increase in personnel-related costs due to an increase in headcount to support the continued growth in our business.

#### Other Income (Expense), Net

	Year Ended December 31,		Change	
	2017	2016	Amount	%
	(dollars in thousands)			
Other income (expense), net	\$ (13,404)	\$ 921	\$ (14,325)	(1555.4)%
Percentage of revenue	(3.8)%	0.3%		

The change from a net other income of \$0.9 million to a net other expense of \$13.4 million was primarily due to a \$16.6 million increase in interest expense attributable to our term loan facility entered into in December 2016, partially offset by a \$1.2 million increase in interest income due to an increase in interest rates and an increase in our portfolio of cash equivalents and a \$1.2 million increase in foreign currency gains due to appreciation of the Euro and the impact thereof on our foreign-denominated cash and receivables.

#### Provision for Income Taxes

	Year Ended December 31,		Change	
	2017	2016	Amount	%
	(dollars in thousands)			
Provision for income taxes	\$ 34,318	\$ 27,025	\$ 7,293	27.0%
Effective tax rate	27.9%	23.4%		

The 4.5% increase in our effective tax rate includes the impact of the TCJA that resulted in an 11.5% increase in our effective tax rate, which was partially offset by an increase in the benefit of the foreign rate differential of 5.0% due to the restructuring of our international operations and an increase in research and development tax credits.



**Year Ended December 31, 2016 Compared to Year Ended December 31, 2015**

*Revenue*

	Year Ended December 31,				Change	
	2016		2015		Amount	%
	Amount	% of Total	Amount	% of Total		
(dollars in thousands)						
<b>Revenue:</b>						
Product	\$ 279,223	88.3%	\$ 247,588	90.9%	\$ 31,635	12.8%
Service	36,905	11.7%	24,862	9.1%	12,043	48.4%
Total revenue	<u>\$ 316,128</u>	<u>100.0%</u>	<u>\$ 272,450</u>	<u>100.0%</u>	<u>\$ 43,678</u>	<u>16.0%</u>
<b>Revenue by geographic region:</b>						
North America	\$ 183,941	58.2%	\$ 54,518	20.0%	\$ 129,423	237.4%
Latin America	47,314	15.0%	87,382	32.1%	(40,068)	(45.9)%
Europe, Middle East and Africa	45,205	14.3%	75,767	27.8%	(30,562)	(40.3)%
Asia-Pacific	39,668	12.5%	54,783	20.1%	(15,115)	(27.6)%
Total revenue	<u>\$ 316,128</u>	<u>100.0%</u>	<u>\$ 272,450</u>	<u>100.0%</u>	<u>\$ 43,678</u>	<u>16.0%</u>

The increase in product revenue was due to an increase in sales of our software-centric broadband products in North America primarily due to an increase of \$74.2 million in sales to new customers, which predominantly deployed our CCAP solution that includes DOCSIS 3.1 capabilities, and an increase of \$45.7 million in sales of our CCAP solutions to existing customers to increase the proportion of their networks using our products to provide their subscribers with greater bandwidth capacity through capacity expansions. These increases were partially offset by an aggregate decrease of \$88.3 million in product sales in all other regions resulting primarily from decreases in purchases by customers in those regions of capacity expansions from us, which we believe was primarily due to the timing of customer expenditures on network upgrades.

The increase in service revenue was primarily due to a \$9.3 million increase in maintenance and support services revenue due to an increase in our installed base of customers through the addition of new customers and from customers renewing their maintenance and support service contracts as well as a \$2.8 million increase in professional services revenue related to customer installations in North America to deploy our DOCSIS 3.1 capabilities.

*Cost of Revenue and Gross Profit*

	Year Ended December 31,		Change	
	2016	2015	Amount	%
	(dollars in thousands)			
<b>Cost of revenue:</b>				
Product	\$ 89,340	\$ 74,349	\$ 14,991	20.2%
Service	8,477	5,265	3,212	61.0%
Total cost of revenue	<u>\$ 97,817</u>	<u>\$ 79,614</u>	<u>\$ 18,203</u>	<u>22.9%</u>

The increase in cost of product revenue was primarily due to an increase in the quantity of our software-centric broadband products sold and an increase in personnel-related costs resulting from hiring additional employees.

The increase in cost of service revenue was primarily due to a \$2.5 million increase in subcontracted professional services related to customer deployments of our DOCSIS 3.1 capabilities and a \$0.7 million increase in personnel-related costs resulting from hiring additional employees.

	Year Ended December 31,				Change	
	2016		2015		Amount	Gross Margin (bps)
	Amount	Gross Margin	Amount	Gross Margin		
(dollars in thousands)						
Gross profit:						
Product	\$ 189,883	68.0%	\$ 173,239	70.0%	\$ 16,644	(200)
Service	28,428	77.0%	19,597	78.8%	8,831	(180)
Total gross profit	<u>\$ 218,311</u>	69.1%	<u>\$ 192,836</u>	70.8%	<u>\$ 25,475</u>	(170)

The decrease in product gross margin was primarily due to higher cost of goods related to initial sales of our software-centric broadband products as a result of the significant amount of hardware in these sales.

Service gross margin declined due to an increase in professional services revenue as a percentage of total service revenue during the year ended December 31, 2016.

#### Research and Development

	Year Ended December 31,		Change	
	2016	2015	Amount	%
	(dollars in thousands)			
Research and development	\$ 49,210	\$ 37,155	\$ 12,055	32.4%
Percentage of revenue	15.6%	13.6%		

The increase in research and development expense was due to a \$9.6 million increase in personnel-related costs (including a \$0.5 million increase in stock-based compensation expense) as a result of the increase in the headcount of our research and development personnel from 256 to 328 to support the development of our new wireless and software-centric broadband products and to enhance our existing software-centric broadband products, a \$1.2 million increase in facilities and infrastructure expenses and a \$1.2 million increase in prototype development costs for new broadband products.

#### Sales and Marketing

	Year Ended December 31,		Change	
	2016	2015	Amount	%
	(dollars in thousands)			
Sales and marketing	\$ 36,114	\$ 36,157	\$ (43)	(0.1)%
Percentage of revenue	11.4%	13.3%		

The slight decrease in sales and marketing expense was due to a \$7.8 million decrease in sales agent commissions related to a decrease in sales in Latin America, which was partially offset by a \$6.8 million increase in personnel-related costs (including a \$0.4 million increase in stock-based compensation expense) as a result of the increase in the headcount of our sales and marketing personnel from 94 to 114 in order to increase the sales force associated with our software-centric broadband products and to develop a new sales force assigned to our new wireless solutions and a \$0.9 million increase in marketing costs related to trade shows and events to promote our solutions.

General and Administrative

	Year Ended December 31,		Change	
	2016	2015	Amount	%
	(dollars in thousands)			
General and administrative	\$ 18,215	\$ 16,453	\$ 1,762	10.7%
Percentage of revenue	5.8%	6.0%		

The increase in general and administrative expense was primarily due to a \$1.5 million increase in personnel-related costs (including a \$0.1 million increase in stock-based compensation expense) to support the continued growth in our business and a \$0.3 million increase in facilities and infrastructure expenses.

Other Income (Expense), Net

	Year Ended December 31,		Change	
	2016	2015	Amount	%
	(dollars in thousands)			
Other income (expense), net	\$ 921	\$ (1,408)	\$ 2,329	165.4%
Percentage of revenue	0.3%	0.5%		

The change from a net other expense of \$1.4 million to a net other income of \$0.9 million was primarily due to a \$2.7 million decrease in foreign currency losses resulting from a lower carrying value of foreign-denominated cash and receivables during the year ended December 31, 2016 as compared to the year ended December 31, 2015 and a \$0.3 million increase in interest income due to an increase in our portfolio of cash equivalents and marketable securities, both partially offset by a \$0.7 million increase in interest expense primarily attributable to \$300.0 million of borrowings under the term loan facility we entered into in December 2016.

Provision for Income Taxes

	Year Ended December 31,		Change	
	2016	2015	Amount	%
	(dollars in thousands)			
Provision for income taxes	\$ 27,025	\$ 33,742	\$ (6,717)	(19.9)%
Effective tax rate	23.4%	33.2%		

The 9.8% decrease in our effective tax rate primarily resulted from the tax benefits from certain employee stock-based compensation transactions, including equitable adjustment payments to holders of our stock-based awards, during the year ended December 31, 2016 related to our adoption, effective as of January 1, 2016, of a new share-based payment accounting standard. In particular, the tax benefit of equitable adjustment payments in 2016 contributed to a 7.0% non-recurring reduction in our effective tax rate. The decrease in our effective tax rate was also due in part to an increase in the benefit of the foreign tax rate differential, reflecting the partial effect of a process we began in the third quarter of 2016 to restructure our international operations.

## Liquidity and Capital Resources

Since our inception, we have primarily funded our operations through issuances of shares of our convertible preferred stock and cash flows from operations. In addition, on December 20, 2016, we entered into a credit agreement that included a term loan facility under which we borrowed \$300.0 million. The following tables set forth our cash, cash equivalents and marketable securities and working capital as of December 31, 2017, 2016 and 2015 as well as our net cash flows for the years ended December 31, 2017, 2016 and 2015:

	As of December 31,		
	2017	2016	2015
	(in thousands)		
<b>Consolidated Balance Sheet Data:</b>			
Cash, cash equivalents and marketable securities	\$ 260,820	\$ 343,946	\$ 92,496
Working capital	324,710	286,652	162,981

	Year Ended December 31,		
	2017	2016	2015
	(in thousands)		
<b>Consolidated Cash Flow Data:</b>			
Net cash provided by operating activities	\$ 95,008	\$ 110,780	\$ 24,602
Net cash provided by (used in) investing activities	7,575	(21,811)	(15,503)
Net cash (used in) provided by financing activities	(172,661)	149,368	7,304

As of December 31, 2017, we had cash and cash equivalents of \$260.8 million and net accounts receivable of \$127.3 million. We maintain a \$25.0 million revolving credit facility under which \$24.0 million was available and \$1.0 million was used as collateral for a stand-by letter of credit as of December 31, 2017.

Of our total cash and cash equivalents of \$260.8 million as of December 31, 2017, \$31.3 million was held by our foreign subsidiaries. The TCJA established a modified territorial system requiring a mandatory deemed repatriation tax on undistributed earnings of foreign subsidiaries. In December 2017, we recorded a provisional charge related to a one-time deemed repatriation of accumulated earnings of foreign subsidiaries and related withholding taxes. As a result, applicable U.S. corporate and foreign income taxes have been provided on substantially all of our accumulated earnings of foreign subsidiaries previously considered indefinitely reinvested. Beginning in 2018, the TCJA also requires a minimum tax on certain future earnings generated by foreign subsidiaries while providing future tax-free repatriation of such earnings through a 100% dividends-received deduction. We are still evaluating whether to change our indefinite reinvestment assertion in light of the TCJA and consider that conclusion to be incomplete under guidance issued by the SEC. If we subsequently change our assertion during the measurement period, such changes will be accounted for through an adjustment to the provisional income tax charge during 2018, which is expected to be finalized no later than the fourth quarter of 2018.

We believe our existing cash and cash equivalents, anticipated cash flows from future operations and liquidity available from our revolving credit facility will be sufficient to meet our working capital and capital expenditure needs and debt service obligations for at least the next 12 months. Our future capital requirements may vary materially from those currently planned and will depend on many factors, including our rate of revenue growth, the timing and extent of spending on research and development efforts and other business initiatives, purchases of capital equipment to support our growth, the expansion of sales and marketing activities, expansion of our business through acquisitions or our investments in complementary products, technologies or businesses, the use of working capital to purchase additional inventory, the timing of new product introductions, market acceptance of our products and overall economic conditions. To the extent that current and anticipated future sources of liquidity are insufficient to fund our future business activities and requirements, we may be required to seek additional equity or debt financing. In the event additional financing is required from outside sources, we may not be able to raise it on terms acceptable to us or at all.

From our inception through December 31, 2017, our board of directors has declared a special dividend on five separate occasions and has approved cash payments to the holders of our stock options, stock appreciation rights, or SARs, and restricted stock units, or RSUs, as equitable adjustments in connection with these special dividends. The dividend payments totaled \$206.4 million, \$137.4 million and \$0.3 million in the years ended December 31, 2017, 2016 and 2015, respectively. The equitable adjustment payments totaled \$40.2 million, \$4.9 million and \$0.4 million in the years ended December 31, 2017, 2016 and 2015, respectively. As of December 31, 2017, there were \$9.8 million of equitable adjustment payments that had been approved by our board of directors that had not yet been paid to the holders of our stock options, SARs and RSUs. These equitable adjustment payments will be paid to the holders of the applicable equity awards as they

vest through 2021. We do not anticipate declaring cash dividends in the foreseeable future. Any future determination to declare dividends will be subject to the discretion of our board of directors and applicable law, and will depend on various factors, including our results of operations, financial condition, prospects and any other factors deemed relevant by our board of directors.

## **Cash Flows**

### *Operating Activities*

Our primary source of cash from operating activities has been from cash collections from our customers. We expect cash inflows from operating activities to be affected by increases in sales and timing of collections and by purchases and shipments of inventory. Our primary uses of cash from operating activities have been for personnel costs and investment in sales and marketing and research and development. We expect cash outflows from operating activities to increase as a result of further investment in research and development and sales and marketing and increases in personnel costs as we continue to enhance our products and introduce new products in an effort to continue to expand our business.

During the year ended December 31, 2017, cash provided by operating activities was \$95.0 million, primarily resulting from our net income of \$88.5 million and net non-cash charges of \$32.4 million, both partially offset by net cash used by changes in our operating assets and liabilities of \$25.9 million. The net cash used by changes in our operating assets and liabilities during the year ended December 31, 2017 was primarily due to a \$25.7 million increase in accounts receivable due to an increase in sales and timing of the related collections; a \$25.6 million decrease in deferred revenue primarily due to recognition of \$14.4 million of revenue upon the product acceptance by a customer in Asia-Pacific and recognition of \$8.5 million of revenue upon the expiration of a trade-in right for a customer in North America; a \$6.5 million decrease in accounts payable primarily attributable to timing of our payments for purchases of inventory; and a \$3.2 million decrease in accrued income taxes due to the timing of payments. These uses of cash were partially offset by a \$21.9 million decrease in inventory due to shipments of our software-centric broadband products to customers; a \$10.2 million increase in accrued expenses and other current liabilities, which included an increase of \$8.4 million for accrued customer incentives; and a \$3.5 million decrease in prepaid expenses and other current assets.

During the year ended December 31, 2016, cash provided by operating activities was \$110.8 million, primarily resulting from our net income of \$88.7 million, net non-cash charges of \$9.1 million and net cash provided by changes in our operating assets and liabilities of \$13.0 million. The net cash provided by changes in our operating assets and liabilities during the year ended December 31, 2016 was primarily due to a \$17.3 million increase in deferred revenue due to the deferral of the revenue recognition for certain sales transactions due to customer acceptance provisions or future delivery obligations and an increase in sales of maintenance and support service contracts as a result of an increase in our installed base; a \$15.8 million increase in accrued expenses and other current liabilities, which included an increase of \$15.4 million for accrued customer incentives; a \$14.5 million increase in accounts payable primarily attributable to timing of our payments for purchases of inventory; and a \$6.9 million increase in accrued income taxes as a result of an increase in taxable income. These sources of cash were partially offset by a \$22.8 million increase in inventory due to the anticipated growth in our business and a \$16.3 million increase in accounts receivable due to an increase in sales and timing of the related collections.

During the year ended December 31, 2015, cash provided by operating activities was \$24.6 million, primarily resulting from our net income of \$67.9 million and net non-cash charges of \$12.7 million, both partially offset by net cash used by changes in our operating assets and liabilities of \$56.0 million. The net cash used by changes in our operating assets and liabilities during the year ended December 31, 2015 was primarily due to a \$28.6 million decrease in deferred revenue primarily due to recognition of \$23.1 million of revenue upon the product acceptance by a new customer in Europe that deployed our CCAP solution, a \$10.8 million decrease in accrued income taxes due to the timing of tax payments, a \$17.4 million increase in inventory for anticipated growth in our business and a \$9.7 million increase in accounts receivable due to an increase in sales and timing of the related collections. These uses of cash were partially offset by a \$2.7 million increase in accounts payable primarily attributable to the timing of our payments for the purchases of inventory and an \$8.0 million increase in accrued expenses and other current liabilities, which included an increase of \$3.4 million for personnel-related accrued liabilities, such as accrued salaries and bonuses, due to the growth in headcount.

### *Investing Activities*

Our investing activities have consisted primarily of expenditures for lab and computer equipment and software to support the development of new products and increase our manufacturing capacity to meet customer demand for our products. In addition, our investing activities include expansion of and improvements to our facilities. As our business expands, we expect that we will continue to invest in these areas. Our investing activities in 2015 also included the purchase of our corporate offices.

Net cash provided by investing activities during the year ended December 31, 2017 was \$7.6 million and consisted of \$14.6 million of proceeds from maturities of marketable securities, partially offset by \$7.0 million for purchases of property and equipment.

Net cash used in investing activities during the year ended December 31, 2016 was \$21.8 million and consisted of \$14.4 million for purchases of marketable securities and \$7.4 million for purchases of property and equipment.

Net cash used in investing activities during the year ended December 31, 2015 was \$15.5 million for purchases of property and equipment, consisting primarily of the purchase of and improvements to our corporate offices totaling \$10.4 million during that period.

#### *Financing Activities*

Net cash used in financing activities during the year ended December 31, 2017 was \$172.7 million and consisted primarily of dividend and equitable adjustment payments of \$246.6 million, payment of taxes on behalf of our employees related to net share settlement of equity awards of \$4.0 million, principal repayments of our term loan facility and commercial mortgage of \$3.3 million and payments of initial public offering costs of \$2.4 million, partially offset by proceeds received from our initial public offering, net of underwriting discounts and commissions, of \$83.4 million and proceeds from the exercise of stock options of \$0.3 million.

Net cash provided by financing activities during the year ended December 31, 2016 was \$149.4 million and consisted primarily of net proceeds from borrowings under our term loan facility of \$292.2 million and proceeds from the exercise of stock options of \$0.6 million, both partially offset by dividend and equitable adjustment payments of \$142.3 million and payments of initial public offering costs of \$0.5 million.

Net cash provided by financing activities during the year ended December 31, 2015 was \$7.3 million and consisted primarily of proceeds of \$7.9 million from the commercial mortgage on our corporate offices, partially offset by \$0.7 million of dividend and equitable adjustment payments.

#### *Commercial Mortgage Loan*

In July 2015, we entered into an \$8.0 million commercial mortgage loan agreement. The annual interest rate on the loan is 3.5%, and the loan is repayable in 60 monthly installments of principal and interest based on a 20-year amortization schedule. The loan is secured by the land and building, which are our corporate offices, purchased in March 2015, and contains annual affirmative, negative and financial covenants, including maintenance of a minimum debt service ratio. We were in compliance with all the covenants of the mortgage loan as of December 31, 2017 and 2016. As of December 31, 2017 and 2016, the outstanding principal amount under the mortgage loan was \$7.3 million and \$7.6 million, respectively.

#### *Term Loan and Revolving Credit Facilities*

On December 20, 2016, we entered into a credit agreement with JPMorgan Chase Bank, N.A., as administrative agent, various lenders and JPMorgan Chase Bank, N.A. and Barclays Bank PLC, as joint lead arrangers and joint bookrunners, providing for:

- a term loan facility of \$300.0 million and
- a revolving credit facility of up to \$25.0 million in revolving credit loans and letters of credit.

As of December 31, 2017 and 2016, we had borrowings of \$297.0 million and \$300.0 million, respectively, outstanding under the term loan facility and we did not have any outstanding borrowings under the revolving credit facility; however, we had used \$1.0 million under the revolving credit facility for a stand-by letter of credit that serves as collateral for a stand-by letter of credit issued by Bank of America to one of our customers pursuant to a contractual performance guarantee. In addition, we may, subject to certain conditions, including the consent of the administrative agent and the institutions providing such increases, increase the facilities by an unlimited amount so long as we are in compliance with specified leverage ratios, or otherwise by up to \$70.0 million.

Borrowings under the facilities bear interest at a floating rate, which can be either a Eurodollar rate plus an applicable margin or, at our option, a base rate (defined as the highest of (x) the JPMorgan Chase, N.A. prime rate, (y) the federal funds effective rate, plus one-half percent (0.50%) per annum and (z) a one-month Eurodollar rate plus 1.00% per annum) plus an applicable margin. The applicable margin for borrowings under the term loan facility is 4.00% per annum for Eurodollar rate loans (subject to a 1.00% per annum interest rate floor) and 3.00% per annum for base rate loans. As a result of the completion of our initial public offering in December 2017, the applicable margin for borrowings under the revolving credit facility is 1.75% per annum for Eurodollar rate loans and 0.75% per annum for base rate loans, subject to reduction based on our maintaining of specified net leverage ratios. The interest rates payable under the facilities are subject to an increase of 2.00% per annum during the continuance of any payment default.

For Eurodollar rate loans, we may select interest periods of one, two, three or six months or, with the consent of all relevant affected lenders, twelve months. Interest will be payable at the end of the selected interest period, but no less frequently than every three months within the selected interest period. Interest on any base rate loan is not set for any specified period and is payable quarterly. We have the right to convert Eurodollar rate loans into base rate loans and the right to convert base rate loans into Eurodollar rate loans at our option, subject, in the case of Eurodollar rate loans, to prepayment penalties if the conversion is effected prior to the end of the applicable interest period. As of December 31, 2017, the interest rate on our borrowings under the term loan facility was 5.69% per annum, which was based on a three-month Eurodollar rate of 1.69% per annum plus the applicable margin of 4.00% per annum for Eurodollar rate loans. As of December 31, 2016, the interest rate on the term loans was 5.00% per annum, which was based on a one-month Eurodollar rate at the applicable floor of 1.00% per annum plus the applicable margin of 4.00% per annum for Eurodollar rate loans.

The revolving credit facility also requires payment of quarterly commitment fees at a rate of 0.25% per annum on the difference between committed amounts and amounts actually borrowed under the facility and customary letter of credit fees.

The term loan facility matures on December 20, 2023 and the revolving credit facility matures on December 20, 2021. The term loan facility is subject to amortization in equal quarterly installments, which commenced on March 31, 2017, of principal in an annual aggregate amount equal to 1.0% of the original principal amount of the term loans of \$300.0 million, with the remaining outstanding balance payable at the date of maturity.

Voluntary prepayments of principal amounts outstanding under the term loan facility are permitted at any time; however, if a prepayment of principal is made with respect to a Eurodollar loan on a date other than the last day of the applicable interest period, we are required to compensate the lenders for any funding losses and expenses incurred as a result of the prepayment. Prior to the revolving credit facility maturity date, funds borrowed under the revolving credit facility may be borrowed, repaid and reborrowed, without premium or penalty.

In addition, we are required to make mandatory prepayments under the facilities with respect to (i) 100% of the net cash proceeds from certain asset dispositions (including casualty and condemnation events) by us or certain of our subsidiaries, subject to certain exceptions and reinvestment provisions, (ii) 100% of the net cash proceeds from the issuance or incurrence of any additional debt by us or certain of our subsidiaries, subject to certain exceptions, and (iii) 50% of our excess cash flow, as defined in the credit agreement, subject to reduction upon our achievement of specified performance targets.

The facilities are secured by, among other things, a first priority security interest, subject to permitted liens, in substantially all of our assets and all of the assets of certain of our subsidiaries and a pledge of certain of the stock of certain of our subsidiaries, in each case subject to specified exceptions. The facilities contain customary affirmative and negative covenants, including certain restrictions on our ability to pay dividends, and, with respect to the revolving credit facility, a financial covenant requiring us to maintain a specified total net leverage ratio in the event that on the last day of any fiscal quarter we have utilized more than 30% of our borrowing capacity under the facility. We were in compliance with all of the applicable covenants of the facilities as of December 31, 2017 and 2016. As of December 31, 2017 and 2016, we had not utilized more than 30% of our borrowing capacity under the revolving credit facility and compliance with the financial covenant was not applicable.

In connection with entering into the facilities in December 2016, we terminated our revolving credit facility with Bank of America. We did not have any outstanding borrowings under the Bank of America revolving credit facility at the time of termination.



## Contractual Obligations and Commitments

The following table summarizes our contractual obligations and commitments as of December 31, 2017.

	Payments Due by Period				
	Total	Less than 1 Year	1 to 3 Years	4 to 5 Years	More than 5 Years
			(in thousands)		
Debt obligations—Term loans <sup>(1)</sup>	\$ 396,923	\$ 20,079	\$ 39,685	\$ 38,946	\$ 298,213
Debt obligations—Commercial mortgage <sup>(2)</sup>	7,892	556	7,336	—	—
Operating leases <sup>(3)</sup>	2,461	857	1,197	407	—
Total	<u>\$ 407,276</u>	<u>\$ 21,492</u>	<u>\$ 48,218</u>	<u>\$ 39,353</u>	<u>\$ 298,213</u>

- (1) Amounts in the table reflect the contractually required principal and interest payable pursuant to outstanding borrowings under our term loan facility. For purposes of this table, the interest due under the term loan facility was calculated using an assumed interest rate of 5.69% per annum, which was the interest rate in effect as of December 31, 2017.
- (2) Amounts in the table reflect the contractually required principal and interest payable pursuant to outstanding borrowings under our commercial mortgage.
- (3) Amounts in the table reflect payments due for our lease of manufacturing, warehouse and office space in the United States, China, Spain and Ireland under non-cancelable operating leases that expire in 2021, 2019, 2022 and 2026, respectively. The Ireland lease provides us the right to terminate in 2021.

We enter into purchase agreements with our contract manufacturers and suppliers, generally with terms of a year or more. We have no minimum purchase requirements under these agreements.

The contractual obligations table above excludes \$7.7 million of long term taxes payable recorded as part of a provisional charge in the fourth quarter of 2017 for the mandatory deemed repatriation tax on undistributed earnings of foreign subsidiaries under the TCJA. The deemed repatriation was estimated based on our initial analysis in accordance with ASC Topic 740, *Income Taxes*, and Staff Accounting Bulletin 118 and is expected to be paid over the next eight years. Given the significant complexity of the TCJA, anticipated guidance from the U.S. Treasury Department about implementing the TCJA and the potential for additional guidance from the SEC or the FASB related to the TCJA or additional information becoming available, our provisional charge may be adjusted during 2018 and is expected to be finalized no later than the fourth quarter of 2018.

## Critical Accounting Policies and Significant Judgments and Estimates

Our management's discussion and analysis of financial condition and results of operations is based on our consolidated financial statements included elsewhere in this Annual Report on Form 10-K, which have been prepared in accordance with accounting principles generally accepted in the United States of America, or GAAP. In preparing our consolidated financial statements, we make estimates, assumptions and judgments that can have a significant effect on our reported revenue, results of operations and net income or loss, as well as on the value of certain assets and liabilities on our balance sheet during and as of the reporting periods. These estimates, assumptions and judgments are necessary because future events and their effects on our results and the value of our assets cannot be determined with certainty, and are made based on our historical experience and on other assumptions that we believe to be reasonable under the circumstances. We evaluate our estimates and assumptions on an ongoing basis. These estimates may change as new events occur or additional information is obtained, and we may periodically be faced with uncertainties, the outcomes of which are not within our control and may not be known for a prolonged period of time. As the use of estimates is inherent in the financial reporting process, actual results could differ from those estimates.

While our significant accounting policies are described in more detail in Note 2 to our consolidated financial statements included elsewhere in this Annual Report on Form 10-K, we believe that the following accounting policies are those most critical to the judgments and estimates used in the preparation of our consolidated financial statements.

## Revenue Recognition

We generate revenue from sales of our broadband products, along with associated maintenance and support services, and, to a lesser extent, from sales of professional services and extended warranty services. We also generate revenue from sales of additional line cards and software-based capacity expansions. Maintenance and support services include telephone support and unspecified software upgrades and updates provided on a when-and-if-available basis.

In our consolidated statements of operations and comprehensive income, revenue from sales of broadband products and capacity expansions is classified as product revenue, and revenue from maintenance and support, professional services and extended warranty services is classified as service revenue.

We recognize revenue from sales when the following revenue recognition criteria are met:

- *Persuasive evidence of an arrangement exists.* Binding contracts and/or customer purchase orders are generally evidence of an arrangement. For professional services, evidence of an arrangement may also include information documenting the scope of work to be performed, and customer acceptance terms, if any.
- *Delivery has occurred.* For broadband products, shipping documents and customer acceptance, if applicable, verify that delivery has occurred. For software-enabled capacity expansions, delivery occurs when the additional bandwidth capacity is made available to the customer. For professional services, delivery occurs as the services are completed.
- *The sales price is fixed or determinable.* The sales price is considered fixed or determinable when the fees have been contractually agreed with the customer and are not deemed to be subject to refund, adjustment or future discounts, and when the payment terms of the transaction do not extend beyond our customary payment terms, which are one year or less.
- *Collectibility is reasonably assured.* We assess the ability to collect from our customers based on a number of factors that generally include information supplied by credit agencies, references and/or analysis of customer accounts and payment history. If collection from a customer is not considered reasonably assured, all revenue related to the customer arrangement is deferred until payment is received and all other revenue recognition criteria have been met.

When customer acceptance of the product is required and is other than perfunctory, revenue for the entire customer arrangement is deferred until the acceptance has been received.

Our products have both software and non-software (i.e., hardware) components that function together to deliver the products' essential functionality. In addition, the hardware sold generally cannot be used apart from the embedded software. As a result, all of our product and service offerings are excluded from the scope of software revenue recognition requirements and instead fall within the scope of ASC Topic 605, *Revenue Recognition*.

Many of our sales involve multiple-deliverable arrangements that include products and maintenance and support services and, on a limited basis, may also include professional services and extended warranty services. We have determined that our products, maintenance and support services, professional services and extended warranty services have standalone value to the customer because each of these deliverables is sold separately to our customers or, in the case of professional services, is sold separately by other vendors. As a result, we treat each of these deliverables as a separate unit of accounting for purposes of allocating the arrangement fee and recognizing the revenue of each unit.

For our multiple-deliverable arrangements, we allocate the arrangement fee to each deliverable based on the relative selling prices of each of the deliverables in the arrangement using the selling price hierarchy. In such circumstances, we determine the selling price of each deliverable based on vendor-specific objective evidence, or VSOE, of selling price, if it exists; otherwise, third-party evidence, or TPE, of selling price. If neither VSOE nor TPE exists, we use our best estimate of the selling price, or BEBP, for the deliverable. We limit the amount of the arrangement fee allocated to deliverables to the amount that is not contingent on the future delivery of products or services or future performance obligations and the amount that is not subject to customer-specific return or refund privileges.

To date, we have not been able to establish VSOE of selling price of any of our products, maintenance and support services, professional services or extended warranty services because we have not established a history of consistently pricing each product or service within a narrow range. In addition, we are not able to determine TPE of selling price for our products or services because our various product and service offerings contain a significant level of differentiation and, therefore,

comparable pricing of competitors' products and services with similar functionality cannot be obtained. As we are unable to establish selling price using VSOE or TPE, we use BEBP to allocate the arrangement fee to products, maintenance and support services, professional services and extended warranty services in multiple-deliverable arrangements. The objective of BEBP is to determine the price at which we would transact a sale if a product or service was sold on a standalone basis. We determine BEBP of selling price for our products and services by considering multiple factors, including, but not limited to, our historical pricing practices by customer type and geographic-specific market factors.

Revenue from product sales is recognized upon delivery to the customer, or upon the later receipt of customer acceptance of the product when such acceptance is required.

Revenue from maintenance and support services is recognized ratably over the contract period, which is typically one year, but can be as long as three or five years. When customer acceptance of a product is required, the recognition of any associated maintenance and support services revenue commences only upon customer acceptance of the associated product. Revenue from extended warranty services is recognized ratably over the contract period, which is typically one to three years.

Revenue from professional services is recognized as the services are performed. Professional services generally include installation or configuration services that are not deemed to be essential to the functionality of the products. When customer acceptance is required, the recognition of any associated professional services revenue is deferred until the associated product and/or professional service is accepted by the customer.

#### *Resellers*

We market and sell our products through our direct global sales force, supported by sales agents, and through resellers. Our resellers receive an order from an end customer prior to placing an order with us, and we confirm the identification of or are aware of the end customer prior to accepting such order. We invoice the reseller an amount that reflects a reseller discount and record revenue based on the amount of the discounted arrangement fee. Our resellers do not stock inventory received from us.

When we transact with a reseller, our contractual arrangement is with the reseller and not with the end customer. Whether we transact business with and receive the order from a reseller or directly from an end customer, our revenue recognition policy and resulting pattern of revenue recognition for the order are the same.

We also use sales agents that assist us in the sales process with certain customers primarily located in the Latin America and Asia-Pacific regions. Sales agents are not resellers. If a sales agent is engaged in the sales process, we receive the order directly from and sell the products and services directly to the end customer, and we pay a commission to the sales agent, calculated as a percentage of the related customer payment. Sales agent commissions are recorded as expenses when incurred and are classified as sales and marketing expenses in our consolidated statements of operations and comprehensive income.

#### *Deferred Revenue*

Amounts billed in excess of revenue recognized are recorded as deferred revenue. Deferred revenue includes customer deposits, amounts billed for maintenance and support services contracts in advance of services being performed, amounts for trade-in right liabilities and amounts related to arrangements that have been deferred as a result of not meeting the required revenue recognition criteria as of the end of the reporting period. Deferred revenue expected to be recognized as revenue more than one year subsequent to the balance sheet date is reported within long-term liabilities in our consolidated balance sheets.

When the payment terms of a customer order extend beyond our customary payment terms, which are one year or less, we consider the arrangement to be an extended payment term arrangement and conclude that the sales price is not fixed or determinable for revenue recognition purposes. In these circumstances, we defer all revenue of the arrangement and only recognize revenue to the extent of the payment amounts that become due, provided that all other revenue recognition criteria have been met.

We defer recognition of incremental direct costs, such as cost of goods and services, until recognition of the related revenue. Such costs are classified as current assets if the related deferred revenue is classified as current, and such costs are classified as non-current assets if the related deferred revenue is classified as non-current.

### *Other Revenue Recognition Policies*

In limited instances, we have offered future rebates to customers based on a fixed or variable percentage of actual sales volumes over specified periods. The future rebates earned based on the customer's purchasing from us in one period may be used as credits to be applied by them against accounts receivable due to us in later periods. We account for these future rebates as a reduction of the revenue recorded for the customer's current purchasing activity giving rise to the future rebates. The liability for these future rebates is recorded as accrued customer incentives until the credits have been applied by the customer against accounts receivable due to us or the credits expire.

When future trade-in rights are granted to customers at the time of sale, we defer a portion of the revenue recognized for the sale and account for it as a guarantee at fair value until the trade-in right is exercised or the right expires, in accordance with ASC Topic 460, *Guarantees*. Determining the fair value of the trade-in right requires us to estimate the probability of the trade-in right being exercised and the future value of the product upon trade-in. We assess and update these estimates at each reporting period, and our updates to these estimates may result in either an increase or decrease in the amount of revenue deferred.

Billings to customers for shipping costs and reimbursement of out-of-pocket expenses, including travel, lodging and meals, are recorded as revenue, and the associated costs incurred by us for those items are recorded as cost of revenue.

We exclude any taxes assessed by a governmental authority that are directly imposed on a revenue-producing transaction (e.g., sales, use and value added taxes) from our revenue and costs.

### ***Inventories***

Inventories are valued at the lower of cost or market value. Cost is computed using the first-in first-out convention. Inventories are composed of hardware and related component parts of finished goods. We establish provisions for excess and obsolete inventories after evaluating historical sales, future demand, market conditions, expected product life cycles, and current inventory levels to reduce such inventories to their estimated net realizable value. Such provisions are made in the normal course of business and charged to cost of revenue in our consolidated statements of operations and comprehensive income.

Deferred inventory costs are included within inventory in our consolidated balance sheets. Deferred inventory costs represent the cost of products that have been delivered to the customer for which revenue associated with the arrangement has been deferred as a result of not meeting all of the required revenue recognition criteria, such as receipt of customer acceptance. Until the revenue recognition criteria are met, we retain the right to a return of the underlying inventory. Deferred inventory costs are recognized as cost of revenue in our consolidated statements of operations and comprehensive income when the related revenue is recognized.

### ***Product Warranties***

Substantially all of our products are covered by a warranty for software and hardware for periods ranging from 90 days to one year. In addition, in conjunction with customers' renewals of maintenance and support contracts, we offer an extended warranty for periods typically of one to three years for agreed-upon fees. In the event of a failure of a hardware product or software covered by these warranties, we must repair or replace the software or hardware or, if those remedies are insufficient, provide a refund at our discretion. Our warranty reserve, which is included in accrued expenses and other current liabilities in our consolidated balance sheets, reflects estimated material, labor and other costs related to potential or actual software and hardware warranty claims for which we expect to incur an obligation. Our estimates of anticipated rates of warranty claims and the costs associated therewith are primarily based on historical information and future forecasts. We periodically assess the adequacy of the warranty reserve and adjust the amount as necessary. If the historical data used to calculate the adequacy of the warranty reserve are not indicative of future requirements, additional or reduced warranty reserves may be required.

### ***Derivative Instruments***

We have certain international customers that are billed in foreign currencies. To mitigate the volatility related to fluctuations in the foreign exchange rates for accounts receivable denominated in foreign currencies, we enter into foreign currency forward contracts. We do not use derivative financial instruments for speculative purposes. As of December 31, 2017, we had foreign currency forward contracts outstanding with notional amounts totaling 5.9 million euros maturing in the fiscal year ending December 31, 2018. As of December 31, 2016, we had foreign currency forward contracts outstanding with notional amounts totaling 11.2 million euros maturing in 2017. There were no outstanding derivative instruments as of December 31, 2015.

Our foreign currency forward contracts economically hedge certain risk but are not designated as hedges for financial reporting purposes, and accordingly, all changes in the fair value of these derivative instruments are recorded as unrealized foreign currency transaction gains or losses in our consolidated statements of operations and comprehensive income as a component of other income (expense). We record all derivative instruments in the consolidated balance sheet at their fair values. As of December 31, 2016, we recorded an asset of \$0.1 million and as of December 31, 2017 and 2016, we recorded a liability of \$0.2 million and \$0.1 million, respectively, related to outstanding foreign currency forward contracts, which were included in prepaid expenses and other current assets and in accrued expenses and other current liabilities, respectively, in the consolidated balance sheet. No asset was recorded as of December 31, 2017.

### ***Income Taxes***

We account for income taxes using the asset and liability method, which requires the recognition of deferred tax assets and liabilities for the expected future tax consequences of temporary differences between the financial statement and tax basis of assets and liabilities, as measured by enacted tax rates anticipated to be in effect when these differences reverse. This method also requires the recognition of future tax benefits to the extent that realization of such benefits is more likely than not. Deferred tax expense or benefit is the result of changes in the deferred tax assets and liabilities. We assess the likelihood that our deferred tax assets will be recovered from future taxable income and, to the extent we believe, based upon the weight of available evidence, that it is more likely than not that all or a portion of the deferred tax assets will not be realized, we establish a valuation allowance through a charge to income tax expense. We evaluate the potential for recovery of deferred tax assets by estimating the future taxable profits expected and considering prudent and feasible tax planning strategies.

We record a liability for potential payments of taxes to various tax authorities related to uncertain tax positions and other tax matters. The recorded liability is based on a determination of whether and how much of a tax benefit in our tax filings or positions is more likely than not to be realized. The amount of the benefit that may be recognized in the financial statements is the largest amount that has a greater than 50% likelihood of being realized upon ultimate settlement. To the extent that the assessment of such tax positions changes, the change in estimate is recorded in the period in which the determination is made. We establish a liability, which is included in accrued income taxes in our consolidated balance sheets, for tax-related uncertainties based on estimates of whether, and the extent to which, additional taxes will be due. These liabilities are established when we believe that certain positions might be challenged despite our belief that the tax return positions are fully supportable. We adjust the recorded liability in light of changing facts and circumstances. Our provision for income taxes includes the impact of the recorded liability and changes thereto.

We recognize interest and penalties related to uncertain tax positions within other income (expense) in our consolidated statements of operations and comprehensive income. Accrued interest and penalties are included in accrued income taxes in our consolidated balance sheets.

On December 22, 2017, the TCJA was enacted which, among other things, lowered the U.S. corporate income tax rate to 21% from 35% and established a modified territorial system requiring a mandatory deemed repatriation tax on undistributed earnings of foreign subsidiaries. Beginning in 2018, the TCJA also requires a minimum tax on certain future earnings generated by foreign subsidiaries while providing for future tax-free repatriation of such earnings through a 100% dividends-received deduction. While the reduction in the U.S. corporate tax rate under the TCJA is not effective until 2018, under GAAP, changes in tax rates are accounted for in the period enacted. As a result of the TCJA, applicable U.S. and foreign taxes have been provided on substantially all of our accumulated earnings of foreign subsidiaries previously considered indefinitely reinvested. Given the significant complexity of the TCJA, anticipated guidance from the U.S. Treasury Department about implementing the TCJA and the potential for additional guidance from the SEC or the FASB related to the TCJA or additional information becoming available, the provisional income tax charge may be adjusted during 2018 and is expected to be finalized no later than the fourth quarter of 2018. Other provisions of the TCJA that impact future tax years are still being assessed.

### ***Stock-Based Compensation***

We measure stock options and other stock-based awards granted to employees and directors based on the fair value on the date of the grant and recognize compensation expense of those awards, net of estimated forfeitures, over the requisite service period, which is generally the vesting period of the respective award. Generally, we issue stock options with only service-based vesting conditions and record the expense for these awards using the straight-line method.

For stock-based awards granted to non-employee consultants, compensation expense is recognized over the period during which services are rendered by such non-employee consultants until completed. At the end of each financial reporting

period prior to completion of the service, the fair value of these awards is remeasured using the then-current fair value of our common stock and updated assumption inputs in the Black-Scholes option-pricing model.

We have also granted SARs to certain employees, which require us to pay in cash upon exercise an amount equal to the product of the excess of the per share fair market value of our common stock on the date of exercise over the exercise price, multiplied by the number of shares of common stock with respect to which the SAR is exercised. Because these awards may require us to settle the awards in cash, they are accounted for as a liability in our consolidated balance sheets. The liability related to these awards, as well as related compensation expense, is recognized over the period during which services are rendered until completed. Changes in the fair value of the SAR liability are recorded in our consolidated statements of operations and comprehensive income. After vesting is completed, we will continue to remeasure the fair market value of the liability until the award is either exercised or cancelled, with changes in the fair value of the liability recorded in our consolidated statements of operations and comprehensive income.

We estimate the fair value of each stock option and SAR grant using the Black-Scholes option-pricing model, which uses as inputs the fair value of our common stock and assumptions we make for the volatility of our common stock, the expected term of the award, the risk-free interest rate for a period that approximates the expected term of our stock options and our expected dividend yield.

#### *Determination of Fair Value of Common Stock on Grant Dates prior to our Initial Public Offering*

Given the absence of an active market for our common stock prior to our initial public offering, the estimated fair value of our common stock was determined by our board of directors at the time of each award grant based upon several factors, including its consideration of input from management, our most recently available third-party valuations of common stock and our board of directors' assessment of additional objective and subjective factors that it believed were relevant and which may have changed from the date of the most recent valuation through the date of the grant. These third-party valuations were performed in accordance with the guidance outlined in the American Institute of Certified Public Accountants' Accounting and Valuation Guide, *Valuation of Privately-Held-Company Equity Securities Issued as Compensation* using either the hybrid method or the option-pricing method, or OPM, which used a combination of income and market approaches to estimate our enterprise value. Cash is added and interest-bearing debt is subtracted from the estimated enterprise value in order to estimate the underlying equity value. The hybrid method is a probability-weighted expected return method, or PWERM, where the equity value in one or more of the scenarios is allocated using an OPM. The OPM treats common stock and preferred stock as call options on the total equity value of a company, with exercise prices based on the value thresholds at which the allocation among the various holders of a company's securities changes. Under this method, the common stock has value only if the funds available for distribution to stockholders exceed the value of the preferred stock liquidation preferences at the time of a liquidity event, such as a strategic sale or merger. The PWERM is a scenario-based methodology that estimates the fair value of common stock based upon an analysis of future values for the company, assuming various outcomes. The common stock value is based on the probability-weighted present value of expected future investment returns considering each of the possible outcomes available as well as the rights of each class of stock. The future value of the common stock under each outcome is discounted back to the valuation date at an appropriate risk-adjusted discount rate and probability weighted to arrive at an indication of value for the common stock.

#### *Stock-Based Award Grants in Connection with and Following Our Initial Public Offering*

Our board of directors approved, effective upon the commencement of trading of our common stock on the Nasdaq Global Select Market, grants of options to purchase an aggregate of 625,000 shares of common stock, with an exercise price per share equal to the estimated fair market value of our common stock on such date of grant, which our board of directors determined to be equal to the initial public offering price of our common stock, to certain of our employees and restricted stock units for an aggregate of 34,614 shares of common stock to one of our non-employee directors.

Following our initial public offering, the exercise price per share of stock-based award grants will be set at the closing price of our common stock on the Nasdaq Global Select Market on the applicable date of grant, which our board of directors believes represents the fair value of our common stock.

### ***Emerging Growth Company Status***

The JOBS Act provides that an “emerging growth company” can take advantage of the extended transition period afforded by the JOBS Act for the implementation of new or revised accounting standards. However, we have elected not to “opt out” of such extended transition period, which means that when a standard is issued or revised and it has different application dates for public or private companies, we will adopt the new or revised standard at the time private companies adopt the new or revised standard, provided that we continue to be an emerging growth company. The JOBS Act provides that our decision to take advantage of the extended transition period for complying with new or revised accounting standards is irrevocable.

### **Off-Balance Sheet Arrangements**

As of December 31, 2017, 2016 and 2015, we did not have any off-balance sheet arrangements, as defined in Item 303(a)(4)(ii) of Regulation S-K, such as the use of unconsolidated subsidiaries, structured finance, special purpose entities or variable interest entities.

### **Recent Accounting Pronouncements**

Refer to the “Summary of Significant Accounting Policies” footnote within our consolidated financial statements included elsewhere in this Annual Report on Form 10-K for our analysis of recent accounting pronouncements that are applicable to our business.

### **Item 7A. Quantitative and Qualitative Disclosures About Market Risk.**

Market risk is the risk of loss to future earnings, values or future cash flows that may result from changes in the price of a financial instrument. The value of a financial instrument may change as a result of changes in interest rates, exchange rates, commodity prices, equity prices and other market changes. We are exposed to market risk related to changes in foreign currency exchange rates and interest rates. We do not use derivative financial instruments for speculative or trading purposes. However, we have entered into, and in the future expect to continue to enter into, exchange rate hedging arrangements to manage certain of the risks described below.

#### ***Foreign Currency Exchange Risk***

We have accounts receivables denominated in foreign currencies, and our operations outside of the United States incur their operating expenses in foreign currencies. To date, the majority of our product sales and inventory purchases have been denominated in U.S. dollars. For our subsidiary in Ireland, the U.S. dollar is the functional currency. For each of our other foreign subsidiaries, the functional currency is the local currency. During the years ended December 31, 2017, 2016 and 2015, we incurred foreign currency transaction gains (losses) of \$0.9 million, \$(0.3) million and \$(3.0) million, respectively, primarily related to unrealized and realized foreign currency losses for accounts receivables denominated in foreign currencies. These foreign currency transaction losses were recorded as a component of other income (expense), net in our consolidated statements of operations and comprehensive income. We believe that a 5% change in the exchange rate between the U.S. dollar and euro would not materially impact our operating results or financial position. We entered into foreign currency exchange contracts during the year ended December 31, 2017 that mature in the first and second quarter of 2018, and we expect to continue to hedge certain significant transactions denominated in currencies other than the U.S. dollar in the future.

#### ***Interest Rate Sensitivity***

Our cash and cash equivalents as of December 31, 2017 consisted of cash maintained in FDIC-insured operating accounts as well as investments in money market mutual funds, commercial paper and certificates of deposit. We also have policies requiring us to invest in high-quality issuers, limit our exposure to any individual issuer, and ensure adequate liquidity. Our primary exposure to market risk for our cash and cash equivalents is interest income sensitivity, which is primarily affected by changes in the general level of U.S. interest rates. However, we do not believe a sudden change in the interest rates for our cash and cash equivalents would have a material impact on our financial condition, results of operations or cash flows.

We have a credit agreement that provides us with a term loan facility of \$300.0 million and a revolving credit facility of up to \$25.0 million in revolving credit loans and letters of credit. Borrowings under the facilities bear interest at a floating rate, which can be either a Eurodollar rate plus an applicable margin or, at our option, a base rate (defined as the highest of



(x) the JPMorgan Chase, N.A. prime rate, (y) the federal funds effective rate, plus one-half percent (0.50%) per annum and (z) a one-month Eurodollar rate plus 1.00% per annum) plus an applicable margin. The applicable margin for borrowings under the term loan facility is 4.00% per annum for Eurodollar rate loans (subject to a 1.00% per annum interest rate floor) and 3.00% per annum for base rate loans. As a result of the completion of our initial public offering in December 2017, the applicable margin for borrowings under the revolving credit facility is 1.75% per annum for Eurodollar rate loans and 0.75% per annum for base rate loans, subject to reduction based on our maintaining of specified net leverage ratios.

As of December 31, 2017, we had borrowings of \$297.0 million outstanding under the term loan facility, bearing interest at a rate of 5.69% per annum, which was based on a three-month Eurodollar rate of 1.69% per annum plus the applicable margin of 4.00% per annum for Eurodollar rate loans. Changes in interest rates could cause interest charges on our term loan facility to fluctuate. Based on the amount of borrowings outstanding as of December 31, 2017, an increase of 10%, or approximately 17 basis points, in the three-month Eurodollar rate as of December 31, 2017 would cause pre-tax decreases to our earnings and cash flows of approximately \$0.5 million per year, assuming that such rate were to remain in effect for a year. A decrease of 10%, or approximately 17 basis points, in the three-month Eurodollar rate as of December 31, 2017 would cause pre-tax increases to our earnings and cash flows of approximately \$0.5 million, assuming that such rate were to remain in effect for a year.

As of December 31, 2017, we were not exposed to interest rate risk under the revolving credit facility as a result of having no outstanding borrowings under the facility.

### ***Inflation Risk***

We do not believe that inflation has had a material effect on our business. However, if global demand for the base materials utilized in our suppliers' components were to significantly increase for the components we purchase from our suppliers to manufacture our products, our costs could become subject to significant inflationary pressures, and we may not be able to fully offset such higher costs through price increases. Our inability or failure to do so could harm our business, operating results and financial condition.

**Item 8. Financial Statements and Supplementary Data.**

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*Audited Consolidated Financial Statements*

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To the Board of Directors and Shareholders of Casa Systems, Inc.

***Opinion on the Financial Statements***

We have audited the accompanying consolidated balance sheets of Casa Systems, Inc. and its subsidiaries as of December 31, 2017 and 2016 and the related consolidated statements of operations and comprehensive income, of convertible preferred stock and stockholders' equity (deficit), and of cash flows for each of the three years in the period ended December 31, 2017 including the related notes (collectively referred to as the "consolidated financial statements"). In our opinion, the consolidated financial statements present fairly, in all material respects, the financial position of the Company as of December 31, 2017 and 2016, and the results of their operations and their cash flows for each of the three years in the period ended December 31, 2017 in conformity with accounting principles generally accepted in the United States of America.

***Change in Accounting Principle***

As discussed in Note 8 to the consolidated financial statements, the Company changed the manner in which it accounts for windfall tax benefits as of January 1, 2016.

***Basis for Opinion***

These consolidated financial statements are the responsibility of the Company's management. Our responsibility is to express an opinion on the Company's consolidated financial statements based on our audits. We are a public accounting firm registered with the Public Company Accounting Oversight Board (United States) ("PCAOB") and are required to be independent with respect to the Company in accordance with the U.S. federal securities laws and the applicable rules and regulations of the Securities and Exchange Commission and the PCAOB.

We conducted our audits of these consolidated financial statements in accordance with the standards of the PCAOB. Those standards require that we plan and perform the audit to obtain reasonable assurance about whether the consolidated financial statements are free of material misstatement, whether due to error or fraud.

Our audits included performing procedures to assess the risks of material misstatement of the consolidated financial statements, whether due to error or fraud, and performing procedures that respond to those risks. Such procedures included examining, on a test basis, evidence regarding the amounts and disclosures in the consolidated financial statements. Our audits also included evaluating the accounting principles used and significant estimates made by management, as well as evaluating the overall presentation of the consolidated financial statements. We believe that our audits provide a reasonable basis for our opinion.

/s/ PricewaterhouseCoopers LLP  
Boston, Massachusetts  
March 6, 2018

We have served as the Company's auditor since 2014.

## CASA SYSTEMS, INC.

**CONSOLIDATED BALANCE SHEETS**  
(Amounts in thousands, except per share amounts)

	December 31,	
	2017	2016
<b>Assets</b>		
Current assets:		
Cash and cash equivalents	\$ 260,820	\$ 329,554
Marketable securities	—	14,392
Accounts receivable, net of provision for doubtful accounts of \$692 and \$690 as of December 31, 2017 and 2016, respectively	122,634	110,234
Inventory	36,148	65,975
Prepaid expenses and other current assets	5,151	7,178
Prepaid income taxes	538	39
<b>Total current assets</b>	<b>425,291</b>	<b>527,372</b>
Property and equipment, net	29,363	25,682
Accounts receivable, net of current portion	4,710	6,629
Deferred tax assets	9,718	21,140
Deferred offering costs	—	1,464
Other assets	615	748
<b>Total assets</b>	<b>\$ 469,697</b>	<b>\$ 583,035</b>
<b>Liabilities, Convertible Preferred Stock and Stockholders' Equity (Deficit)</b>		
Current liabilities:		
Accounts payable	\$ 15,833	\$ 21,704
Accrued expenses and other current liabilities	48,250	149,184
Accrued income taxes	118	11,823
Deferred revenue	34,224	55,876
Current portion of long-term debt, net of unamortized debt issuance costs	2,156	2,133
<b>Total current liabilities</b>	<b>100,581</b>	<b>240,720</b>
Accrued income taxes, net of current portion	8,810	463
Deferred revenue, net of current portion	14,691	18,458
Long-term debt, net of current portion and unamortized debt issuance costs	295,459	297,618
<b>Total liabilities</b>	<b>419,541</b>	<b>557,259</b>
Commitments and contingencies (Note 16)		
Convertible preferred stock (Series A, B and C), \$0.001 par value; no shares and 6,000 shares authorized as of December 31, 2017 and 2016, respectively; no shares and 4,038 shares issued and outstanding as of December 31, 2017 and 2016, respectively	—	97,479
Stockholders' equity (deficit):		
Preferred stock, \$0.001 par value; 5,000 shares and no shares authorized as of December 31, 2017 and 2016, respectively; no shares issued and outstanding as of December 31, 2017 and 2016, respectively	—	—
Common stock, \$0.001 par value; 500,000 and 100,000 shares authorized as of December 31, 2017 and 2016, respectively; 81,043 and 33,184 shares issued and outstanding as of December 31, 2017 and 2016, respectively	81	33
Additional paid-in capital	128,798	—
Accumulated other comprehensive income (loss)	194	(1,739)
Accumulated deficit	(78,917)	(69,997)
<b>Total stockholders' equity (deficit)</b>	<b>50,156</b>	<b>(71,703)</b>
<b>Total liabilities, convertible preferred stock and stockholders' equity (deficit)</b>	<b>\$ 469,697</b>	<b>\$ 583,035</b>

The accompanying notes are an integral part of these consolidated financial statements.

**CONSOLIDATED STATEMENTS OF OPERATIONS AND COMPREHENSIVE INCOME**  
(Amounts in thousands, except per share amounts)

	Year Ended December 31,		
	2017	2016	2015
<b>Revenue:</b>			
Product	\$ 311,896	\$ 279,223	\$ 247,588
Service	39,679	36,905	24,862
Total revenue	<u>351,575</u>	<u>316,128</u>	<u>272,450</u>
<b>Cost of revenue:</b>			
Product	88,538	89,340	74,349
Service	4,973	8,477	5,265
Total cost of revenue	<u>93,511</u>	<u>97,817</u>	<u>79,614</u>
Gross profit	<u>258,064</u>	<u>218,311</u>	<u>192,836</u>
<b>Operating expenses:</b>			
Research and development	60,677	49,210	37,155
Sales and marketing	39,602	36,114	36,157
General and administrative	21,563	18,215	16,453
Total operating expenses	<u>121,842</u>	<u>103,539</u>	<u>89,765</u>
Income from operations	<u>136,222</u>	<u>114,772</u>	<u>103,071</u>
<b>Other income (expense):</b>			
Interest income	2,439	1,208	955
Interest expense	(17,466)	(902)	(214)
Gain (loss) on foreign currency, net	886	(328)	(3,020)
Other income (expense), net	737	943	871
Total other income (expense), net	<u>(13,404)</u>	<u>921</u>	<u>(1,408)</u>
Income before provision for income taxes	122,818	115,693	101,663
Provision for income taxes	<u>34,318</u>	<u>27,025</u>	<u>33,742</u>
Net income	<u>88,500</u>	<u>88,668</u>	<u>67,921</u>
<b>Other comprehensive income (expense)—foreign currency translation adjustment</b>			
	1,933	(1,525)	(1,244)
Comprehensive income	<u>\$ 90,433</u>	<u>\$ 87,143</u>	<u>\$ 66,677</u>
Cash dividends declared per common share or common share equivalent	<u>\$ 1.7576</u>	<u>\$ 2.9197</u>	<u>\$ —</u>
<b>Net income (loss) attributable to common stockholders:</b>			
Basic	<u>\$ 11,849</u>	<u>\$ (35,119)</u>	<u>\$ 27,302</u>
Diluted	<u>\$ 11,849</u>	<u>\$ (35,119)</u>	<u>\$ 30,402</u>
<b>Net income (loss) per share attributable to common stockholders:</b>			
Basic	<u>\$ 0.34</u>	<u>\$ (1.07)</u>	<u>\$ 0.86</u>
Diluted	<u>\$ 0.26</u>	<u>\$ (1.07)</u>	<u>\$ 0.78</u>
<b>Weighted-average shares used to compute net income (loss) per share attributable to common stockholders:</b>			
Basic	<u>35,359</u>	<u>32,864</u>	<u>31,740</u>
Diluted	<u>44,972</u>	<u>32,864</u>	<u>38,809</u>

The accompanying notes are an integral part of these consolidated financial statements.

CASA SYSTEMS, INC.

CONSOLIDATED STATEMENTS OF CONVERTIBLE PREFERRED STOCK AND STOCKHOLDERS' EQUITY (DEFICIT)  
(Amounts in thousands, except per share amounts)

	Series A, B and C Convertible Preferred Stock		Common Stock		Additional Paid-in Capital	Accumulated Other Comprehensive Income (Loss)	Retained Earnings (Accumulated Deficit)	Total Stockholders' Equity (Deficit)
	Shares	Amount	Shares	Amount				
<b>Balances at January 1, 2015</b>	4,038	\$ 97,479	31,673	\$ 32	\$ 7,638	\$ 1,030	\$ —	\$ 8,700
Exercise of stock options	—	—	133	—	226	—	—	226
Foreign currency translation adjustment, net of tax of \$0	—	—	—	—	—	(1,244)	—	(1,244)
Stock-based compensation	—	—	—	—	6,855	—	—	6,855
Net income	—	—	—	—	—	—	67,921	67,921
<b>Balances at December 31, 2015</b>	4,038	97,479	31,806	32	14,719	(214)	67,921	82,458
Exercise of stock options and common stock issued upon vesting of equity awards, net of shares withheld for employee taxes	—	—	1,378	1	277	—	—	278
Foreign currency translation adjustment, net of tax of \$0	—	—	—	—	—	(1,525)	—	(1,525)
Cash dividends declared (\$2.9197 per share of common stock, \$29.1968 per share of convertible preferred stock and \$2.9197 per share to holders of stock-based awards)	—	—	—	—	(22,841)	—	(226,586)	(249,427)
Stock-based compensation	—	—	—	—	7,845	—	—	7,845
Net income	—	—	—	—	—	—	88,668	88,668
<b>Balances at December 31, 2016</b>	4,038	97,479	33,184	33	—	(1,739)	(69,997)	(71,703)
Conversion of convertible preferred stock into common stock upon initial public offering	(4,038)	(97,479)	40,382	40	97,439	—	—	97,479
Issuance of common stock upon initial public offering, net of underwriting discounts and commissions and offering costs incurred of \$10,373	—	—	6,900	7	79,320	—	—	79,327
Exercise of stock options and common stock issued upon vesting of equity awards, net of shares withheld for employee taxes	—	—	577	1	(3,772)	—	—	(3,771)
Foreign currency translation adjustment, net of tax of \$0	—	—	—	—	—	1,933	—	1,933
Cash dividends declared (\$1.7576 per share of common stock, \$17.5764 per share of convertible preferred stock and \$1.7576 per share to holders of stock-based awards)	—	—	—	—	(52,365)	—	(97,420)	(149,785)
Stock-based compensation	—	—	—	—	8,176	—	—	8,176
Net income	—	—	—	—	—	—	88,500	88,500
<b>Balances at December 31, 2017</b>	—	\$ —	81,043	\$ 81	\$ 128,798	\$ 194	\$ (78,917)	\$ 50,156

The accompanying notes are an integral part of these consolidated financial statements.

**CASA SYSTEMS, INC.**  
**CONSOLIDATED STATEMENTS OF CASH FLOWS**  
(Amounts in thousands)

	Year Ended December 31,		
	2017	2016	2015
<b>Cash flows from operating activities:</b>			
Net income	\$ 88,500	\$ 88,668	\$ 67,921
Adjustments to reconcile net income to net cash provided by operating activities:			
Depreciation and amortization	7,738	6,008	5,149
Stock-based compensation	9,136	8,304	7,321
Deferred income taxes	11,422	(6,860)	(1,637)
Excess and obsolete inventory valuation adjustment	4,115	1,674	1,379
Increase in provision for doubtful accounts	6	—	454
Changes in operating assets and liabilities:			
Accounts receivable	(25,726)	(16,273)	(9,717)
Inventory	21,859	(22,798)	(17,373)
Prepaid expenses and other assets	3,519	(3,235)	(875)
Prepaid income taxes	(486)	900	742
Accounts payable	(6,475)	14,453	2,744
Accrued expenses and other current liabilities	10,243	15,759	7,967
Accrued income taxes	(3,212)	6,894	(10,842)
Deferred revenue	(25,631)	17,286	(28,631)
Net cash provided by operating activities	<u>95,008</u>	<u>110,780</u>	<u>24,602</u>
<b>Cash flows provided by (used in) investing activities:</b>			
Purchases of property and equipment	(7,014)	(7,419)	(15,503)
Purchases of marketable securities	—	(14,392)	—
Proceeds from maturities of marketable securities	14,589	—	—
Net cash provided by (used in) investing activities	<u>7,575</u>	<u>(21,811)</u>	<u>(15,503)</u>
<b>Cash flows from financing activities:</b>			
Proceeds from initial public offering, net of underwriting discounts and commissions	83,421	—	—
Proceeds from issuance of debt, net of issuance costs	—	292,189	7,905
Principal repayments of debt	(3,292)	(282)	(115)
Proceeds from exercise of stock options	274	594	226
Payments of dividends and equitable adjustments	(246,634)	(142,301)	(712)
Payments of initial public offering costs	(2,384)	(517)	—
Employee taxes paid related to net share settlement of equity awards	(4,046)	(315)	—
Net cash (used in) provided by financing activities	<u>(172,661)</u>	<u>149,368</u>	<u>7,304</u>
Effect of exchange rate changes on cash and cash equivalents	1,344	(1,279)	(1,062)
<b>Net (decrease) increase in cash and cash equivalents</b>	<u>(68,734)</u>	<u>237,058</u>	<u>15,341</u>
Cash and cash equivalents at beginning of year	329,554	92,496	77,155
Cash and cash equivalents at end of year	<u>\$ 260,820</u>	<u>\$ 329,554</u>	<u>\$ 92,496</u>
<b>Supplemental disclosures of cash flow information:</b>			
Cash paid for interest	\$ 16,275	\$ 274	\$ 117
Cash paid for income taxes	\$ 26,297	\$ 25,179	\$ 45,182
<b>Supplemental disclosures of non-cash investing and financing activities:</b>			
Purchases of property and equipment included in accounts payable	\$ 1,018	\$ 869	\$ 1,140
Prepaid expenses and other current assets included in accounts payable	\$ 1,394	\$ 256	\$ 87
Deferred offering costs included in accounts payable and accrued expenses and other current liabilities	\$ 1,193	\$ 947	\$ —
Unpaid dividends and equitable adjustments included in accrued expenses and other current liabilities	\$ 10,661	\$ 107,509	\$ 383
Release of customer incentives included in accounts receivable and accrued expenses and other current liabilities	\$ 15,468	\$ 4,206	\$ —

The accompanying notes are an integral part of these consolidated financial statements.

**NOTES TO CONSOLIDATED FINANCIAL STATEMENTS**  
**(Amounts in thousands, except per share amounts)****1. Nature of Business and Basis of Presentation**

Casa Systems, Inc. (the “Company”) was incorporated under the laws of the State of Delaware on February 28, 2003. The Company is a global communications technology company headquartered in Andover, Massachusetts and has wholly owned subsidiaries in China, France, Canada, Ireland, Spain and the Netherlands.

The Company offers solutions for next-generation centralized, distributed and virtualized architectures for cable broadband, fixed-line broadband and wireless networks. The Company’s solutions enable customers to cost-effectively and dynamically increase network speed, add bandwidth capacity and new services for consumers and enterprises, reduce network complexity and reduce operating and capital expenditures. The Company’s solutions include a suite of software-centric infrastructure solutions that allow cable service providers to deliver voice, video and data services over a single platform at multi-gigabit speeds.

The Company is subject to a number of risks similar to other companies of comparable size and other companies selling and providing services to the communications industry. These risks include, but are not limited to, the level of capital spending by the communications industry, a lengthy sales cycle, dependence on the development of new products and services, unfavorable economic and market conditions, competition from larger and more established companies, limited management resources, dependence on a limited number of contract manufacturers and suppliers, the rapidly changing nature of the technology used by the communications industry and reliance on resellers and sales agents. Failure by the Company to anticipate or to respond adequately to technological developments in its industry, changes in customer or supplier requirements, changes in regulatory requirements or industry standards, or any significant delays in the development or introduction of products could have a material adverse effect on the Company’s operating results, financial condition and cash flows.

In December 2017, the Company closed its initial public offering (“IPO”) of 6,900 shares of its common stock at an offering price of \$13.00 per share, including 900 shares pursuant to the underwriters’ option to purchase additional shares of the Company’s common stock. The Company received net proceeds of \$79,327, after deducting underwriting discounts and commissions of \$6,279 and offering costs of \$4,094. Upon the closing of the IPO, all 4,038 shares of the Company’s then-outstanding preferred stock automatically converted on a ten-for-one basis into an aggregate of 40,382 shares of the Company’s common stock. Upon conversion of the preferred stock, the Company reclassified \$97,439 from temporary equity to additional paid-in capital and \$40 from temporary equity to common stock.

The Company is an “emerging growth company,” as defined in the Jumpstart Our Business Startups Act of 2012 (the “JOBS Act”), and may remain an emerging growth company until the last day of the fiscal year following the fifth anniversary of the initial public offering, subject to specified conditions. The JOBS Act provides that an emerging growth company can take advantage of the extended transition period afforded by the JOBS Act for the implementation of new or revised accounting standards. The Company has elected not to “opt out” of such extended transition period, which means that when a standard is issued or revised and it has different application dates for public or private companies, the Company will adopt the new or revised standard at the time private companies adopt the new or revised standard, provided that the Company continues to be an emerging growth company. The JOBS Act provides that the decision to take advantage of the extended transition period for complying with new or revised accounting standards is irrevocable.

The accompanying consolidated financial statements have been prepared in accordance with accounting principles generally accepted in the United States of America (“GAAP”) and include the accounts of the Company and its wholly owned subsidiaries. All intercompany accounts and transactions have been eliminated in consolidation.

**2. Summary of Significant Accounting Policies*****Use of Estimates***

The preparation of financial statements in conformity with GAAP requires management to make estimates and assumptions that affect the reported amounts of assets and liabilities and the disclosures of contingent assets and liabilities at the date of the financial statements and the reported amounts of revenue and expenses during the reporting periods.



Significant estimates and judgments relied upon by management in preparing these consolidated financial statements include revenue recognition, provision for doubtful accounts, reserves for excess and obsolete inventory, valuation of inventory and deferred inventory costs, the expensing and capitalization of software-related research and development costs, amortization and depreciation periods, recoverability of net deferred tax assets, valuations of uncertain tax positions, provision for income taxes, warranty allowances, the valuation of the Company's common stock and other equity instruments, and stock-based compensation expense.

Although the Company regularly reassesses the assumptions underlying these estimates, actual results could differ materially from these estimates. Changes in estimates are recorded in the period in which they become known. The Company bases its estimates on historical experience and various other assumptions that it believes to be reasonable under the circumstances existing at the time such estimates are made.

#### ***Cash Equivalents***

Cash equivalents include all highly liquid investments maturing within three months from the date of purchase. As of December 31, 2017 and 2016, the Company's cash equivalents consisted of investments in certificates of deposit, commercial paper and money market mutual funds.

#### ***Marketable Securities***

Marketable securities with original maturities of greater than three months and remaining maturities of less than one year from the balance sheet date are classified as current assets. Marketable securities with remaining maturities of greater than one year from the balance sheet date are classified as non-current assets.

The Company classifies all of its marketable securities as available-for-sale securities. The Company's marketable securities are measured and reported at fair value. Unrealized gains and losses are reported as a separate component of stockholders' equity (deficit). The cost of securities sold is determined on a specific identification basis, and realized gains and losses are included in other income (expense) within the consolidated statement of operations and comprehensive income. If any adjustment to fair value reflects a decline in the value of the investment, the Company considers available evidence to evaluate the extent to which the decline is "other than temporary" and reduces the investment to fair value through a charge to the consolidated statement of operations and comprehensive income. The Company did not have any marketable securities outstanding as of December 31, 2017. As of December 31, 2016, the Company's marketable securities consisted of investments in certificates of deposit.

#### ***Accounts Receivable***

Accounts receivable are presented net of a provision for doubtful accounts, which is an estimate of amounts that may not be collectible. Accounts receivable for arrangements with customary payment terms, which are one year or less, are recorded at invoiced amounts and do not bear interest. The Company generally does not require collateral, but the Company may, in certain instances based on its credit assessment, require full or partial prepayment prior to shipment.

For certain customers and/or for certain transactions, the Company provides extended payment arrangements to allow the customer to pay for the purchased equipment in monthly, other periodic or lump-sum payments over a period of one to five years. Certain of these arrangements are collateralized by the underlying assets during the term of the arrangement. Payments due beyond 12 months from the balance sheet date are recorded as non-current assets. In addition, amounts recorded as current and non-current accounts receivable for extended payment term arrangements at any balance sheet date have a corresponding amount recorded as deferred revenue because the Company defers the recognition of revenue for all extended payment term arrangements and only recognizes revenue to the extent of the payment amounts that become due from the customer (see—"Revenue Recognition—Deferred Revenue").

Although there is no contractual interest rate for customer arrangements with extended payment terms, the Company imputes interest on the accounts receivable related to these arrangements and reduces the arrangement fee that will be recognized as revenue for the amount of the imputed interest, which is recorded as interest income over the payment term using the effective interest method. For the periods presented in the accompanying consolidated financial statements, the impact of imputing interest on revenue and interest income was insignificant.

Accounts receivable as of December 31, 2017 and 2016 consisted of the following:

	December 31,	
	2017	2016
Current portion of accounts receivable, net:		
Accounts receivable, net	\$ 106,114	\$ 87,250
Amounts due from related party (see Note 15)	13,367	15,619
Accounts receivable, extended payment arrangements	3,153	7,365
	<u>122,634</u>	<u>110,234</u>
Accounts receivable, net of current portion:		
Accounts receivable, extended payment arrangements	4,710	6,629
	<u>\$ 127,344</u>	<u>\$ 116,863</u>

The Company performs ongoing credit evaluations of its customers and, if necessary, provides a provision for doubtful accounts and expected losses. When assessing and recording its provision for doubtful accounts, the Company evaluates the age of its accounts receivable, current economic trends, creditworthiness of the customers, customer payment history, and other specific customer and transaction information. The Company writes off accounts receivable against the provision when it determines a balance is uncollectible and no longer actively pursues collection of the receivable. Adjustments to the provision for doubtful accounts are recorded as general and administrative expenses in the consolidated statements of operations and comprehensive income. A summary of changes in the provision for doubtful accounts for the years ended December 31, 2017, 2016 and 2015 is as follows:

	Year Ended December 31,		
	2017	2016	2015
Provision for doubtful accounts at beginning of year	\$ 690	\$ 768	\$ 485
Provisions	6	—	454
Write-offs	(4)	(78)	(171)
Provision for doubtful accounts at end of year	<u>\$ 692</u>	<u>\$ 690</u>	<u>\$ 768</u>

As of December 31, 2017 and 2016, the Company concluded that all amounts due under extended payment term arrangements were collectible and no reserve for credit losses was recorded. During the years ended December 31, 2017, 2016 and 2015, the Company did not provide a reserve for credit losses and did not write off any uncollectible receivables due under extended payment term arrangements.

### ***Inventories***

Inventories are valued at the lower of cost or market value. Cost is computed using the first-in first-out convention. Inventories are composed of hardware and related component parts of finished goods. The Company establishes provisions for excess and obsolete inventories after evaluating historical sales, future demand, market conditions, expected product life cycles, and current inventory levels to reduce such inventories to their estimated net realizable value. Such provisions are made in the normal course of business and charged to cost of revenue in the consolidated statements of operations and comprehensive income.

Deferred inventory costs are included within inventory in the consolidated balance sheets. Deferred inventory costs represent the cost of products that have been delivered to the customer for which revenue associated with the arrangement has been deferred as a result of not meeting all of the required revenue recognition criteria, such as receipt of customer acceptance. Until the revenue recognition criteria are met, the Company retains the right to a return of the underlying inventory. Deferred inventory costs are recognized as cost of revenue in the consolidated statements of operations and comprehensive income when the related revenue is recognized.

### ***Property and Equipment***

Property and equipment is stated at historical cost less accumulated depreciation. Depreciation is computed using the straight-line method over the estimated useful lives of the assets. Leasehold improvements are recorded at cost with any reimbursement from the landlord being accounted for as deferred rent, which is amortized using the straight-line method over the lease term. Costs for trial systems held and used by the Company's customers pursuant to evaluation agreements are also included within property and equipment. Trial systems held and used by the Company's customers are depreciated over the estimated useful life of such assets, which is two years.

Whenever a trial system is sold to a customer and the selling price is recorded as revenue, the related net book value of the trial system sold is removed from property and equipment and recorded as a cost of revenue. Maintenance and repairs expenditures are charged to expense as incurred.

Estimated useful lives of the respective property and equipment assets are as follows:

	<b>Estimated Useful Life</b>
Computers and purchased software	3 years
Leasehold improvements	Shorter of lease term or 7 years
Furniture and fixtures	7 years
Machinery and equipment	3 – 5 years
Building	40 years
Building improvements	5 – 40 years
Trial systems at customers' sites	2 years

Upon retirement or sale, the cost of assets disposed of and the related accumulated depreciation are removed from the accounts and any resulting gain or loss is included in income from operations.

### ***Impairment of Long-Lived Assets***

The Company evaluates its long-lived assets, which consist primarily of property and equipment, for impairment whenever events or changes in circumstances indicate that the carrying amount of such assets may not be recoverable. Factors that the Company considers in deciding when to perform an impairment review include significant underperformance of the business in relation to expectations, significant negative industry or economic trends and significant changes or planned changes in the use of the assets. Recoverability of assets to be held and used is measured by a comparison of the carrying amount of an asset to the future undiscounted net cash flows expected to be generated by the asset. If such assets are considered to be impaired, the impairment to be recognized is measured by the amount by which the carrying amount of the asset exceeds the fair value of the asset, less the cost to sell. No events or changes in circumstances existed to require an impairment assessment during the years ended December 31, 2017, 2016 and 2015.

### ***Deferred Offering Costs***

Deferred offering costs of \$4,094, consisting of legal, professional accounting and other third-party fees related to the IPO, were reclassified to additional paid-in capital as a reduction of the proceeds upon the closing of the IPO in December 2017. Deferred offering costs of \$2,384 and \$517 were paid during the years ended December 31, 2017 and 2016, respectively.

### ***Concentration of Risks***

Financial instruments that potentially subject the Company to concentrations of credit risk consist principally of cash and cash equivalents, marketable securities and accounts receivable. Cash and cash equivalents and marketable securities consist of demand deposits, savings accounts, commercial paper, money market mutual funds, and certificates of deposit with financial institutions, which may exceed Federal Deposit Insurance Corporation limits. The Company has not experienced any losses related to its cash, cash equivalents and marketable securities and does not believe that it is subject to unusual credit risk beyond the normal credit risk associated with commercial banking relationships.

Significant customers are those that represent 10% or more of revenue or accounts receivable as set forth in the following table:

	Revenue			Accounts Receivable, Net		
	Year Ended December 31,			December 31,		
	2017	2016	2015	2017	2016	2015
Customer A	37%	23%	14%	44%	11%	11%
Customer B	11%	10%	17%	10%	13%	13%
Customer C	*	19%	*	17%	21%	21%
Customer D	*	*	*	*	12%	12%

\* Less than 10% of total

Customer B is a related party, Liberty Global Affiliates (see Note 15).

Certain of the components and subassemblies included in the Company's products are obtained from a single source or a limited group of suppliers. In addition, the Company primarily relies on two third parties to manufacture certain components of its products. Although the Company seeks to reduce dependence on those limited sources of suppliers and manufacturers, the partial or complete loss of certain of these sources could have a material adverse effect on the Company's operating results, financial condition and cash flows and damage its customer relationships.

### **Product Warranties**

Substantially all of the Company's products are covered by a warranty for software and hardware for periods ranging from 90 days to one year. In addition, in conjunction with customers' renewals of maintenance and support contracts, the Company offers an extended warranty for periods typically of one to three years for agreed-upon fees. In the event of a failure of a hardware product or software covered by these warranties, the Company must repair or replace the software or hardware or, if those remedies are insufficient, and at the discretion of the Company, provide a refund. The Company's warranty reserve, which is included in accrued expenses and other current liabilities in the consolidated balance sheets, reflects estimated material, labor and other costs related to potential or actual software and hardware warranty claims for which the Company expects to incur an obligation. The Company's estimates of anticipated rates of warranty claims and the costs associated therewith are primarily based on historical information and future forecasts. The Company periodically assesses the adequacy of the warranty reserve and adjusts the amount as necessary. If the historical data used to calculate the adequacy of the warranty reserve are not indicative of future requirements, additional or reduced warranty reserves may be required.

A summary of changes in the amount reserved for warranty costs for the years ended December 31, 2017, 2016 and 2015 is as follows:

	Year Ended December 31,		
	2017	2016	2015
Warranty reserve at beginning of year	\$ 1,256	\$ 993	\$ 949
Provisions	1,829	1,862	1,272
Charges	(1,839)	(1,599)	(1,228)
Warranty reserve at end of year	\$ 1,246	\$ 1,256	\$ 993

### **Revenue Recognition**

The Company generates revenue from sales of its broadband products, along with associated maintenance and support services, and, to a lesser extent, from sales of professional services and extended warranty services. The Company also generates revenue from sales of additional line cards and software-based capacity expansions. Maintenance and support services include telephone support and unspecified software upgrades and updates provided on a when-and-if-available basis.

In the Company's consolidated statements of operations and comprehensive income, revenue from sales of broadband products and capacity expansions is classified as product revenue, and revenue from maintenance and support, professional services and extended warranty services is classified as service revenue.

The Company recognizes revenue from sales when the following revenue recognition criteria are met:

- *Persuasive evidence of an arrangement exists.* Binding contracts and/or customer purchase orders are generally evidence of an arrangement. For professional services, evidence of an arrangement may also include information documenting the scope of work to be performed, and customer acceptance terms, if any.
- *Delivery has occurred.* For broadband products, shipping documents and customer acceptance, if applicable, verify that delivery has occurred. For software-enabled capacity expansions, delivery occurs when the additional bandwidth capacity is made available to the customer. For professional services, delivery occurs as the services are completed.
- *The sales price is fixed or determinable.* The sales price is considered fixed or determinable when the fees have been contractually agreed with the customer and are not deemed to be subject to refund, adjustment or future discounts, and when the payment terms of the transaction do not extend beyond the Company's customary payment terms, which are one year or less.
- *Collectibility is reasonably assured.* The Company assesses the ability to collect from its customers based on a number of factors that generally include information supplied by credit agencies, references and/or analysis of customer accounts and payment history. If collection from a customer is not considered reasonably assured, all revenue related to the customer arrangement is deferred until payment is received and all other revenue recognition criteria have been met.

When customer acceptance of the product is required and is other than perfunctory, revenue for the entire customer arrangement is deferred until the acceptance has been received.

The Company's products have both software and non-software (i.e., hardware) components that function together to deliver the products' essential functionality. In addition, the hardware sold generally cannot be used apart from the embedded software. As a result, all of the Company's product and service offerings are excluded from the scope of software revenue recognition requirements and instead fall within the scope of Accounting Standards Codification ("ASC") Topic 605, *Revenue Recognition*.

Many of the Company's sales involve multiple-deliverable arrangements that include products and maintenance and support services and, on a limited basis, may also include professional services and extended warranty services. The Company has determined that its products, maintenance and support services, professional services and extended warranty services have standalone value to the customer because each of these deliverables is sold separately by the Company to its customers or, in the case of professional services, is sold separately by other vendors. As a result, the Company treats each of these deliverables as a separate unit of accounting for purposes of allocating the arrangement fee and recognizing the revenue of each unit.

For its multiple-deliverable arrangements, the Company allocates the arrangement fee to each deliverable based on the relative selling prices of each of the deliverables in the arrangement using the selling price hierarchy. In such circumstances, the Company determines the selling price of each deliverable based on vendor-specific objective evidence ("VSOE") of selling price, if it exists; otherwise, third-party evidence ("TPE") of selling price. If neither VSOE nor TPE exists, the Company uses its best estimate of the selling price ("BESP") for the deliverable. The Company limits the amount of the arrangement fee allocated to deliverables to the amount that is not contingent on the future delivery of products or services or future performance obligations and the amount that is not subject to customer-specific return or refund privileges.

To date, the Company has not been able to establish VSOE of selling price of any of its products, maintenance and support services, professional services or extended warranty services because the Company has not established a history of consistently pricing each product or service within a narrow range. In addition, the Company is not able to determine TPE of selling price for its products or services because the Company's various product and service offerings contain a significant level of differentiation and, therefore, comparable pricing of competitors' products and services with similar functionality cannot be obtained. As the Company is unable to establish selling price using VSOE or TPE, the Company uses BESP to allocate the arrangement fee to products, maintenance and support services, professional services and extended warranty services in multiple-deliverable arrangements. The objective of BESP is to determine the price at which the Company would transact a sale if a product or service was sold on a standalone basis. The Company determines BESP of selling price for its products and services by considering multiple factors, including, but not limited to, its historical pricing practices by customer type and geographic-specific market factors.

Revenue from product sales is recognized upon delivery to the customer, or upon the later receipt of customer acceptance of the product when such acceptance is required.

Revenue from maintenance and support services is recognized ratably over the contract period, which is typically one year, but can be as long as three or five years. When customer acceptance of a product is required, the recognition of any associated maintenance and support services revenue commences only upon customer acceptance of the associated product. Revenue from extended warranty services is recognized ratably over the contract period, which is typically one to three years.

Revenue from professional services is recognized as the services are performed. Professional services generally include installation or configuration services that are not deemed to be essential to the functionality of the products. When customer acceptance is required, the recognition of any associated professional services revenue is deferred until the associated product and/or professional service is accepted by the customer.

#### *Resellers*

The Company markets and sell its products through its direct global sales force, supported by sales agents, and through resellers. The Company's resellers receive an order from an end customer prior to placing an order with the Company, and the Company confirms the identification of or is aware of the end customer prior to accepting such order. The Company invoices the reseller an amount that reflects a reseller discount and records revenue based on the amount of the discounted arrangement fee. The Company's resellers do not stock inventory received from the Company.

When the Company transacts with a reseller, its contractual arrangement is with the reseller and not with the end customer. Whether the Company transacts business with and receives the order from a reseller or directly from an end customer, its revenue recognition policy and resulting pattern of revenue recognition for the order are the same.

The Company also uses sales agents that assist in the sales process with certain customers primarily located in the Latin America and Asia-Pacific regions. Sales agents are not resellers. If a sales agent is engaged in the sales process, the Company receives the order directly from and sells the products and services directly to the end customer, and the Company pays a commission to the sales agent, calculated as a percentage of the related customer payment. Sales agent commissions are recorded as expenses when incurred and are classified as sales and marketing expenses in the Company's consolidated statements of operations and comprehensive income.

#### *Deferred Revenue*

Amounts billed in excess of revenue recognized are recorded as deferred revenue. Deferred revenue includes customer deposits, amounts billed for maintenance and support services contracts in advance of services being performed, amounts for trade-in right liabilities and amounts related to arrangements that have been deferred as a result of not meeting the required revenue recognition criteria as of the end of the reporting period. Deferred revenue expected to be recognized as revenue more than one year subsequent to the balance sheet date is reported within long-term liabilities in the consolidated balance sheets.

When the payment terms of a customer order extend beyond the Company's customary payment terms, which are one year or less, the Company considers the arrangement to be an extended payment term arrangement and concludes that the sales price is not fixed or determinable for revenue recognition purposes. In these circumstances, the Company defers all revenue of the arrangement and only recognizes revenue to the extent of the payment amounts that become due, provided that all other revenue recognition criteria have been met.

The Company defers recognition of incremental direct costs, such as cost of goods and services, until recognition of the related revenue. Such costs are classified as current assets if the related deferred revenue is classified as current, and such costs are classified as non-current assets if the related deferred revenue is classified as non-current.

#### *Other Revenue Recognition Policies*

In limited instances, the Company has offered future rebates to customers based on a fixed or variable percentage of actual sales volumes over specified periods. The future rebates earned based on the customer's purchasing from the Company in one period may be used as credits to be applied by them against accounts receivable due to the Company in later periods. The Company accounts for these future rebates as a reduction of the revenue recorded for the customer's current purchasing activity giving rise to the future rebates. The liability for these future rebates is recorded as accrued customer incentives (within accrued expenses and other current liabilities) until the credits have been applied by the customer against accounts receivable due to the Company or the credits expire.

When future trade-in rights are granted to customers at the time of sale, the Company defers a portion of the revenue recognized for the sale and accounts for it as a guarantee at fair value until the trade-in right is exercised or the right expires, in accordance with ASC Topic 460, *Guarantees*. Determining the fair value of the trade-in right requires the Company to estimate the probability of the trade-in right being exercised and the future value of the product upon trade-in. The Company assesses and updates these estimates each reporting period, and updates to these estimates may result in either an increase or decrease in the amount of revenue deferred. The amounts of deferred revenue recorded in the consolidated balance sheet as of December 31, 2016 included amounts deferred for trade-in rights of \$8,477. As of December 31, 2017, no amounts for trade-in rights were deferred.

Billings to customers for shipping costs and reimbursement of out-of-pocket expenses, including travel, lodging and meals, are recorded as revenue, and the associated costs incurred by the Company for those items are recorded as cost of revenue.

The Company excludes any taxes assessed by a governmental authority that are directly imposed on a revenue-producing transaction (e.g., sales, use and value added taxes) from its revenue and costs.

### ***Stock-Based Compensation***

The Company measures stock options and other stock-based awards granted to employees and directors based on the fair value on the date of the grant and recognizes compensation expense of those awards, net of estimated forfeitures, over the requisite service period, which is generally the vesting period of the respective award. Generally, the Company issues stock options with only service-based vesting conditions and records the expense for these awards using the straight-line method.

For stock-based awards granted to non-employee consultants, compensation expense is recognized over the period during which services are rendered by such non-employee consultants until completed. At the end of each financial reporting period prior to completion of the service, the fair value of these awards is remeasured using the then-current fair value of the Company's common stock and updated assumption inputs in the Black-Scholes option-pricing model.

The Company classifies stock-based compensation expense in its consolidated statements of operations and comprehensive income in the same manner in which the award recipient's payroll costs are classified or in which the award recipient's service payments are classified.

The Company recognizes compensation expense for only the portion of awards that are expected to vest. In developing a forfeiture rate estimate, the Company has considered its historical experience to estimate pre-vesting forfeitures for service-based awards. The impact of a forfeiture rate adjustment will be recognized in full in the period of adjustment, and if the actual forfeiture rate is materially different from the Company's estimate, the Company may be required to record adjustments to stock-based compensation expense in future periods.

The fair value of each stock option grant is estimated on the date of grant using the Black-Scholes option pricing model. The Company was a private company until December 14, 2017 and lacks sufficient company-specific historical and implied volatility information for its stock. Therefore, it estimates its expected stock volatility based on the historical volatility of publicly traded peer companies and expects to continue to do so until such time as it has adequate historical data regarding the volatility of its own traded stock price. The expected term of the Company's stock options has been determined utilizing the "simplified" method for awards that qualify as "plain-vanilla" options. The expected term of stock options granted to non-employees is equal to the contractual term of the option award. The risk-free interest rate is determined by reference to the U.S. Treasury yield curve in effect at the time of grant of the award for time periods approximately equal to the expected term of the award. Expected dividend yield is based on the fact that the Company does not have a history of declaring or paying cash dividends, except for the special cash dividends declared in November 2014, June 2016, December 2016, May 2017 and November 2017 and in those circumstances the board of directors approved cash dividends to be paid to holders of the Company's stock options, stock appreciation rights ("SARs") and restricted stock units ("RSUs") upon vesting as an equitable adjustment to the holders of such instruments.

The Company has also granted SARs to certain employees, which require the Company to pay in cash upon exercise an amount equal to the product of the excess of the per share fair market value of the Company's common stock on the date of exercise over the exercise price, multiplied by the number of shares of common stock with respect to which the stock appreciation right is exercised. Because these awards may require the Company to settle the awards in cash, they are accounted for as a liability in the Company's consolidated balance sheets. The liability related to these awards, as well as related compensation expense, is recognized over the period during which services are rendered until completed. Changes in

the fair value of the SAR liability are estimated using the Black-Scholes option pricing model and are recorded in the consolidated statements of operations and comprehensive income. After vesting is completed, the Company will continue to remeasure the fair market value of the liability until the award is either exercised or canceled, with changes in the fair value of the liability recorded in the consolidated statements of operations and comprehensive income.

### ***Research and Development Costs***

The Company expenses research and development costs as incurred. Costs incurred to develop software to be licensed to customers are expensed prior to the establishment of technological feasibility of the software and are capitalized thereafter until commercial release of the software. The Company has not historically capitalized software development costs as the establishment of technological feasibility typically occurs shortly before the commercial release of its software, which is embedded in its products. As such, all software development costs related to software for license to customers are expensed as incurred and included within research and development expense in the accompanying consolidated statements of operations and comprehensive income.

### ***Advertising Costs***

Advertising costs are expensed as incurred and are included in selling and marketing expense in the accompanying consolidated statements of operations and comprehensive income. Advertising expenses were not significant for any periods presented.

### ***Foreign Currency Translation***

For the Company's subsidiary in Ireland, the U.S. dollar is the functional currency. For each of the Company's other foreign subsidiaries, the functional currency is its local currency. Assets and liabilities of these foreign subsidiaries are translated into U.S. dollars using period-end exchange rates, and revenues and expenses are translated into U.S. dollars using average exchange rates in effect during each period. The effects of these foreign currency translation adjustments are included in accumulated other comprehensive income, a separate component of stockholders' equity (deficit).

Foreign currency transaction gains (losses) are included in the consolidated statements of operations and comprehensive income as a component of other income (expense) and totaled \$886, \$(328) and \$(3,020) for the years ended December 31, 2017, 2016 and 2015, respectively.

### ***Fair Value Measurements***

Certain assets and liabilities are carried at fair value under GAAP. Fair value is defined as the price that would be received for an asset or the exit price that would be paid to transfer a liability in the principal or most advantageous market in an orderly transaction between market participants on the measurement date. Valuation techniques used to measure fair value must maximize the use of observable inputs and minimize the use of unobservable inputs. Financial assets and liabilities carried at fair value are to be classified and disclosed in one of the following three levels of the fair value hierarchy, of which the first two are considered observable and the last is considered unobservable:

- Level 1*— Quoted prices in active markets for identical assets and liabilities.
- Level 2*— Observable inputs (other than Level 1 quoted prices), such as quoted prices in active markets for similar assets or liabilities at the measurement date; quoted prices in markets that are not active for identical or similar assets and liabilities; or other inputs that are observable or can be corroborated by observable market data.
- Level 3*— Unobservable inputs that involve management judgment and are supported by little or no market activity, including pricing models, discounted cash flow methodologies and similar techniques.

The categorization of a financial instrument within the valuation hierarchy is based on the lowest level of input that is significant to the fair value measurement.

The Company's cash equivalents, marketable securities, foreign currency forward contracts and SARs are carried at fair value, determined according to the fair value hierarchy described above (see Note 6). The fair values of accounts receivable, accounts payable and accrued expenses and other current liabilities approximate their fair values due to the short-term nature of these assets and liabilities, with the exception of amounts recorded by the Company as "accounts receivable, non-current," which represent amounts billed to customers for which payment has not yet become due and for which an



offsetting amount of deferred revenue has been recorded. The carrying values of the Company's debt obligations (see Note 9) as of December 31, 2017 and 2016 approximated their fair values because the debt bears interest at rates the Company would be required to pay on the issuance of debt with similar terms, based on an analysis of recent market conditions and other Company-specific factors.

### ***Income Taxes***

The Company accounts for income taxes using the asset and liability method, which requires the recognition of deferred tax assets and liabilities for the expected future tax consequences of temporary differences between the financial statement and tax basis of assets and liabilities, as measured by enacted tax rates anticipated to be in effect when these differences reverse. This method also requires the recognition of future tax benefits to the extent that realization of such benefits is more likely than not. Deferred tax expense or benefit is the result of changes in the deferred tax assets and liabilities. The Company assesses the likelihood that its deferred tax assets will be recovered from future taxable income and, to the extent it believes, based upon the weight of available evidence, that it is more likely than not that all or a portion of the deferred tax assets will not be realized, a valuation allowance is established through a charge to income tax expense. Potential for recovery of deferred tax assets is evaluated by estimating the future taxable profits expected and considering prudent and feasible tax planning strategies.

The Company records a liability for potential payments of taxes to various tax authorities related to uncertain tax positions and other tax matters. The recorded liability is based on a determination of whether and how much of a tax benefit taken by the Company in its tax filings or positions is "more likely than not" to be realized. The amount of the benefit that may be recognized in the financial statements is the largest amount that has a greater than 50% likelihood of being realized upon ultimate settlement. To the extent that the assessment of such tax positions changes, the change in estimate is recorded in the period in which the determination is made. The Company establishes a liability, which is included in accrued income taxes in the consolidated balance sheets, for tax-related uncertainties based on estimates of whether, and the extent to which, additional taxes will be due. These liabilities are established when the Company believes that certain positions might be challenged despite the Company's belief that the tax return positions are fully supportable. The recorded liability is adjusted in light of changing facts and circumstances. The provision for income taxes includes the impact of the recorded liability and changes thereto.

The Company recognizes interest and penalties related to uncertain tax positions within other income (expense) in the accompanying consolidated statements of operations and comprehensive income. Accrued interest and penalties are included in accrued income taxes in the consolidated balance sheets.

On December 22, 2017, the Tax Cuts and Jobs Act (the "TCJA") was enacted which, among other things, lowered the U.S. corporate income tax rate to 21% from 35% and established a modified territorial system requiring a mandatory deemed repatriation tax on undistributed earnings of foreign subsidiaries. Beginning in 2018, the TCJA also requires a minimum tax on certain future earnings generated by foreign subsidiaries while providing for future tax-free repatriation of such earnings through a 100% dividends-received deduction. While the reduction in the U.S. corporate tax rate under the TCJA is not effective until 2018, under GAAP, changes in tax rates are accounted for in the period enacted. Therefore, in accordance with ASC Topic 740, *Income Taxes*, and Staff Accounting Bulletin 118 ("SAB 118"), the Company recognized a provisional income tax charge in the fourth quarter of 2017 of \$14,098 related to the TCJA based on its initial analysis using available information and estimates. The provisional charge is comprised of \$10,031 related to the one-time deemed repatriation of accumulated earnings of foreign subsidiaries and related withholding taxes and \$4,067 related primarily to the remeasurement of net deferred tax assets as a result of the reduction in the U.S. corporate income tax rate effected by the TCJA. As a result, applicable U.S. and foreign taxes have been provided on substantially all of the Company's accumulated earnings of foreign subsidiaries previously considered indefinitely reinvested. Given the significant complexity of the TCJA, anticipated guidance from the U.S. Treasury Department about implementing the TCJA and the potential for additional guidance from the Securities and Exchange Commission ("SEC") or the Financial Accounting Standards Board ("FASB") related to the TCJA or additional information becoming available, the Company's provisional income tax charge may be adjusted during 2018 and is expected to be finalized no later than the fourth quarter of 2018. Other provisions of the TCJA that impact future tax years are still being assessed.

### ***Comprehensive Income***

Comprehensive income includes net income as well as other changes in stockholders' equity (deficit) that result from transactions and economic events other than those with stockholders. Comprehensive income for the periods presented consists of net income and the change in the cumulative foreign currency translation adjustment.

### ***Net Income (Loss) per Share***

The Company follows the two-class method when computing net income (loss) per share as the Company has issued shares that meet the definition of participating securities. The two-class method determines net income (loss) per share for each class of common and participating securities according to dividends declared or accumulated and participation rights in undistributed earnings. The two-class method requires income available to common stockholders for the period to be allocated between common and participating securities based upon their respective rights to receive dividends as if all income for the period had been distributed.

Basic net income (loss) per share attributable to common stockholders is computed by dividing the net income (loss) attributable to common stockholders by the weighted-average number of shares of common stock outstanding for the period. Diluted net income (loss) attributable to common stockholders is computed by adjusting net income (loss) attributable to common stockholders to reallocate undistributed earnings based on the potential impact of dilutive securities. Diluted net income (loss) per share attributable to common stockholders is computed by dividing the diluted net income (loss) attributable to common stockholders by the weighted-average number of shares of common stock outstanding for the period, including potential dilutive common shares. For purpose of this calculation, outstanding stock-based awards and convertible preferred stock are considered potential dilutive common shares.

### ***Impact of Recently Adopted Accounting Standards***

In July 2015, the FASB issued Accounting Standards Update (“ASU”) 2015-11, *Simplifying the Measurement of Inventory* (“ASU 2015-11”). Under ASU 2015-11, subsequent measurement of inventory is based on the lower of cost or net realizable value. Net realizable value is estimated selling price in the ordinary course of business, less the estimated cost of completion and disposal. This update does not apply to inventory that is measured using last-in, first-out or the retail inventory method. The new guidance is effective for fiscal years beginning after December 15, 2016. The Company adopted ASU 2015-11 during the first quarter of 2017, and there was no material impact on its consolidated financial statements.

### ***Impact of Recently Issued Accounting Standards***

In May 2014, the FASB issued ASU 2014-09, *Revenue from Contracts with Customers (Topic 606)* (“ASU 2014-09”), which supersedes existing revenue recognition guidance under GAAP. The core principle of this standard is that an entity should recognize revenue to depict the transfer of promised goods or services to customers in an amount that reflects the consideration to which the entity expects to be entitled in exchange for those goods or services. In August 2015, the FASB issued ASU 2015-14, *Revenue from Contracts with Customers (Topic 606): Deferral of the Effective Date*, which delays the effective date of ASU 2014-09 such that the standard is effective for public companies for annual periods beginning after December 15, 2017 and for interim periods within those fiscal years. The standard is effective for private companies, and emerging growth companies that choose to take advantage of the extended transition periods, for annual reporting periods beginning after December 15, 2018. Entities are not permitted to adopt the standard earlier than the original effective date for public entities. This standard can be adopted either retrospectively to each prior reporting period presented or as a cumulative effect adjustment as of the date of adoption. In March 2016, the FASB issued ASU No. 2016-08, *Revenue from Contracts with Customers (Topic 606): Principal versus Agent Considerations* (“ASU 2016-08”), which further clarifies the implementation guidance on principal versus agent considerations in ASU 2014-09. In April 2016, the FASB issued ASU No. 2016-10, *Revenue from Contracts with Customers (Topic 606): Identifying Performance Obligations and Licensing* (“ASU 2016-10”), clarifying the implementation guidance on identifying performance obligations and licensing. In May 2016, the FASB issued ASU No. 2016-12, *Revenue from Contracts with Customers (Topic 606): Narrow-Scope Improvements and Practical Expedients* (“ASU 2016-12”), which clarifies the objective of the collectibility criterion, presentation of taxes collected from customers, non-cash consideration, contract modifications at transition, completed contracts at transition and how guidance in ASU 2014-09 is retrospectively applied. ASU 2016-08, ASU 2016-10 and ASU 2016-12 have the same effective dates and transition requirements as ASU 2014-09. The Company continues to assess the potential impact that the adoption of ASU 2014-09, ASU 2016-08, ASU 2016-10 and ASU 2016-12 will have on its consolidated financial statements. Based on its assessment to date, the Company does expect that the adoption of this new accounting standard will impact the timing and amount of assets, liabilities, revenue and/or expenses recorded and the financial statement disclosures related to the Company’s revenue from contracts with its customers. For example, the treatment of extended payment terms, contingent revenue elements, commissions and costs to obtain customer contracts may change under the new accounting standard. The Company is continuing to assess the impact of this new accounting standard and the expected adoption method. This assessment is subject to change, and the Company may identify other impacts on its consolidated financial statements.

In February 2016, the FASB issued ASU 2016-02, *Leases* (“ASU 2016-02”), which will require lessees to recognize most leases on their balance sheets as a right-of-use asset with a corresponding lease liability, and lessors to recognize a net lease investment. Additional qualitative and quantitative disclosures will also be required. The new guidance is effective for public companies for annual reporting periods beginning after December 15, 2018 and for interim periods within those fiscal years. The new guidance is effective for private companies, and emerging growth companies that choose to take advantage of the extended transition periods, for annual reporting periods beginning after December 15, 2019, and interim periods within fiscal years beginning after December 15, 2020. Early application is permitted. The Company is currently assessing the potential impact that the adoption of ASU 2016-02 will have on its consolidated financial statements.

In June 2016, the FASB issued ASU 2016-13, *Measurement of Credit Losses on Financial Instruments* (“ASU 2016-13”). This guidance requires that financial assets measured at amortized cost be presented at the net amount expected to be collected. The measurement of expected credit losses is based on historical experience, current conditions and reasonable and supportable forecasts that affect the collectibility. This guidance is effective for public companies for annual reporting periods beginning after December 15, 2019 and for interim periods within those fiscal years. This guidance is effective for private companies, and emerging growth companies that choose to take advantage of the extended transition periods, for annual reporting periods beginning after December 15, 2020, and interim periods within fiscal years beginning after December 15, 2021. The Company is currently assessing the potential impact that the adoption of ASU 2016-13 will have on its consolidated financial statements.

In August 2016, the FASB issued ASU 2016-15, *Statement of Cash Flows: Classification of Certain Cash Receipts and Cash Payments* (“ASU 2016-15”), to address diversity in practice in how certain cash receipts and cash payments are presented and classified in the statement of cash flows. The standard is effective for public companies for annual periods beginning after December 15, 2017, including interim periods within those fiscal years. The standard is effective for private companies, and emerging growth companies that choose to take advantage of the extended transition periods, for annual periods beginning after December 15, 2018, and interim periods within fiscal years beginning after December 15, 2019. The Company is currently assessing the potential impact that the adoption of ASU 2016-15 will have on its consolidated financial statements.

In October 2016, the FASB issued ASU 2016-16, *Income Taxes (Topic 740): Intra-Entity Transfer of Assets Other than Inventory* (“ASU 2016-16”), which requires the recognition of the income tax consequences of an intra-entity transfer of an asset, other than inventory, when the transfer occurs. The standard is effective for public companies for annual periods beginning after December 15, 2017, including interim periods within those fiscal years. The standard is effective for private companies, and emerging growth companies that choose to take advantage of the extended transition periods, for annual periods beginning after December 15, 2018, and interim reporting periods within annual periods beginning after December 15, 2019. The Company is currently assessing the potential impact that the adoption of ASU 2016-16 will have on its consolidated financial statements.

In August 2017, the FASB issued ASU 2017-12, *Derivatives and Hedging—Targeted Improvements to Accounting for Hedging Activities* (“ASU 2017-12”), which aims to improve the financial reporting of hedging relationships to better portray the economic results of an entity’s risk management activities in its financial statements. The standard is effective for public companies for annual periods beginning after December 15, 2018, including interim periods within those fiscal years. The standard is effective for private companies, and emerging growth companies that choose to take advantage of the extended transition periods, for annual periods beginning after December 15, 2019, and interim reporting periods within annual periods beginning after December 15, 2020. The Company is currently assessing the potential impact that the adoption of ASU 2017-12 will have on its consolidated financial statements.

### 3. Inventory

Inventory as of December 31, 2017 and 2016 consisted of the following:

	December 31,	
	2017	2016
Raw materials	\$ 5,135	\$ 5,037
Work in process	7	103
Finished goods:		
Manufactured finished goods	36,321	60,866
Deferred inventory costs	3,344	4,488
	44,807	70,494
Valuation adjustment for excess and obsolete inventory	(8,659)	(4,519)
	<u>\$ 36,148</u>	<u>\$ 65,975</u>

### 4. Property and Equipment

Property and equipment as of December 31, 2017 and 2016 consisted of the following:

	December 31,	
	2017	2016
Computers and purchased software	\$ 12,343	\$ 9,246
Leasehold improvements	1,268	1,044
Furniture and fixtures	1,752	1,516
Machinery and equipment	17,911	11,494
Land	3,091	3,091
Building	4,765	4,765
Building improvements	4,906	4,724
Trial systems at customers' sites	7,458	6,581
	53,494	42,461
Less: Accumulated depreciation and amortization	(24,131)	(16,779)
	<u>\$ 29,363</u>	<u>\$ 25,682</u>

During the years ended December 31, 2017, 2016 and 2015, the Company transferred trial systems from inventory into property and equipment with values of \$877, \$706 and \$1,545, respectively, net of transfers of trial systems to cost of revenue. In addition, the Company transferred \$2,566, \$1,082 and \$806 of equipment from inventory into property and equipment during the years ended December 31, 2017, 2016 and 2015, respectively.

Total depreciation and amortization expense was \$7,738, \$6,008 and \$5,149 for the years ended December 31, 2017, 2016 and 2015, respectively.

### 5. Accrued Expenses and Other Current Liabilities

Accrued expenses and other current liabilities as of December 31, 2017 and 2016 consisted of the following:

	December 31,	
	2017	2016
Accrued compensation and related taxes	\$ 22,465	\$ 18,475
Accrued warranty (see Note 2)	1,246	1,256
Dividends and equitable adjustments payable (see Note 10)	10,661	107,509
Accrued customer incentives (see Note 2)	8,437	15,449
Other accrued expenses	5,441	6,495
	<u>\$ 48,250</u>	<u>\$ 149,184</u>

## 6. Fair Value Measurements

The Company's cash equivalents include certificates of deposit and money market mutual funds, which are valued using Level 1 or Level 2 inputs in the fair value hierarchy. The Company's marketable securities consist of certificates of deposit, which are valued using Level 2 inputs in the fair value hierarchy. The Company's foreign currency forward contracts are valued using Level 2 inputs in the fair value hierarchy. The Company's SARs are valued using as Level 3 inputs in the fair value hierarchy based on management's judgment and the assumptions set forth in Note 12 as there is no market activity to derive an estimate of their fair value. Changes in the fair value of SARs are recorded in operating expenses in the consolidated statements of operations and comprehensive income.

The following tables present information about the fair value of the Company's financial assets and liabilities as of December 31, 2017 and 2016 and indicate the level of the fair value hierarchy utilized to determine such fair values:

	Fair Value Measurements as of December 31, 2017 Using:			
	Level 1	Level 2	Level 3	Total
<b>Assets:</b>				
Certificates of deposit	\$ —	\$ 18,905	\$ —	\$ 18,905
Commercial paper	—	11,483	—	11,483
Money market mutual funds	224,555	—	—	224,555
	<u>\$ 224,555</u>	<u>\$ 30,388</u>	<u>\$ —</u>	<u>\$ 254,943</u>
<b>Liabilities:</b>				
SARs	\$ —	\$ —	\$ 2,155	\$ 2,155
Foreign currency forward contracts	—	150	—	150
	<u>\$ —</u>	<u>\$ 150</u>	<u>\$ 2,155</u>	<u>\$ 2,305</u>

	Fair Value Measurements as of December 31, 2016 Using:			
	Level 1	Level 2	Level 3	Total
<b>Assets:</b>				
Certificates of deposit	\$ —	\$ 17,558	\$ —	\$ 17,558
Money market mutual funds	321,088	—	—	321,088
Foreign currency forward contracts	—	60	—	60
	<u>\$ 321,088</u>	<u>\$ 17,618</u>	<u>\$ —</u>	<u>\$ 338,706</u>
<b>Liabilities:</b>				
SARs	\$ —	\$ —	\$ 1,195	\$ 1,195
Foreign currency forward contracts	—	56	—	56
	<u>\$ —</u>	<u>\$ 56</u>	<u>\$ 1,195</u>	<u>\$ 1,251</u>

During the years ended December 31, 2017, 2016 and 2015 there were no transfers between Level 1, Level 2 and Level 3.

The liability for SARs in the table above consists of the fair value of the SARs granted to the Company's employees. The fair values of the SARs are based on significant inputs not observable in the market, which represents a Level 3 measurement within the fair value hierarchy. The Company's valuation of these SARs utilized the Black-Scholes option-pricing model, which incorporates assumptions and estimates to determine their fair values (see Note 12). The Company assesses these assumptions and estimates on a quarterly basis as additional information impacting the assumptions is obtained. Changes in the fair value of the SARs liability are recognized as stock-based compensation expense in the consolidated statements of operations and comprehensive income.

The following table provides a summary of changes in the fair values of the Company's SARs liability, for which fair value is determined by Level 3 inputs:

	Year Ended December 31,		
	2017	2016	2015
Fair value at beginning of the year	\$ 1,195	\$ 737	\$ 271
Change in fair value	960	458	466
Exercises	—	—	—
Fair value at end of year	<u>\$ 2,155</u>	<u>\$ 1,195</u>	<u>\$ 737</u>

The Company's cash and cash equivalents as of December 31, 2017 and 2016 consisted of the following:

	December 31,	
	2017	2016
Cash	\$ 5,877	\$ 5,300
Cash equivalents:		
Certificates of deposit	18,905	3,166
Commercial paper	11,483	—
Money market mutual funds	224,555	321,088
Total cash equivalents	254,943	324,254
Total cash and cash equivalents	<u>\$ 260,820</u>	<u>\$ 329,554</u>

The Company's marketable securities as of December 31, 2016 consisted of certificates of deposit of \$14,392.

## 7. Derivative Instruments

The Company has certain international customers that are billed in foreign currencies. To mitigate the volatility related to fluctuations in the foreign exchange rates for accounts receivable denominated in foreign currencies, the Company enters into foreign currency forward contracts. As of December 31, 2017, the Company had foreign currency forward contracts outstanding with notional amounts totaling 5,924 euros maturing in the first and second quarter of 2018. As of December 31, 2016, the Company had foreign currency forward contracts outstanding with notional amounts totaling 11,171 euros which matured in the first and second quarter of 2017.

The Company's foreign currency forward contracts economically hedge certain risk but are not designated as hedges for financial reporting purposes, and accordingly, all changes in the fair value of these derivative instruments are recorded as unrealized foreign currency transaction gains or losses and are included in the consolidated statements of operations and comprehensive income as a component of other income (expense). The Company records all derivative instruments in the consolidated balance sheet at their fair values. As of December 31, 2016, the Company recorded an asset of \$60 and as of December 31, 2017 and 2016, the Company recorded a liability of \$150 and \$56, respectively, related to outstanding foreign currency forward contracts, which were included in prepaid expenses and other current assets and in accrued expenses and other current liabilities, respectively, in the consolidated balance sheets.

## 8. Income Taxes

Income before the provision for income taxes for the years ended December 31, 2017, 2016 and 2015 consisted of the following:

	Year Ended December 31,		
	2017	2016	2015
United States	\$ 77,410	\$ 106,386	\$ 99,972
Foreign	45,408	9,307	1,691
	<u>\$ 122,818</u>	<u>\$ 115,693</u>	<u>\$ 101,663</u>

The provision for income taxes for the years ended December 31, 2017, 2016 and 2015 consisted of the following:

	Year Ended December 31,		
	2017	2016	2015
Current income tax provision:			
Federal	\$ 17,498	\$ 30,876	\$ 34,124
State	589	1,775	924
Foreign	4,809	1,234	331
Total current income tax provision	<u>22,896</u>	<u>33,885</u>	<u>35,379</u>
Deferred income tax provision (benefit):			
Federal	12,468	(5,802)	(2,260)
State	(1,024)	(979)	346
Foreign	(22)	(79)	277
Total deferred income tax provision (benefit)	<u>11,422</u>	<u>(6,860)</u>	<u>(1,637)</u>
Total income tax provision	<u>\$ 34,318</u>	<u>\$ 27,025</u>	<u>\$ 33,742</u>

A reconciliation of the U.S. federal statutory rate to the Company's effective income tax rate for the years ended December 31, 2017, 2016 and 2015 is as follows:

	Year Ended December 31,		
	2017	2016	2015
Federal statutory income tax rate	35.0%	35.0%	35.0%
State taxes, net of federal tax benefit	0.6	1.2	0.7
Research and development tax credits	(3.5)	(2.1)	(1.6)
Permanent differences	0.5	1.1	1.6
Domestic manufacturing deduction	(0.9)	(2.0)	(3.2)
Foreign tax rate differential	(7.0)	(2.0)	0.6
Equitable adjustment payments	(6.0)	(7.0)	—
Excess tax benefit from stock-based transactions	(1.6)	(1.2)	—
Impact of deferred tax rate decrease under TCJA	3.3	—	—
TCJA one-time deemed repatriation of accumulated earnings of foreign subsidiaries	7.1	—	—
Withholding tax on repatriation of accumulated earnings of foreign subsidiaries	1.1	—	—
Other, net	(0.7)	0.4	0.1
Effective income tax rate	<u>27.9%</u>	<u>23.4%</u>	<u>33.2%</u>

The income tax effect of each type of temporary difference and carryforward as of December 31, 2017 and 2016 was as follows:

	December 31,	
	2017	2016
<b>Deferred tax assets:</b>		
Nonqualified stock options	\$ 2,336	\$ 3,183
Tax credit carryforwards	3,737	1,099
Inventory valuation	2,190	1,750
Accrued liabilities and reserves	589	5,690
Deferred revenue	5,538	12,805
Other	286	515
Total deferred tax assets	14,676	25,042
<b>Deferred tax liabilities:</b>		
Depreciation and amortization	(2,089)	(2,328)
Deferred costs	(225)	(804)
Accrued liabilities and reserves	(2,598)	(647)
Deferred revenue	(46)	(116)
Other	—	(7)
Total deferred tax liabilities	(4,958)	(3,902)
Net deferred tax assets	\$ 9,718	\$ 21,140

The Company has concluded that net deferred tax assets will be recovered based upon its expectation that current and future earnings will provide sufficient taxable income to realize the recorded net tax assets. However, the realization of the Company's net deferred tax assets cannot be assured, and to the extent that future taxable income against which these tax assets may be applied is not sufficient, some or all of the Company's recorded net deferred tax assets would not be realizable. The Company is required to compute income tax expense in each jurisdiction in which it operates. This process requires the Company to project its current tax liability and estimate its deferred tax assets and liabilities, including tax credit carryforwards. In assessing the need for a valuation allowance against its net deferred tax assets, the Company considers its recent operating results, future taxable income projections and feasible tax planning strategies.

On December 22, 2017, the TCJA was enacted which, among other things, lowered the U.S. corporate income tax rate to 21% from 35% and established a modified territorial system requiring a mandatory deemed repatriation tax on undistributed earnings of foreign subsidiaries. Beginning in 2018, the TCJA also requires a minimum tax on certain future earnings generated by foreign subsidiaries while providing for future tax-free repatriation of such earnings through a 100% dividends-received deduction. While the reduction in the U.S. corporate tax rate under the TCJA is not effective until 2018, under GAAP, changes in tax rates are accounted for in the period enacted. Therefore, in accordance with ASC Topic 740, *Income Taxes*, and SAB 118, the Company recognized a provisional charge in the fourth quarter of 2017 of \$14,098 related to the TCJA based on its initial analysis using available information and estimates. The provisional charge is comprised of \$10,031 related to the one-time deemed repatriation of accumulated earnings of foreign subsidiaries and related withholding taxes and \$4,067 related primarily to the remeasurement of net deferred tax assets as a result of the reduction in the U.S. corporate income tax rate effected by the TCJA. As a result, applicable U.S. and foreign taxes have been provided on substantially all of the Company's accumulated earnings of foreign subsidiaries previously considered indefinitely reinvested. Given the significant complexity of the TCJA, anticipated guidance from the U.S. Treasury Department about implementing the TCJA and the potential for additional guidance from the SEC or the FASB related to the TCJA or additional information becoming available, the Company's provisional charge may be adjusted during 2018 and is expected to be finalized no later than the fourth quarter of 2018. Other provisions of the TCJA that impact future tax years are still being assessed.

As of December 31, 2017, the Company had state research and development tax credits of \$3,340 that will begin to expire in 2030 through 2032. Management believes that it is more likely than not that the research and development tax benefit will be realized and thus has not provided a valuation allowance relating to these tax credit carryforwards.

Prior to 2017, the Company's intent was to indefinitely reinvest the total amount of the unremitted earnings of each of its foreign subsidiaries to support business growth in international regions. As such, the Company had not provided for U.S. taxes on the unremitted earnings of its international subsidiaries, which totaled approximately \$27,850 as of December 31, 2016. Under the TCJA, the Company is required to provide U.S. taxes on cumulative unremitted earnings from its foreign subsidiaries. The Company has estimated a U.S. tax liability on these earnings and the associated withholding taxes of



\$10,031 as of December 31, 2017. The Company is still evaluating whether to change its indefinite reinvestment assertion in light of the 2017 Tax Act and consider that conclusion to be incomplete under guidance issued by the SEC. If the Company subsequently changes our assertion during the measurement period, such changes will be accounted for through an adjustment to the provisional income tax charge during 2018 which is expected to be finalized no later than the fourth quarter of 2018.

Interest and penalties related to uncertain tax positions are recorded in the consolidated statements of operations and comprehensive income within other income (expense) and totaled \$14, \$14 and \$20 for the years ended December 31, 2017, 2016 and 2015, respectively. The liability recorded for potential penalties and interest was \$158 and \$145 as of December 31, 2017 and 2016, respectively. The Company had a total recorded liability of \$1,142 and \$463 related to uncertain tax positions, inclusive of penalties and interest, as of December 31, 2017 and 2016, respectively, which is included in accrued income taxes, net of current portion in the consolidated balance sheets.

The aggregate changes in the balance of gross uncertain tax positions, which excludes interest and penalties, for the years ended December 31, 2017, 2016 and 2015 were as follows:

Balance at January 1, 2015	\$	318
Settlement/decreases related to tax positions taken during prior years		—
Increases related to tax positions taken during prior years		—
Increases related to tax positions taken during the current year		—
Balance at December 31, 2015		318
Settlement/decreases related to tax positions taken during prior years		—
Increases related to tax positions taken during prior years		—
Increases related to tax positions taken during the current year		—
Balance at December 31, 2016		318
Settlement/decreases related to tax positions taken during prior years		—
Increases related to tax positions taken during prior years		—
Increases related to tax positions taken during the current year		1,377
Balance at December 31, 2017	\$	<u>1,695</u>

The Company and its subsidiaries file income tax returns in the U.S. federal jurisdiction as well as various states and foreign jurisdictions. As of December 31, 2017, the tax years 2014 through 2017 remained open to examination in the U.S. federal jurisdiction and the tax years 2013 through 2017 remained open to examination in the Massachusetts state and China federal jurisdictions. If any issues addressed in the Company's tax audits are resolved in a manner not consistent with management's expectations, the Company would be required to adjust its provision for income tax in the period such resolution occurs. Although timing of the resolution and/or closure of audits is highly uncertain, the Company does not believe it is reasonably possible that its unrecognized tax benefits will materially change in the next 12 months.

Upon the settlement of certain stock-based awards, such as exercise, vesting, forfeiture or cancellation, the actual tax deduction is compared with the cumulative stock-based compensation expense and any excess tax deduction related to such awards is considered a windfall tax benefit. Windfall tax benefits are tracked within a windfall tax benefit pool to offset any future tax deduction shortfalls. Prior to the Company's adoption of FASB ASU 2016-09, *Improvements to Employee Share-Based Payment Accounting*, as of January 1, 2016, windfall tax benefits were recorded as increases to additional paid-in capital in the period in which the tax deduction reduced income taxes.

## 9. Debt

The aggregate principal amount of debt outstanding as of December 31, 2017 and 2016 consisted of the following:

	December 31,	
	2017	2016
Term loans	\$ 297,000	\$ 300,000
Mortgage loan	7,261	7,553
Total principal amount of debt outstanding	<u>\$ 304,261</u>	<u>\$ 307,553</u>

Current and non-current debt obligations reflected in the consolidated balance sheets as of December 31, 2017 and 2016 consisted of the following:

	December 31,	
	2017	2016
<b>Current liabilities:</b>		
Term loans	\$ 3,000	\$ 3,000
Mortgage loan	303	292
Current portion of principal payment obligations	3,303	3,292
Unamortized debt issuance costs, current portion	(1,147)	(1,159)
Current portion of long-term debt, net of unamortized debt issuance costs	<u>\$ 2,156</u>	<u>\$ 2,133</u>
<b>Non-current liabilities:</b>		
Term loans	\$ 294,000	\$ 297,000
Mortgage loan	6,958	7,261
Non-current portion of principal payment obligations	300,958	304,261
Unamortized debt issuance costs, non-current portion	(5,499)	(6,643)
Long-term debt, net of current portion and unamortized debt issuance costs	<u>\$ 295,459</u>	<u>\$ 297,618</u>

### ***Term Loan and Revolving Credit Facilities***

On December 20, 2016, the Company entered into a credit agreement with JPMorgan Chase Bank, N.A., as administrative agent, various lenders and JPMorgan Chase Bank, N.A. and Barclays Bank PLC providing for (i) a term loan facility of \$300,000 and (ii) a revolving credit facility of up to \$25,000 in revolving credit loans and letters of credit.

As of December 31, 2017 and 2016, \$297,000 and \$300,000 in principal amount, respectively, was outstanding under the term loan facility (the "Term Loans") and the Company did not have any outstanding borrowings under the revolving credit facility; however, the Company had used \$1,000 under the revolving credit facility for a stand-by letter of credit that serves as collateral for a stand-by letter of credit issued by Bank of America to one of the Company's customers pursuant to a contractual performance guarantee. In addition, the Company may, subject to certain conditions, including the consent of the administrative agent and the institutions providing such increases, increase the facilities by an unlimited amount so long as the Company is in compliance with specified leverage ratios, or otherwise by up to \$70,000.

Borrowings under the facilities bear interest at a floating rate, which can be either a Eurodollar rate plus an applicable margin or, at the Company's option, a base rate (defined as the highest of (x) the JPMorgan Chase, N.A. prime rate, (y) the federal funds effective rate, plus one-half percent (0.50%) per annum and (z) a one-month Eurodollar rate plus 1.00% per annum) plus an applicable margin. The applicable margin for borrowings under the term loan facility is 4.00% per annum for Eurodollar rate loans (subject to a 1.00% per annum interest rate floor) and 3.00% per annum for base rate loans. As a result of the completion of the Company's IPO in December 2017, the applicable margin for borrowings under the revolving credit facility is 1.75% per annum for Eurodollar rate loans and 0.75% per annum for base rate loans, subject to reduction based on the Company's maintaining of specified net leverage ratios. The interest rates payable under the facilities are subject to an increase of 2.00% per annum during the continuance of any payment default.

For Eurodollar rate loans, the Company may select interest periods of one, two, three or six months or, with the consent of all relevant affected lenders, twelve months. Interest will be payable at the end of the selected interest period, but no less frequently than every three months within the selected interest period. Interest on any base rate loan is not set for any specified period and is payable quarterly. The Company has the right to convert Eurodollar rate loans into base rate loans and the right to convert base rate loans into Eurodollar rate loans at its option, subject, in the case of Eurodollar rate loans, to prepayment penalties if the conversion is effected prior to the end of the applicable interest period. As of December 31, 2017, the interest rate on the Term Loans was 5.69% per annum, which was based on a three-month Eurodollar rate of 1.69% per annum plus the applicable margin of 4.00% per annum for Eurodollar rate loans. As of December 31, 2016, the interest rate on the Term Loans was 5.00% per annum, which was based on a one-month Eurodollar rate at the applicable floor of 1.00% per annum plus the applicable margin of 4.00% per annum for Eurodollar rate loans.

Upon entering into the term loan facility, the Company incurred debt issuance costs of \$7,811, which were initially recorded as a reduction of the debt liability and are amortized to interest expense using the effective interest method from the

issuance date of the Term Loan until the maturity date. Principal payments of \$3,000 were made under the term loan facility during the year ended December 31, 2017. No principal payments were made during the year ended December 31, 2016. Interest expense, including the amortization of debt issuance costs, totaled \$16,800 and \$538 for the years ended December 31, 2017 and 2016, respectively.

The revolving credit facility also requires payment of quarterly commitment fees at a rate of 0.25% per annum on the difference between committed amounts and amounts actually borrowed under the facility and customary letter of credit fees. For the years ended December 31, 2017 and 2016, interest expense related to the fee for the unused amount of the revolving credit facility totaled \$61 and \$2, respectively.

The Term Loans mature on December 20, 2023, and the revolving credit facility matures on December 20, 2021. The Term Loans are subject to amortization in equal quarterly installments, commencing on March 31, 2017, of principal in an annual aggregate amount equal to 1.0% of the original principal amount of the Term Loans of \$300,000, with the remaining outstanding balance payable at the date of maturity.

Voluntary prepayments of principal amounts outstanding under the term loan facility are permitted at any time; however, if a prepayment of principal is made with respect to a Eurodollar loan on a date other than the last day of the applicable interest period, the Company is required to compensate the lenders for any funding losses and expenses incurred as a result of the prepayment. Prior to the revolving credit facility maturity date, funds borrowed under the revolving credit facility may be borrowed, repaid and reborrowed, without premium or penalty.

In addition, the Company is required to make mandatory prepayments under the facilities with respect to (i) 100% of the net cash proceeds from certain asset dispositions (including casualty and condemnation events) by the Company or certain of its subsidiaries, subject to certain exceptions and reinvestment provisions, (ii) 100% of the net cash proceeds from the issuance or incurrence of any additional debt by the Company or certain of its subsidiaries, subject to certain exceptions, and (iii) 50% of the Company's excess cash flow, as defined in the credit agreement, subject to reduction upon its achievement of specified performance targets.

The facilities are secured by, among other things, a first priority security interest, subject to permitted liens, in substantially all of the Company's assets and all of the assets of certain of its subsidiaries and a pledge of certain of the stock of certain of its subsidiaries, in each case subject to specified exceptions. The facilities contain customary affirmative and negative covenants, including certain restrictions on the Company's ability to pay dividends, and, with respect to the revolving credit facility, a financial covenant requiring the Company to maintain a specified total net leverage ratio in the event that on the last day of any fiscal quarter the Company has utilized more than 30% of its borrowing capacity under the facility. As of December 31, 2017 and 2016, the Company had not utilized more than 30% of its borrowing capacity under the revolving credit facility and compliance with the financial covenant was not applicable.

#### ***Commercial Mortgage Loan***

On July 1, 2015, the Company entered into a commercial mortgage loan agreement in the amount of \$7,950 (the "Mortgage Loan"). Borrowings under the Mortgage Loan bear interest at a rate of 3.5% per annum and are repayable in 60 monthly installments of \$46, consisting of principal and interest based on a 20-year amortization schedule. The remaining amount of unpaid principal under the Mortgage Loan is due on the maturity date of July 1, 2020. Upon entering into the Mortgage Loan, the Company incurred debt issuance costs of \$45, which was initially recorded as a direct deduction from the debt liability and are amortized to interest expense using the effective interest method from issuance date of the loan until the maturity date.

The Company made principal payments under the Mortgage Loan of \$292, \$282 and \$115 during the years ended December 31, 2017, 2016 and 2015, respectively. Interest expense, including the amortization of debt issuance costs, totaled \$272, \$283 and \$145 for the years ended December 31, 2017, 2016 and 2015, respectively.

The Mortgage Loan is secured by the land and building purchased in March 2015 and subjects the Company to various affirmative, negative and financial covenants, including maintenance of a minimum debt service ratio. The Company was in compliance with all covenants of the Mortgage Loan as of December 31, 2017 and 2016.

As of December 31, 2017, aggregate minimum future principal payments of the Company's debt are summarized as follows:

**Year Ending December 31,**

2018	\$	3,303
2019		3,314
2020		9,644
2021		3,000
2022		3,000
Thereafter		282,000
	<b>\$</b>	<b>304,261</b>

**10. Convertible Preferred Stock**

Upon the closing of the Company's initial public offering ("IPO") on December 19, 2017, all shares of the Company's then-outstanding preferred stock automatically converted on a ten-for-one basis into an aggregate of 40,382 shares of the Company's common stock. Convertible preferred stock outstanding as of December 31, 2016 consisted of the following (in thousands):

	December 31, 2016				
	Preferred Shares Designated	Preferred Shares Issued and Outstanding	Carrying Value	Liquidation Preference	Common Stock Issuable Upon Conversion
Series A convertible preferred stock	1,291	—	\$ —	\$ —	—
Series B convertible preferred stock	352	179	1,542	2,326	1,790
Series C convertible preferred stock	3,859	3,859	95,937	135,134	38,592
	<u>5,502</u>	<u>4,038</u>	<u>\$ 97,479</u>	<u>\$ 137,460</u>	<u>40,382</u>

Prior to the closing of the IPO, changes in the liquidation preference of the preferred stock resulted from the accrual of cumulative dividends. During the year ended December 31, 2017, the Company accrued an additional \$5,674 of liquidation preference on the preferred stock. Upon conversion of the preferred stock on December 19, 2017, the Company reclassified \$97,439 from temporary equity to additional paid-in capital and \$40 from temporary equity to common stock.

**Preferred Stock**

Upon the closing of the IPO on December 19, 2017, the Company filed a restated certificate of incorporation, which authorized the issuance of preferred stock with rights and preferences, including voting rights, designated from time to time by the board of directors. As of December 31, 2017, there were 5,000 shares of preferred stock authorized with a par value of \$0.001 per share, and no shares of preferred stock issued or outstanding.

**Special Dividends to Holders of Common and Preferred Stock**

*November 2017 Special Dividend*

On November 30, 2017, the board of directors declared a special dividend to the holders of common stock and preferred stock of record on that date, contingent upon the closing of the Company's IPO. The cash dividend declared to stockholders was \$0.5802 per share of common stock, \$5.8020 per share of Series B convertible preferred stock (the "Series B Preferred Stock") and \$5.8020 per share of Series C convertible preferred stock (the "Series C Preferred Stock"). Related to this special dividend declared in November 2017, the Company paid \$42,137 of dividends to the common and preferred stockholders during the year ended December 31, 2017, and as of December 31, 2017, dividend payments to be made totaled \$865 and were included in accrued expenses and other current liabilities in the accompanying consolidated balance sheet.

In connection with this special dividend declared in November 2017, the board of directors also approved, contingent upon the payment of the November 2017 special dividend, cash payments to be made to holders of the Company's stock options, SARs and RSUs as an equitable adjustment to the holders of such instruments in accordance with the provisions of the Company's equity incentive plans. The equitable adjustment payments to the holders of the stock options, SARs and RSUs are equal to \$0.5802 per share multiplied by the net number of shares subject to outstanding equity awards after applying the treasury stock method. The cash payments to such holders will be made as their equity awards vest through fiscal year 2021. During the year ended December 31, 2017, the Company paid \$5,193 to the holders of such vested equity awards. As of December 31, 2017, equitable adjustment payments to be made as equity awards vest through fiscal year 2021, net of estimated forfeitures, totaled \$1,735 and were included in accrued expenses and other current liabilities in the accompanying consolidated balance sheets.

The cash dividends declared to the holders of common stock, Series B Preferred Stock and Series C Preferred Stock totaled \$19,572, \$1,039 and \$22,391, respectively, and the equitable adjustment to the holders of stock options, SARs and RSUs, net of estimated forfeitures, totaled \$6,928. The \$49,930 aggregate amount of such dividends and equitable adjustments was recorded as a charge to additional paid-in capital during the year ended December 31, 2017.

#### *May 2017 Special Dividend*

On May 10, 2017, the board of directors declared and the stockholders approved a special dividend to the holders of common stock and preferred stock of record on that date. The cash dividend declared to stockholders was \$1.1774 per share of common stock, \$11.7744 per share of Series B Preferred Stock and \$11.7744 per share of Series C Preferred Stock. Related to this special dividend declared in May 2017, the Company paid \$87,133 of dividends to the common and preferred stockholders during the year ended December 31, 2017 and no dividend payments with respect to this special dividend were payable as of December 31, 2017.

In connection with the special dividend declared in May 2017, the board of directors also approved cash payments to be made to holders of the Company's stock options, SARs and RSUs as an equitable adjustment to the holders of such instruments in accordance with the provisions of the Company's equity incentive plans. The equitable adjustment payments to the holders of the stock options, SARs and RSUs are equal to \$1.1774 per share multiplied by the net number of shares subject to outstanding equity awards after applying the treasury stock method. The cash payments to such holders will be made as their equity awards vest through fiscal year 2021. During the year ended December 31, 2017, the Company paid \$10,431 to the holders of such vested equity awards. As of December 31, 2017, equitable adjustment payments to be made as equity awards vest through fiscal year 2021, net of estimated forfeitures, totaled \$2,292 and were included in accrued expenses and other current liabilities in the accompanying consolidated balance sheets.

The cash dividends declared to the holders of common stock, Series B Preferred Stock and Series C Preferred Stock totaled \$39,585, \$2,108 and \$45,440, respectively, and the equitable adjustment to the holders of stock options, SARs and RSUs, net of estimated forfeitures, totaled \$12,723. The \$99,856 aggregate amount of such dividends and equitable adjustments was recorded as a charge to additional paid-in capital (until reduced to zero) and a charge to accumulated deficit during the year ended December 31, 2017.

#### *December 2016 Special Dividend*

On December 21, 2016, the board of directors declared, and on December 29, 2016 the stockholders approved, a special dividend to the holders of common stock and preferred stock of record on December 27, 2016. The cash dividend declared to stockholders was \$2.3306 per share of common stock, \$23.3058 per share of Series B Preferred Stock and \$23.3058 per share of Series C Preferred Stock. Related to this special dividend declared in December 2016, the Company paid \$77,153 and \$94,272 of dividends to the common and preferred stockholders during the years ended December 31, 2017 and 2016, respectively, and, as of December 31, 2016, dividend payments to be made totaled \$77,153 and were included in accrued expenses and other current liabilities in the accompanying consolidated balance sheet. No dividend payments with respect to this special dividend were payable as of December 31, 2017.

In connection with the special dividend declared in December 2016, the board of directors also approved cash payments to be made to holders of the Company's stock options, SARs and RSUs as an equitable adjustment to the holders of such instruments in accordance with the provisions of the Company's equity incentive plans. The equitable adjustment payments to the holders of stock options, SARs and RSUs are equal to \$2.3306 per share multiplied by the net number of shares subject to outstanding equity awards after applying the treasury stock method. The cash payments to such holders will be made as their equity awards vest through fiscal year 2020. During the year ended December 31, 2017, the Company paid

\$23,395 to the holders of such vested equity awards. During the year ended December 31, 2016, no payments were made to the holders of such vested equity awards. As of December 31, 2017 and 2016, equitable adjustment payments to be made as equity awards vest through fiscal year 2020, net of estimated forfeitures, totaled \$4,726 and \$28,121, respectively, and were included in accrued expenses and other current liabilities in the accompanying consolidated balance sheet.

The cash dividends declared to the holders of common stock, Series B Preferred Stock and Series C Preferred Stock totaled \$77,311, \$4,172 and \$89,942, respectively, and the equitable adjustment to the holders of stock options, SARs and RSUs, net of estimated forfeitures, totaled \$28,121. The \$199,546 aggregate amount of such dividends and equitable adjustments was recorded as a charge to retained earnings (until reduced to zero), a charge to additional paid-in capital (until reduced to zero) and a charge to accumulated deficit during the year ended December 31, 2016.

#### *June 2016 Special Dividend*

On June 17, 2016, the board of directors declared and the stockholders approved a special dividend to the holders of common stock and preferred stock of record on that date. The cash dividend declared to stockholders was \$0.5891 per share of common stock, \$5.8910 per share of Series B Preferred Stock, and \$5.8910 per share of Series C Preferred Stock. Related to this special dividend declared in June 2016, the Company paid \$43,148 of dividends to the common and preferred stockholders during the year ended December 31, 2016, and, as of December 31, 2017 and 2016, no dividend payments with respect to this special dividend were payable.

In connection with the special dividend declared in June 2016, the board of directors also approved cash payments to be made to holders of the Company's stock options, SARs and RSUs as an equitable adjustment to the holders of such instruments in accordance with the provisions of the Company's equity incentive plans. The equitable adjustment payments to the holders of stock options, SARs and RSUs are equal to \$0.5891 per share multiplied by the net number of shares subject to outstanding equity awards after applying the treasury stock method. The cash payments to such holders will be made as their equity awards vest through fiscal year 2020. During the years ended December 31, 2017 and 2016, the Company paid \$1,075 and \$4,678, respectively to the holders of such vested equity awards. As of December 31, 2017 and 2016, equitable adjustment payments to be made as equity awards vest through fiscal year 2020, net of estimated forfeitures, totaled \$980 and \$2,055 and were included in accrued expenses and other current liabilities in the accompanying consolidated balance sheet.

The cash dividends declared to the holders of common stock, Series B Preferred Stock and Series C Preferred Stock totaled \$19,359, \$1,054 and \$22,735, respectively, and the equitable adjustment to the holders of stock options, SARs and RSUs, net of estimated forfeitures, totaled \$6,733. The \$49,881 aggregate amount of such dividends and equitable adjustments was recorded as a charge to retained earnings during the year ended December 31, 2016.

#### *November 2014 Special Dividend*

On November 30, 2014, the board of directors declared and the stockholders approved a special dividend to the holders of common stock and preferred stock of record on that date. The cash dividend declared to stockholders was \$0.3835 per share of common stock, \$3.8346 per share of Series B Preferred Stock and \$3.8346 per share of Series C Preferred Stock. Related to this special dividend declared in November 2014, the Company paid \$345 of dividends to the common and preferred stockholders during the year ended December 31, 2015, and no dividend payments with respect to this special dividend were payable as of December 31, 2017 or 2016.

In connection with the special dividend declared in November 2014, the board of directors also approved cash payments to be made to holders of the Company's stock options and SARs as an equitable adjustment to the holders of such instruments in accordance with the provisions of the Company's equity incentive plans. The equitable adjustment payments to the holders of stock options and SARs are equal to \$0.3835 per share multiplied by the net number of shares subject to outstanding equity awards after applying the treasury stock method. The cash payments to the holders of stock options and SARs will be made as equity awards vest through fiscal year 2018. During the years ended December 31, 2017, 2016 and 2015, the Company paid \$117, \$203 and \$367, respectively, to the holders of stock options and SARs for vested equity awards. As of December 31, 2017 and 2016, equitable adjustment payments to be made as equity awards vest through fiscal year 2018, net of estimated forfeitures, totaled \$63 and \$180, respectively, and were included in accrued expenses and other current liabilities in the accompanying consolidated balance sheets.

## **11. Common Stock**

Upon the closing of the IPO on December 19, 2017, the Company filed a restated certificate of incorporation, which authorized the Company to issue 500,000 shares of \$0.001 par value common stock. Each share of common stock entitles the holder to one vote on all matters submitted to a vote of the Company's stockholders. Common stockholders are entitled to receive dividends, as may be declared by the board of directors, if any, subject to the preferential dividend rights of the preferred stock. Through December 31, 2017, except for the special cash dividends declared on November 30, 2014, June 17, 2016, December 21, 2016, May 10, 2017 and November 30, 2017 (see Note 10), no dividends have been declared by the board of directors.

As of December 31, 2017, the Company had reserved 25,838 shares of common stock for the exercise of outstanding stock options, the vesting of outstanding RSUs, and the number of shares remaining available for grant under the Company's 2017 Stock Incentive Plan (see Note 12).

### ***Stock Split***

On December 1, 2017, the Company effected a five-for-one stock split of its issued and outstanding shares of common stock and a proportional adjustment to the existing conversion ratio of each series of the Company's Convertible Preferred Stock (see Note 10). Accordingly, all share and per share amounts for all periods presented in the accompanying consolidated financial statements and notes thereto have been adjusted retroactively, where applicable, to reflect this stock split and adjustment of the preferred stock conversion ratios.

## **12. Stock-based Compensation**

### ***2003 Stock Incentive Plan***

The Company's 2003 Stock Incentive Plan, as amended (the "2003 Plan"), provided for the grant of qualified incentive stock options, nonqualified stock options, restricted stock or other stock-based awards to the Company's employees, officers, directors, advisers and outside consultants. The number of shares authorized for grant under the 2003 Plan, as amended, was 32,500 shares. The 2003 Plan was administered by the board of directors, or at the discretion of the board of directors, by a committee of the board or by one or more executive officers of the Company. The exercise prices, vesting and other restrictions were determined at the discretion of the board of directors, or their committee or by one or more executive officers of the Company, if so delegated.

The 2003 Plan was terminated in August 2011, and the remaining 2,140 shares available for issuance under the plan at that time were transferred to the Company's 2011 Stock Incentive Plan (the "2011 Plan"). The shares of common stock underlying any awards that are forfeited, canceled, repurchased or are otherwise terminated by the Company under the 2003 Plan will be added back to the shares of common stock available for issuance under the Company's 2017 Stock Incentive Plan (the "2017 Plan").

### ***2011 Stock Incentive Plan***

The 2011 Plan provided for the Company to sell or issue common stock or restricted common stock, or to grant qualified incentive stock options, nonqualified stock options, SARs, RSUs or other stock-based awards to the Company's employees, officers, directors, advisers and outside consultants. The 2011 Plan was administered by the board of directors, or at the discretion of the board of directors, by a committee of the board. The exercise prices, vesting and other restrictions were determined at the discretion of the board of directors, or their committee if so delegated, except that the exercise price per share of stock options could not be less than 100% of the fair market value of common stock on the date of grant and the term of the stock option could not be greater than ten years. The stock options generally vest over a four-year period and expire ten years from the date of grant. Certain options provide for accelerated vesting if there is a change in control (as defined in the stock option agreements).

The 2011 Plan was terminated for the purpose of making new grants in December 2017, and the remaining 2,855 shares available for issuance under the 2011 Plan at that time were transferred to the 2017 Plan. Awards outstanding under the 2011 Plan at the time of the 2011 Plan's termination will continue to be governed by their existing terms. The shares of common stock underlying any awards that are forfeited, canceled, repurchased or are otherwise terminated by the Company under the 2011 Plan will be added back to the shares of common stock available for issuance under the 2017 Plan.

## 2017 Stock Incentive Plan

On November 17, 2017, the Company's board of directors adopted, and on November 30, 2017, the Company's stockholders approved, the 2017 Plan, which became effective immediately prior to the effectiveness of the registration statement for the IPO. The 2017 Plan provides for the grant of incentive stock options, nonqualified stock options, stock appreciation rights, restricted stock awards, restricted stock units and other stock-based awards. The number of shares initially reserved for issuance under the 2017 Plan is the sum of 7,161 shares, plus the number of shares (up to 18,746 shares) equal to the sum of (i) the number of shares remaining available for issuance under the 2003 Plan and 2011 Plan upon the effectiveness of the 2017 Plan and (ii) the number of shares of common stock subject to outstanding awards under the 2003 Plan and 2011 Plan that expire, terminate or are otherwise surrendered, canceled, forfeited or repurchased by the Company at their original issuance price pursuant to a contractual repurchase right. The number of shares of common stock that may be issued under the 2017 Plan will automatically increase on each January 1, beginning with the fiscal year ending December 31, 2019 and continuing for each fiscal year until, and including, the fiscal year ending December 31, 2027, equal to the least of (i) 20,000 shares, (ii) 4% of the outstanding shares of common stock on such date and (iii) an amount determined by the Company's board of directors. The shares of common stock underlying any awards that are forfeited, canceled, repurchased or are otherwise terminated by the Company under the 2017 Plan will be added back to the shares of common stock available for issuance under the 2017 Plan. The total number of shares authorized for issuance under the 2017 Plan was 10,023 shares as of December 31, 2017, of which 9,363 shares remained available for future grant.

## Stock Option Valuation

The fair value of each option award is estimated on the date of grant using the Black-Scholes option-pricing model that uses the assumptions noted in the table below. Expected volatility for the Company's common stock was determined based on an average of the historical volatility of a peer group of similar public companies. The expected term of options granted was calculated using the simplified method, which represents the average of the contractual term of the option and the weighted-average vesting period of the option. The Company uses the simplified method because it does not have sufficient historical option exercise data to provide a reasonable basis upon which to estimate the expected term. The expected dividend yield is based on the fact that the Company does not have a history of paying cash dividends, except for the special dividends declared in November 2014, June 2016, December 2016, May 2017 and November 2017 (see Note 10), and in those circumstances, the board of directors approved cash dividends to be paid to holders of the Company's stock options and SARs upon vesting as an equitable adjustment to the holders of such instruments. The risk-free rate for periods within the expected life of the option is based upon the U.S. Treasury yield curve in effect at the time of grant.

In determining the exercise prices for options granted prior to the Company's IPO, the Company's board of directors considered the fair value of the common stock as of the measurement date. The fair value of the common stock was determined by the board of directors at each award grant date based upon a variety of factors, including the results obtained from an independent third-party valuation of the Company's common stock, the Company's financial position and historical financial performance, the status of technological developments within the Company's products, the composition and ability of the current management team, an evaluation or benchmark of the Company's competition, the current business climate in the marketplace, the illiquid nature of the common stock, the effect of the rights and preferences of the holders of the Company's convertible preferred stock, and the prospects of a liquidity event, among others. Subsequent to the completion of the IPO, the Company uses the closing price of its common stock as reported on the Nasdaq Global Select Market on the applicable date of grant to determine the fair value of the shares of common stock underlying stock options.

The assumptions used in the Black-Scholes option-pricing model were as follows:

	Year Ended December 31,		
	2017	2016	2015
Risk-free interest rate	2.0%–2.2%	1.1%–1.5%	1.4%–2.0%
Expected term (in years)	6.0–6.2	4.7–6.2	5.6–6.2
Expected volatility	33.0%–38.5%	34.2%–40.4%	41.3%–52.5%
Expected dividend yield	0.0%	0.0%	0.0%



### Stock Options

A summary of option activity under the 2003 Plan, the 2011 Plan and the 2017 Plan for the year ended December 31, 2017 is as follows:

	Number of Shares	Weighted-Average Exercise Price	Weighted-Average Remaining Contractual Term (in years)	Aggregate Intrinsic Value
Outstanding at January 1, 2017	14,407	\$ 3.64	6.79	\$ 123,844
Granted	1,886	12.28		
Exercised	(182)	1.99		
Forfeited	(532)	8.04		
Outstanding at December 31, 2017	<u>15,579</u>	\$ 4.55	6.18	\$ 205,717
Options exercisable at December 31, 2017	11,530	\$ 2.87	5.38	\$ 171,656
Vested or expected to vest at December 31, 2017	15,337	\$ 4.46	6.14	\$ 203,992

The weighted-average grant-date fair value of options granted during the years ended December 31, 2017, 2016 and 2015 was \$4.74, \$3.71 and \$2.75 per share, respectively. Cash proceeds received upon the exercise of options were \$274, \$594 and \$226 during the years ended December 31, 2017, 2016 and 2015, respectively. The intrinsic value of stock options exercised during the years ended December 31, 2017, 2016 and 2015 was \$1,915, \$5,001 and \$720, respectively. The aggregate intrinsic value is calculated as the difference between the exercise price of the stock options and the fair value of the Company's common stock for those stock options that had exercise prices lower than the fair value of the Company's common stock.

### Restricted Stock Units

On January 31, 2017 and May 15, 2017, the Company granted 176 and 15 RSUs, respectively, under the 2011 Plan. On December 15, 2017, the Company granted 35 RSUs under the 2017 Plan. On March 26, 2016 and January 23, 2015, the Company granted 244 and 2,103 RSUs, respectively, under the 2011 Plan. The RSUs vest ratably over a one- to four-year period from the date of grant. The grant-date fair value of each RSU award is being recorded as stock-based compensation expense on a straight-line basis, net of estimated forfeitures, over the requisite service period for the RSUs, which is generally one to four years. The fair value of each RSU on date of grant is the estimated fair value of the underlying common stock on the date of the grant. A summary of RSU activity under the 2011 Plan and the 2017 Plan for the year ended December 31, 2017 is as follows:

	Number of Shares	Weighted-Average Grant Date Fair Value	Aggregate Fair Value
Unvested balance at January 1, 2017	1,398	\$ 4.92	
Granted	226	12.29	
Vested	(728)	4.54	\$ 8,908
Unvested balance at December 31, 2017	<u>896</u>	\$ <u>7.09</u>	

The Company withheld 310 and 37 shares of common stock in settlement of employee tax withholding obligations due upon the vesting of RSUs during the years ended December 31, 2017 and 2016, respectively. The Company had no RSUs that vested during the year ended December 31, 2015.

### Stock Appreciation Rights

In January 2017, the Company granted 110 SARs that allow the holder the right, upon exercise, to receive in cash the amount of the difference between the fair value of the Company's common stock at the date of exercise and the price of the underlying common stock at the date of grant of each SAR. The price of the underlying common stock on the date of grant was \$12.24 per share and the grant-date fair value was \$4.52 per SAR. The SARs vest over a four-year period from the date of grant and expire ten years from the date of grant. As of December 31, 2017, 240 SARs were outstanding and 68 were unvested. As of December 31, 2017, there were 172 SARs exercisable and the fair value of each SAR was \$12.96 per SAR. The fair value of the SAR liability as of December 31, 2017 and 2016 was \$2,155 and \$1,195, respectively, (see Note 6) and was included in accrued expenses and other current liabilities in the accompanying consolidated balance sheets.

### Stock-Based Compensation Expense

The Company recorded stock-based compensation expense of \$9,136, \$8,304 and \$7,321 during the years ended December 31, 2017, 2016 and 2015, respectively, which is based on the number of stock options, RSUs and SARs ultimately expected to vest. As of December 31, 2017, there was \$16,896 of unrecognized compensation cost related to outstanding stock options, RSUs and SARs, which is expected to be recognized over a weighted-average period of 2.65 years.

Stock-based compensation expense related to stock options, RSUs and SARs for the years ended December 31, 2017, 2016 and 2015 was classified in the consolidated statements of operations and comprehensive income as follows:

	Year Ended December 31,		
	2017	2016	2015
Cost of revenue	\$ 306	\$ 237	\$ 143
Research and development expenses	2,864	2,306	1,843
Sales and marketing expenses	1,112	1,147	775
General and administrative expenses	4,854	4,614	4,560
	<u>\$ 9,136</u>	<u>\$ 8,304</u>	<u>\$ 7,321</u>

### 13. Net Income (Loss) per Share

Basic and diluted net income (loss) per share attributable to common stockholders was calculated as follows:

	Year Ended December 31,		
	2017	2016	2015
<b>Numerator:</b>			
Net income	\$ 88,500	\$ 88,668	\$ 67,921
Cumulative dividends on convertible preferred stock	(5,674)	(5,884)	(5,884)
Dividends declared on convertible preferred stock	(70,977)	(117,903)	—
Undistributed earnings allocated to participating securities	—	—	(34,735)
Net income (loss) attributable to common stockholders, basic	11,849	(35,119)	27,302
Undistributed earnings reallocated to dilutive potential common shares	—	—	3,100
Net income (loss) attributable to common stockholders, diluted	<u>\$ 11,849</u>	<u>\$ (35,119)</u>	<u>\$ 30,402</u>
<b>Denominator:</b>			
Weighted-average shares used to compute net income (loss) per share attributable to common stockholders, basic	35,359	32,864	31,740
Dilutive effect of stock options	9,141	—	6,332
Dilutive effect of restricted stock units	472	—	737
Weighted-average shares used to compute net income (loss) per share attributable to common stockholders, diluted	<u>44,972</u>	<u>32,864</u>	<u>38,809</u>
<b>Net income (loss) per share attributable to common stockholders:</b>			
Basic	<u>\$ 0.34</u>	<u>\$ (1.07)</u>	<u>\$ 0.86</u>
Diluted	<u>\$ 0.26</u>	<u>\$ (1.07)</u>	<u>\$ 0.78</u>

The following potential common shares, presented based on amounts outstanding at each period end, were excluded from the computation of diluted net income (loss) per share attributable to common stockholders for the periods presented because including them would have been anti-dilutive:

	Year Ended December 31,		
	2017	2016	2015
Convertible preferred stock (on an as-converted basis)	—	40,382	40,382
Options to purchase common stock	2,281	14,407	1,649
Unvested restricted stock units	35	1,398	—

#### 14. Segment Information

The Company operates as one operating segment. Operating segments are defined as components of an enterprise for which separate financial information is regularly evaluated by the Company's chief operating decision maker, or decision-making group, in deciding how to allocate resources and assess performance. The Company has determined that its chief operating decision maker is its President and Chief Executive Officer. The Company's chief operating decision maker reviews the Company's financial information on a consolidated basis for purposes of allocating resources and assessing financial performance. Since the Company operates as one operating segment, all required financial segment information can be found in these consolidated financial statements.

The following table summarizes the Company's revenue based on the customer's location, as determined by the customer's shipping address:

	Year Ended December 31,		
	2017	2016	2015
<b>North America:</b>			
United States	\$ 143,540	\$ 105,318	\$ 54,365
Canada	58,316	78,623	153
Total North America	201,856	183,941	54,518
<b>Latin America:</b>			
Mexico	8,380	18,631	66,991
Other	31,967	28,683	20,391
Total Latin America	40,347	47,314	87,382
<b>Europe, Middle East and Africa:</b>			
Belgium	7,321	2,502	30,794
Other	54,137	42,703	44,973
Total Europe, Middle East and Africa	61,458	45,205	75,767
<b>Asia-Pacific</b>	47,914	39,668	54,783
<b>Total revenue(1)</b>	<b>\$ 351,575</b>	<b>\$ 316,128</b>	<b>\$ 272,450</b>

(1) Other than the United States, Mexico, Belgium and Canada, no individual countries represented 10% or more of the Company's total revenue for any of the periods presented.

The Company's property and equipment, net by location was as follows:

	December 31,	
	2017	2016
United States	\$ 24,903	\$ 21,984
China	2,612	2,305
Other	1,848	1,393
Total property and equipment, net	\$ 29,363	\$ 25,682

## 15. Related Parties

### *Transactions Involving Liberty Global Ventures Holding B.V. and its Affiliates*

Liberty Global Ventures Holding B.V. is a principal stockholder of the Company through its ownership of common stock. Affiliates of Liberty Global Ventures Holding B.V. (“Liberty Global Affiliates”) are customers of the Company. During the years ended December 31, 2017, 2016 and 2015, the Company recognized revenue of \$39,370, \$31,737 and \$46,069, respectively, from transactions with Liberty Global Affiliates and amounts received in cash from Liberty Global Affiliates totaled \$38,273, \$29,143 and \$37,012, respectively. As of December 31, 2017 and 2016, amounts due from Liberty Global Affiliates totaled \$13,367 and \$15,619, respectively.

### *Consulting Agreement with Bill Styslinger*

In March 2012, the Company entered into a consulting agreement with Bill Styslinger, a member of its board of directors, for the provision of sales management, corporate strategy and advisory services, which was initially scheduled to expire on January 31, 2014. The Company extended the term of the consulting agreement on two occasions, and the consulting agreement expired on December 31, 2016. During the years ended December 31, 2016 and 2015, the Company recognized sales and marketing expenses of \$323 and \$441, respectively, and paid Mr. Styslinger \$459 and \$542, respectively, for his services under this consulting agreement. No amounts were due to Mr. Styslinger as of December 31, 2016.

In connection with Mr. Styslinger’s services as a consultant, in May 2012, the Company granted Mr. Styslinger stock options for the purchase of 600 shares of common stock, at an exercise price of \$1.69 per share, which vested as to one-third of the shares under the award on February 1, 2013 and in equal monthly installments thereafter for the following two years. The grant-date fair value of the award totaled \$527, which was recorded by the Company as stock-based compensation expense over the vesting period of the award. During the year ended December 31, 2015, the Company recognized sales and marketing expenses of \$15 related to these stock options. The Company recognized no sales and marketing expenses related to these stock options during the year ended December 31, 2016.

In connection with special dividends declared by the Company’s board of directors in November 2014, June 2016, December 2016, May 2017 and November 2017 (see Note 10), the board of directors also approved cash payments to be made to holders of the Company’s stock options, SARs and RSUs in accordance with the provisions of the Company’s equity incentive plans. In connection with the special dividends declared in November 2014 and June 2016, the Company paid Mr. Styslinger \$12 and \$150 as equitable adjustments in the years ended December 31, 2015 and 2016, respectively. In connection with the special dividends declared in December 2016, June 2017 and November 2017, the Company paid Mr. Styslinger \$1,075 as equitable adjustments in the year ended December 31, 2017.

In addition, during the year ended December 31, 2017, the Company recognized general and administrative expenses of \$205 and paid Mr. Styslinger \$205 for his services as a non-employee director. As of December 31, 2017, no amount was due to Mr. Styslinger for his services as a non-employee director.

### *Employment of Rongke Xie*

Rongke Xie, who serves as Deputy General Manager of Guangzhou Casa Communication Technology LTD (“Casa China”), a subsidiary of the Company, is the sister of Lucy Xie, the Company’s Senior Vice President of Operations and a member of the Company’s board of directors. Casa China paid Rongke Xie \$160, \$140 and \$140 in total compensation in the years ended December 31, 2017, 2016 and 2015, respectively, for her services as an employee.

## 16. Commitments and Contingencies

### *Operating Leases*

The Company leases manufacturing, warehouse and office space in the United States, China, Spain and Ireland under non-cancelable operating leases that expire in 2021, 2019, 2022 and 2026, respectively. The Ireland lease provides the Company the right to terminate in 2021. Rent expense for the years ended December 31, 2017, 2016 and 2015 was \$933, \$572 and \$773, respectively. Rent expense is recorded on a straight-line basis, and, as a result, as of December 31, 2017 and 2016, the Company had a deferred rent liability of \$258 and \$130, respectively, which is included in accrued expenses and other current liabilities in the accompanying consolidated balance sheets.

Future minimum lease payments under non-cancelable operating leases as of December 31, 2017 were as follows:

**Year Ending December 31,**

2018	\$	857
2019		602
2020		595
2021		402
2022		5
	\$	<u>2,461</u>

***Indemnification***

The Company has, in the ordinary course of business, agreed to defend and indemnify certain customers against third-party claims asserting infringement of certain intellectual property rights, which may include patents, copyrights, trademarks or trade secrets.

As permitted under Delaware law, the Company indemnifies its officers, directors and employees for certain events or occurrences that happen by reason of their relationship with or position held at the Company.

As of December 31, 2017 and 2016, the Company had not experienced any losses related to these indemnification obligations and no material claims were outstanding. The Company does not expect significant claims related to these indemnification obligations and, consequently, concluded that the fair value of these obligations is negligible, and no related liabilities were recorded in its consolidated financial statements.

***Litigation***

From time to time, and in the ordinary course of business, the Company may be subject to various claims, charges and litigation. As of December 31, 2017, the Company did not have any pending claims, charges or litigation that it expects would have a material adverse effect on its consolidated financial position, results of operations or cash flows.

**17. Employee Benefit Plan**

The Company has a Section 401(k) defined contribution savings plan for its employees. The plan covers substantially all employees in the United States who meet minimum age and service requirements and allows participants to defer a portion of their annual compensation on a pre-tax basis, subject to certain limitations. Company contributions to the plan may be made at the discretion of the board of directors. Effective January 1, 2014, the Company commenced matching contributions in the amount of 50% of the employee's contributions of up to 6% of eligible wages. The Company made matching contributions to the plan of \$1,484, \$1,313 and \$977 in the years ended December 31, 2017, 2016 and 2015, respectively.

## 18. Selected Quarterly Financial Information (Unaudited)

The following tables set forth selected unaudited quarterly consolidated statements of income data for each of the quarters in the years ended December 31, 2017 and 2016:

	Three Months Ended							
	Dec. 31, 2017	Sept. 30, 2017	June 30, 2017	Mar. 31, 2017	Dec. 31, 2016	Sept. 30, 2016	June 30, 2016	Mar. 31, 2016
	(in thousands)							
Revenue:								
Product	\$ 106,741	\$ 84,196	\$ 55,750	\$ 65,209	\$ 87,460	\$ 58,553	\$ 56,777	\$ 76,433
Service	11,221	10,063	10,875	7,520	11,766	9,995	8,148	6,996
Total revenue	<u>117,962</u>	<u>94,259</u>	<u>66,625</u>	<u>72,729</u>	<u>99,226</u>	<u>68,548</u>	<u>64,925</u>	<u>83,429</u>
Cost of revenue:								
Product	25,673	23,824	19,909	19,132	20,547	19,263	22,427	27,103
Services	1,336	1,442	938	1,257	2,494	2,578	1,997	1,408
Total cost of revenue	<u>27,009</u>	<u>25,266</u>	<u>20,847</u>	<u>20,389</u>	<u>23,041</u>	<u>21,841</u>	<u>24,424</u>	<u>28,511</u>
Gross profit	<u>90,953</u>	<u>68,993</u>	<u>45,778</u>	<u>52,340</u>	<u>76,185</u>	<u>46,707</u>	<u>40,501</u>	<u>54,918</u>
Operating expenses:								
Research and development	16,765	15,217	14,227	14,468	11,997	12,451	12,573	12,189
Sales and marketing	12,619	8,747	8,156	10,080	8,825	9,520	9,125	8,644
General and administrative	7,176	4,866	4,526	4,995	4,683	4,520	4,665	4,347
Total operating expenses	<u>36,560</u>	<u>28,830</u>	<u>26,909</u>	<u>29,543</u>	<u>25,505</u>	<u>26,491</u>	<u>26,363</u>	<u>25,180</u>
Income from operations	54,393	40,163	18,869	22,797	50,680	20,216	14,138	29,738
Other income (expense), net	(3,546)	(3,552)	(2,766)	(3,540)	(32)	356	278	319
Income before provision for (benefit from) income taxes	50,847	36,611	16,103	19,257	50,648	20,572	14,416	30,057
Provision for (benefit from) income taxes	21,984	12,288	(1,057)	1,103	10,797	5,471	2,412	8,345
Net income	<u>\$ 28,863</u>	<u>\$ 24,323</u>	<u>\$ 17,160</u>	<u>\$ 18,154</u>	<u>\$ 39,851</u>	<u>\$ 15,101</u>	<u>\$ 12,004</u>	<u>\$ 21,712</u>
Net income (loss) per share attributable to common stockholders:								
Basic	\$ 0.10	\$ 0.31	\$ (0.95)	\$ 0.23	\$ (1.69)	\$ 0.19	\$ (0.40)	\$ 0.28
Diluted	\$ 0.08	\$ 0.27	\$ (0.95)	\$ 0.20	\$ (1.69)	\$ 0.16	\$ (0.40)	\$ 0.25

## Item 9. Changes in and Disagreements With Accountants on Accounting and Financial Disclosure.

None.

**Item 9A. Controls and Procedures.****Evaluation of Disclosure Controls and Procedures**

Our management, with the participation of our Chief Executive Officer and Chief Financial Officer, has evaluated the effectiveness of our disclosure controls and procedures (as defined in Rules 13a- 15(e) and 15d- 15(e) under the Securities Exchange Act of 1934, as amended, or the Exchange Act), as of the end of the period covered by this Annual Report on Form 10-K. The term “disclosure controls and procedures,” as defined in Rules 13a-15(e) and 15d-15(e) under the Exchange Act, means controls and other procedures of a company that are designed to ensure that information required to be disclosed by a company in the reports that it files or submits under the Exchange Act is recorded, processed, summarized and reported, within the time periods specified in the Securities and Exchange Commission’s rules and forms. Disclosure controls and procedures include, without limitation, controls and procedures designed to ensure that information required to be disclosed by a company in the reports that it files or submits under the Exchange Act is accumulated and communicated to the company’s management, including its principal executive and principal financial officers, as appropriate to allow timely decisions regarding required disclosure. Our management recognizes that any controls and procedures, no matter how well designed and operated, can provide only reasonable assurance of achieving their objectives and our management necessarily applies its judgment in evaluating the cost-benefit relationship of possible controls and procedures. Based on the evaluation of our disclosure controls and procedures as of the end of the period covered by this Annual Report on Form 10-K, our principal executive officer and principal financial officer have concluded that as of such date, our disclosure controls and procedures were effective.

**Management’s Report on Internal Control Over Financial Reporting**

This Annual Report on Form 10-K does not include a report of management's assessment regarding internal control over financial reporting or an attestation report of the Company's registered public accounting firm due to a transition period established by rules of the Securities and Exchange Commission for newly public companies.

**Changes in Internal Control over Financial Reporting**

There were no changes in our internal control over financial reporting during our most recently completed fiscal quarter that have materially affected, or are reasonably likely to materially affect, our internal control over financial reporting.

**Item 9B. Other Information.**

None.

## PART III

### Item 10. Directors, Executive Officers and Corporate Governance

#### Executive Officers and Directors

The following table provides information regarding our executive officers and directors as of February 28, 2018:

Name	Age	Position
Jerry Guo	54	President, Chief Executive Officer and Chairman
Gary Hall	56	Chief Financial Officer
Weidong Chen	50	Chief Technology Officer and Director
Lucy Xie(1)	52	Senior Vice President of Operations and Director
Abraham Pucheril	51	Senior Vice President of Product Strategy and Management
Bruce Evans(1)(2)	58	Director
Bill Styslinger(2)	71	Director
Joe Tibbetts(1)	65	Director

(1) Member of audit committee

(2) Member of compensation committee

#### Executive Officers

*Jerry Guo*, the founder of our company, has served as our president and chief executive officer and as the chairman of our board of directors since our founding in 2003. Prior to founding our company, Mr. Guo served as the Vice President of Broadband at River Delta Networks, which was acquired by Motorola in 2001. Prior to that, Mr. Guo was a research scientist at Bell Laboratories' research division. Mr. Guo holds a Ph.D. degree in electrical engineering from the University of Wisconsin-Madison and an M.S. degree in optical instruments from the Department of Precision Instruments at Tsinghua University. We believe that Mr. Guo is qualified to serve on our board of directors due to his leadership experience in the broadband and network industries, his extensive knowledge of our company and his service as our president and chief executive officer.

*Gary Hall* has served as our chief financial officer since June 2011. Prior to joining Casa, from April 2007 to March 2010, Mr. Hall was the chief financial officer of eCopy, a provider of document management solutions. From August 2004 to June 2006, he served as the chief financial officer of MatrixOne, a product life-cycle management company, where he had previously served as controller from April 1999 to August 2004. Previously, Mr. Hall served in various accounting and auditing roles at Deloitte & Touche, a multinational professional services firm. Mr. Hall holds a M.S. degree in finance from Bentley College and a B.A. degree in accounting from Southern New Hampshire University.

*Weidong Chen* has served as our chief technology officer since 2004 and as a member of our board of directors since 2010. Prior to joining Casa, Mr. Chen served as a software manager at Motorola, a multinational telecommunications company from October 2001 to November 2003. Mr. Chen holds a Ph.D. degree in physics from the University of Pennsylvania. We believe that Mr. Chen's deep experience in the telecommunications industry, his extensive knowledge of our company and his position as our chief technology officer enable Mr. Chen to make a valuable contribution to our board of directors.

*Lucy Xie* has served as our senior vice president of operations since 2011 and as a member of our board of directors since 2003. From 2003 to 2011, Ms. Xie served as our chief financial officer and vice president of operations. Prior to joining Casa, Ms. Xie held various accounting, finance and management positions at Raytheon, a U.S. defense contractor and industrial corporation, and Lucent Technologies, a telecommunications equipment company. Ms. Xie has also served as the vice chairman and a board member of the Asia-America Chamber of Commerce. Ms. Xie holds an M.B.A. degree in accounting from Fairleigh Dickinson University. We believe that Ms. Xie is qualified to serve on our board of directors due to her experience as an executive in the telecommunications industry, her extensive knowledge of our company and her service as our senior vice president of operations.

*Abraham Pucheril* has served as our senior vice president of product strategy and management since January 2018 and as our senior vice president of worldwide sales from August 2012 to January 2018. Prior to joining Casa, Mr. Pucheril was the vice president of sales at Fujitsu Network Communications, Inc., a communications network equipment provider and a wholly owned subsidiary of Fujitsu Limited, from April 2005 to July 2012. Prior to joining Fujitsu, Mr. Pucheril served as



area vice president of sales for Alcatel North America, a telecommunications conglomerate, from April 2003 to April 2005, and regional vice president of sales of Atoga Systems, a provider of advanced video and data transmission systems that was acquired by Arris Systems, Inc., from January 2002 to April 2003. He started his professional career with Bell Canada. Mr. Pucheril holds a B.E. degree in electronics and communications engineering from Mangalore University, an M.E. degree in electrical and electronics engineering from Anna University and an M.A.Sc. degree in electrical engineering from the University of Waterloo.

### **Board of Directors**

*Bruce R. Evans* has been a director of our company since 2010. Since 1986, Mr. Evans has served in various positions with Summit Partners, a growth equity and venture capital investment firm, including most recently as Chairman of the Summit Partners' Board of Managers and Senior Advisor to the firm. He is also currently a director of Analog Devices, a public company which designs and manufactures high-performance semiconductor products, as well as several private companies. Mr. Evans previously served as a director of more than a dozen public companies, including, from May 2012 to November 2014, FleetCor Technologies, a provider of fuel cards and workforce payment products and services. In addition, he is Chairman of the Vanderbilt University Board of Trust. Mr. Evans holds a B.E. degree in mechanical engineering and economics from Vanderbilt University and an M.B.A. degree from Harvard Business School. We believe that Mr. Evans is qualified to serve as a director of our company due to his wide-ranging experience in growth equity and venture capital investing in the technology sector and his experience on other private and public company boards.

*Bill Styslinger* has been a director of our company since 2012. Mr. Styslinger served as chairman, president and chief executive officer of SeaChange International, a provider of multiscreen video software and services, from its inception in July 1993 until his retirement in December 2011. Mr. Styslinger was also previously a member of the board of directors of Omtool, a provider of enterprise client/server facsimile software solutions. Mr. Styslinger holds a B.S. degree in Engineering Science from the State University of New York at Buffalo. We believe that Mr. Styslinger is qualified to serve on our board of directors due to his leadership expertise, including service as chief executive officer of a public company with international operations, as well as his knowledge of the telecommunications industry.

*Joe Tibbetts* has been a director of our company since November 2017. Since March 2017, Mr. Tibbetts has served as the interim chief financial officer of Acquia Corporation, a provider of cloud-based, digital experience management solutions. Prior to that, Mr. Tibbetts served as the senior vice president and chief financial officer of the Publicis.Sapient unit of Publicis Group SA, from February 2015, when Publicis acquired Sapient Corporation, to September 2015. Prior to that, Mr. Tibbetts served as senior vice president and global chief financial officer for Sapient Corporation from October 2006 to February 2015. Mr. Tibbetts was formerly a partner with Price Waterhouse LLP. Mr. Tibbetts currently serves on the board of directors of Vivint, Inc., a provider of home automation equipment and services, Vivint Solar, Inc., a provider of home solar energy solutions, and one other private company. Mr. Tibbetts holds a B.S. in business administration from the University of New Hampshire. We believe that Mr. Tibbetts is qualified to serve on our board of directors due to his experience as an executive officer or director of other technology companies and his financial and accounting expertise.

Jerry Guo and Lucy Xie are married to one another. There are no other family relationships among any of our directors or executive officers.

### **Audit Committee**

The members of our audit committee are Messrs. Evans and Tibbetts and Ms. Xie. Mr. Tibbetts is the chair of our audit committee. Our board of directors has determined that Mr. Tibbetts is independent within the meaning of Rule 10A-3 under the Exchange Act. Our board of directors has determined that Mr. Tibbetts is an "audit committee financial expert" as defined by applicable SEC rules.

Our audit committee's responsibilities include:

- appointing, approving the compensation of, and assessing the independence of our registered public accounting firm;
- overseeing the work of our registered public accounting firm, including through the receipt and consideration of reports from such firm;
- reviewing and discussing with management and the registered public accounting firm our annual and quarterly financial statements and related disclosures;

- monitoring our internal control over financial reporting, disclosure controls and procedures and code of business conduct and ethics;
- discussing our risk management policies;
- establishing policies regarding hiring employees from the registered public accounting firm and procedures for the receipt and retention of accounting related complaints and concerns;
- meeting independently with our registered public accounting firm and management;
- reviewing and approving or ratifying any related person transactions; and
- preparing the audit committee report required by SEC rules.

All audit services and all non-audit services, other than de minimis non-audit services, to be provided to us by our independent registered public accounting firm are required to be approved in advance by our audit committee.

We expect to satisfy the member independence requirements for the audit committee prior to the end of the transition period provided under current Nasdaq Listing Rules and SEC rules and regulations for companies that have recently completed their initial public offering.

### Section 16(a) Beneficial Ownership Reporting Compliance

Section 16(a) of the Exchange Act requires our directors, executive officers and beneficial owners of more than 10% of our common stock to file reports of holdings and transactions in our common stock and other securities of ours with the Securities Exchange Commission. Based solely on our review of copies of such forms that we have received, or written representations from reporting persons, we believe that during the fiscal year ended December 31, 2017, all executive officers, directors and greater than 10% stockholders complied with all applicable filing requirements under Section 16(a) of the Exchange Act.

### Code of Business Conduct and Ethics

We have adopted a written code of business conduct and ethics that applies to our directors, officers and employees, including our principal executive officer, principal financial officer, principal accounting officer or controller, or persons performing similar functions. A copy of the code is available on our website, [www.casa-systems.com](http://www.casa-systems.com). In addition, we intend to post on our website all disclosures that are required by law or the Nasdaq Listing Rules concerning any amendments to, or waivers from, any provision of the code.

## Item 11. Executive Compensation

### Summary Compensation Table

The following table sets forth the total compensation paid to our chief executive officer and each of our two other most highly compensated executive officers for the years ended December 31, 2017 and 2016. We refer to these individuals as our “named executive officers.”

Name and Principal Position	Year	Salary (\$)	Bonus (\$)	Stock Awards \$(1)	Option Awards \$(1)	All Other Compensation \$(2)	Total (\$)
Jerry Guo <i>President, Chief Executive Officer and Chairman</i>	2017	729,926 (3)	2,872,323 (4)	1,118,370	2,093,945	8,100	6,822,664
	2016	664,566 (5)	1,613,825 (6)	1,065,115	1,989,328	7,950	5,340,784
Lucy Xie <i>Senior Vice President of Operations and Director</i>	2017	391,319 (7)	778,305 (4)	659,459	529,162	8,100	2,366,345
	2016	402,721 (8)	538,337 (6)	628,081	502,724	7,950	2,079,813
Weidong Chen <i>Chief Technology Officer and Director</i>	2017	387,695 (9)	452,203 (4)	376,808	302,382	8,100	1,527,188
	2016	378,206 (10)	538,337 (6)	358,885	287,266	7,950	1,570,644

- (1) The amounts reported represent the aggregate grant-date fair value of the stock and option grants awarded to the named executive officer during the year in question, calculated in accordance with FASB ASC Topic 718. Such grant-date fair values do not take into account any estimated forfeitures related to service-vesting conditions. The assumptions used in calculating the grant-date fair value of the sale of the stock or equity awards reported in this column are set forth in the

notes to our consolidated financial statements included elsewhere in this Annual Report on Form 10-K. The amounts reported in this column reflect the accounting cost for these stock options and do not correspond to the actual economic value that may be received by the named executive officers upon exercise of the stock options.

- (2) Constitutes matching contributions to 401(k) plans.
- (3) Includes \$52,119 of cash paid in lieu of vacation earned in 2017 and paid in 2018.
- (4) Consists of a discretionary bonus for 2017 performance to be paid in 2018.
- (5) Includes \$16,554 of cash paid in lieu of vacation earned in 2016 and paid in 2017.
- (6) Consists of a discretionary bonus for 2016 performance that was determined and paid in early 2017.
- (7) Includes \$14,483 of cash paid in lieu of vacation earned in 2017 and paid in 2018.
- (8) Includes \$42,449 of cash paid in lieu of vacation earned in 2016 and paid in 2017.
- (9) Includes \$10,859 of cash paid in lieu of vacation earned in 2017 and paid in 2018.
- (10) Includes \$17,934 of cash paid in lieu of vacation earned in 2016 and paid in 2017.

### Outstanding Equity Awards at Fiscal Year-End

The following table sets forth information regarding outstanding stock awards held as of December 31, 2017 by our named executive officers.

Name	Grant Date	Option Awards				RSUs	
		Number of Securities Underlying Unexercised Options Exercisable (#)	Number of Securities Underlying Unexercised Options Unexercisable (#)	Option Exercise Price (\$)	Option Expiration Date	Number of Shares or Units of Stock That Have Not Vested (#)	Market Value of Shares or Units of Stock That Have Not Vested \$(1)
Jerry Guo	1/23/2015(2)	787,495	292,500	4.18	1/23/2025		
	1/23/2015(3)					192,860	3,425,194
	1/23/2015(4)					115,715	2,055,098
	3/26/2016(5)	283,740	308,420	8.39	3/25/2026		
	3/26/2016(6)					95,170	1,690,219
	1/31/2017(7)	—	426,535	12.24	1/30/2027		
	1/31/2017(8)					91,400	1,623,264
	Lucy Xie	1/23/2015(2)	165,840	61,600	4.18	1/23/2025	
1/23/2015(3)		56,865					1,009,922
1/23/2015(4)		56,860					1,009,834
3/26/2016(5)		71,700	77,945	8.39	3/25/2026		
3/26/2016(6)						56,120	996,691
1/31/2017(7)		—	107,790	12.24	1/30/2027		
1/31/2017(8)						53,895	957,175
Weidong Chen		5/25/2012	600,000	—	1.69	5/24/2022	
	1/23/2015(2)	94,760	35,205	4.18	1/23/2025		
	1/23/2015(3)					32,495	577,111
	1/23/2015(4)					32,495	577,111
	3/26/2016(5)	40,965	44,545	8.39	3/25/2026		
	3/26/2016(6)					32,070	569,563
	1/31/2017(7)	—	61,595	12.24	1/30/2027		
	1/31/2017(8)					30,795	546,919

- (1) The value of equity awards is based on the closing price of our stock on the Nasdaq Global Select Market on December 29, 2017.
- (2) One-fourth (1/4) of the shares of our common stock subject to this stock option award vested on January 1, 2016, and the balance is scheduled to vest in 36 equal monthly installments thereafter, subject to continued service with us through each applicable vesting date.
- (3) One-half (1/2) of these RSUs vested on January 1, 2016, one-third (1/3) vested on January 1, 2017 and one-sixth (1/6) are scheduled to vest on January 1, 2018, subject to continued service with us through each applicable vesting date.
- (4) One-fourth (1/4) of these RSUs vested on each of January 1, 2016 and 2017, and one-fourth (1/4) are scheduled to vest each year thereafter, subject to continued service with us through each applicable vesting date.

- (5) One-fourth (1/4) of the shares of our common stock subject to this stock option award vested on January 1, 2017, and the balance is scheduled to vest in 36 equal monthly installments thereafter, subject to continued service with us through each applicable vesting date.
- (6) One-fourth (1/4) of these RSUs vested on January 1, 2017, and one-fourth (1/4) are scheduled to vest each year thereafter, subject to continued service with us through each applicable vesting date.
- (7) One-fourth (1/4) of the shares of our common stock subject to this stock option award vested on January 1, 2018, and the balance is scheduled to vest in 36 equal monthly installments thereafter, subject to continued service with us through each applicable vesting date.
- (8) One-fourth (1/4) of these RSUs vested on January 1, 2018, and one-fourth (1/4) are scheduled to vest each year thereafter, subject to continued service with us through each applicable vesting date.

### **Potential Payments upon Termination or Change in Control**

Under each of our 2011 Stock Incentive Plan and our 2017 Stock Incentive Plan, our board of directors may provide that outstanding awards shall become exercisable, realizable, or deliverable, or restrictions applicable to an award shall lapse, in whole or in part, in connection with (a) any merger or consolidation of the company with or into another entity as a result of which all of the common stock of the company is converted into or exchanged for the right to receive cash, securities or other property or is cancelled, (b) any transfer or disposition of all of the common stock of the company for cash, securities or other property pursuant to a share exchange or other transaction or (c) any liquidation or dissolution of the company. Further, under our 2003 Stock Incentive Plan, our 2011 Stock Incentive Plan, and our 2017 Stock Incentive Plan, our board of directors has complete discretion to cause any award to become immediately exercisable in whole or in part, free of some or all restrictions or conditions, or otherwise realizable in whole or in part, as the case may be.

### **Employment Agreements**

#### ***Employment Agreement with Mr. Guo***

We are a party to an employment agreement with Mr. Guo dated November 17, 2017. Under the employment agreement, Mr. Guo is an at-will employee, and his employment with us can be terminated by him or us at any time and for any reason. The employment agreement provides that Mr. Guo is entitled to a base salary of \$677,806 during his employment with us and that he is eligible, at our sole discretion, to earn a target annual bonus equal to 150% of his base salary. The employment agreement also provides that Mr. Guo is eligible to participate in our annual long-term incentive program, with a target annual equity award equal to 550% of his then-current base salary, and with the form, terms and conditions of such long-term incentive awards to be determined in our sole discretion.

Under the employment agreement, Mr. Guo is entitled, subject to his execution and nonrevocation of a release of claims in our favor, in the event of the termination of his employment by us without cause or by him for good reason, each as defined in his employment agreement with us, to (i) receive an amount equal to the sum of his then-current annual base salary plus his target annual bonus for the year of his termination of employment, with such amount payable in equal installments over a period of 12 months, (ii) continue to receive an amount equal to COBRA premiums for health benefit coverage on the same terms as were applicable to him prior to his termination for a period of 12 months following the date that his employment with us is terminated, or earlier, if he becomes eligible to enroll in a health benefit plan with a new employer and (iii) accelerated vesting of all outstanding and unvested stock options and other equity awards, with any stock options being exercisable following his termination of employment for the period of time set forth in the applicable option agreement.

In addition, the employment agreement provides that in the event Mr. Guo's employment with us terminates by reason of his death or disability, Mr. Guo is entitled to accelerated vesting of all outstanding and unvested stock options and other equity awards, with any stock options being exercisable following his termination of employment for the period of time set forth in the applicable option agreement.

#### ***Employment Agreement with Ms. Xie***

We are a party to an employment agreement with Ms. Xie dated November 17, 2017. Under the employment agreement, Ms. Xie is an at-will employee, and her employment with us can be terminated by her or us at any time and for any reason. The employment agreement provides that Ms. Xie is entitled to a base salary of \$376,836 during her employment with us and that she is eligible, at our sole discretion, to earn a target annual bonus equal to 100% of her base salary. The employment agreement also provides that Ms. Xie is eligible to participate in our annual long-term incentive program, with a target annual equity award equal to 350% of her then-current base salary, and with the form, terms and conditions of such long-term incentive awards to be determined in our sole discretion.

Under the employment agreement, Ms. Xie is entitled, subject to her execution and nonrevocation of a release of claims in our favor, in the event of the termination of her employment by us without cause or by her for good reason, each as defined in her employment agreement with us, to (i) receive an amount equal to the sum of her then-current annual base salary plus her target annual bonus for the year of her termination of employment, with such amount payable in equal installments over a period of 12 months, (ii) continue to receive an amount equal to COBRA premiums for health benefit coverage on the same terms as were applicable to her prior to her termination for a period of 12 months following the date that her employment with us is terminated, or earlier, if she becomes eligible to enroll in a health benefit plan with a new employer and (iii) accelerated vesting of all outstanding and unvested stock options and other equity awards, with any stock options being exercisable following her termination of employment for the period of time set forth in the applicable option agreement.

In addition, the employment agreement provides that in the event Ms. Xie's employment with us terminates by reason of her death or disability, Ms. Xie is entitled to accelerated vesting of all outstanding and unvested stock options and other equity awards, with any stock options being exercisable following her termination of employment for the period of time set forth in the applicable option agreement.

#### ***Employment Agreement with Mr. Chen***

We are a party to an employment agreement with Mr. Chen dated November 17, 2017. Under the employment agreement, Mr. Chen is an at-will employee, and his employment with us can be terminated by him or us at any time and for any reason. The employment agreement provides that Mr. Chen is entitled to a base salary of \$376,836 during his employment with us and that he is eligible, at our sole discretion, to earn a target annual bonus equal to 100% of his base salary. The employment agreement also provides that Mr. Chen is eligible to participate in our annual long-term incentive program, with a target annual equity award equal to 200% of his then-current base salary, and with the form, terms and conditions of such long-term incentive awards to be determined in our sole discretion.

Under the employment agreement, Mr. Chen is entitled, subject to his execution and nonrevocation of a release of claims in our favor, in the event of the termination of his employment by us without cause or by him for good reason, each as defined in his employment agreement with us, to (i) receive an amount equal to the sum of his then-current annual base salary plus his target annual bonus for the year of his termination of employment, with such amount payable in equal installments over a period of 12 months, (ii) continue to receive an amount equal to COBRA premiums for health benefit coverage on the same terms as were applicable to him prior to his termination for a period of 12 months following the date that his employment with us is terminated, or earlier, if he becomes eligible to enroll in a health benefit plan with a new employer and (iii) accelerated vesting of all outstanding and unvested stock options and other equity awards, with any stock options being exercisable following his termination of employment for the period of time set forth in the applicable option agreement.

In addition, the employment agreement provides that in the event Mr. Chen's employment with us terminates by reason of his death or disability, Mr. Chen is entitled to accelerated vesting of all outstanding and unvested stock options and other equity awards, with any stock options being exercisable following his termination of employment for the period of time set forth in the applicable option agreement.

#### **Retirement Benefits**

We maintain a retirement plan for the benefit of our employees, including our named executive officers. The plan is intended to qualify as a tax-qualified 401(k) plan so that contributions to the 401(k) plan, and income earned on such contributions, are not taxable to participants until withdrawn or distributed from the 401(k) plan (except in the case of contributions under the 401(k) plan designated as Roth contributions). Under the 401(k) plan, each employee is fully vested in his or her deferred salary contributions. Employee contributions are held and invested by the plan's trustee as directed by participants. We match 50% of employee contributions to our 401(k) plan up to a maximum amount of 6% of eligible wages.

#### **Employee Benefits and Perquisites**

Our named executive officers are eligible to participate in our health and welfare plans to the same extent as all full-time employees.

## Director Compensation

During the year ended December 31, 2017, we paid to Bill Styslinger of an annual cash retainer of \$200,000, payable quarterly in arrears, for his services as a director and an annual cash retainer of \$5,000, payable annually in arrears, for his services as a member of the compensation committee of our board of directors. This arrangement terminated upon the closing of our initial public offering on December 19, 2017. In addition, in connection with Mr. Tibbetts' appointment to our board of directors, we granted to Mr. Tibbetts, upon the commencement of trading of our common stock on the Nasdaq Global Select Market on December 15, 2017, restricted stock units for 23,076 and 11,538 shares, respectively, with the restricted stock unit for 23,076 shares vesting on a quarterly basis over a period of three years after the date of his appointment to our board of directors and the restricted stock unit for 11,538 shares vesting on the first anniversary of the date of his appointment to our board of directors, in each case subject to Mr. Tibbetts' continued service as a director, with full acceleration of vesting upon a change in control of our company. Such grants were intended to be consistent with our new non-employee director compensation program described below. Prior to our initial public offering, none of our other directors received compensation for service on our board of directors or committees of our board of directors during the year ended December 31, 2017.

We also have a policy of reimbursing our directors for their reasonable out-of-pocket expenses incurred in attending board of directors and committee meetings.

In November 2017, we approved a non-employee director compensation program that became effective upon the closing of our initial public offering on December 19, 2017. Under this program, non-employee directors receive the cash compensation set forth below, and an additional payment of \$150,000 annually, commencing with election or appointment to our board of directors, to be paid, at the discretion of our board of directors, in the form of cash or cash-settled or stock-settled restricted stock units for the number of shares of our common stock equal to \$150,000 divided by the closing price of our common stock on the Nasdaq Global Select Market on the date of grant. Any such cash-settled or stock-settled restricted stock units will vest one year after the date of grant. In addition, new non-employee directors also receive an additional initial equity grant of cash-settled or stock-settled restricted stock units for the number of shares of our common stock equal to \$300,000 divided by the closing price of our common stock on the Nasdaq Global Select Market on the date of such director's initial election to our board of directors. Such cash-settled or stock-settled restricted stock units will vest on a quarterly basis, over a period of three years after the date of grant, subject to the non-employee director's continued service as a director, with full acceleration of vesting upon a change in control of our company.

Under our non-employee director compensation program, each non-employee director is eligible to receive compensation for his or her service on our board of directors or committees thereof consisting of annual cash retainers paid quarterly in arrears, as follows:

Position	Retainer
Board member	\$ 50,000
Audit committee chair	\$ 20,000
Compensation committee chair	\$ 10,000
Audit committee member	\$ 10,000
Compensation committee member	\$ 5,000

The following table sets forth information regarding compensation earned by our non-employee directors during the year ended December 31, 2017.

Name	Fees earned or paid in cash (\$)	Stock awards (\$)(1)	Total (\$)
Bruce Evans	\$ 10,849 (2)	—	\$ 10,849
Bill Styslinger	\$ 205,000	—	\$ 205,000
Joe Tibbetts	\$ 8,560 (3)	\$ 449,982	\$ 458,542

(1) Amount reflects the aggregate grant date fair market value, calculated in accordance with FASB ASC Topic 718, of RSU awards granted to Mr. Tibbetts on December 15, 2017 for 23,076 and 11,538 shares of our common stock, representing an initial equity granted of stock-settled restricted stock units, and an additional annual payment that our board of directors determined to pay in the form of stock-settled restricted stock units, in each case intended to be consistent with our non-employee director compensation program that became effective upon the closing of our initial public offering.

- (2) The amount of Mr. Evans's annual cash retainer and additional annual payment was pro-rated upon the effectiveness of our registration statement on Form S-1 on December 14, 2017.
- (3) The amount of Mr. Tibbetts's annual cash retainer was pro-rated to reflect the fact that he joined our Board of Directors and audit committee on November 13, 2017.

### **Stock Option and Other Compensation Plans**

Prior to our initial public offering, we granted awards under our 2003 Stock Incentive Plan, as amended to date, and our 2011 Stock Incentive Plan, as amended to date. In connection with our initial public offering, we started granting awards under our 2017 Stock Incentive Plan and ceased granting awards under all prior plans.

#### **2017 Stock Incentive Plan**

The 2017 Stock Incentive Plan provides for the grant of incentive stock options, nonstatutory stock options, stock appreciation rights, restricted stock awards, RSUs and other stock-based awards. The number of shares of our common stock that are reserved for issuance under the 2017 Stock Incentive Plan is equal to the sum of: (1) 7,160,685 plus; (2) the number of shares (up to 18,746,045 shares) equal to the sum of the number of shares of our common stock then available for issuance under the 2003 Stock Incentive Plan and the 2011 Stock Incentive Plan as of immediately prior to the effectiveness of the registration statement for our initial public offering and the number of shares of our common stock subject to outstanding awards under the 2003 Stock Incentive Plan and the 2011 Stock Incentive Plan that expire, terminate or are otherwise surrendered, cancelled, forfeited or repurchased by us at their original issuance price pursuant to a contractual repurchase right; plus (3) an annual increase, to be added on the first day of each fiscal year, beginning with the fiscal year ending December 31, 2019 and continuing until, and including, the fiscal year ending December 31, 2027, equal to the lowest of 20,000,000 shares of our common stock, 4% of the number of shares of our common stock outstanding on the first day of such fiscal year and an amount determined by our board of directors.

Our employees, officers, directors, consultants and advisors are eligible to receive awards under the 2017 Stock Incentive Plan. Incentive stock options, however, may only be granted to our employees. Pursuant to the terms of the 2017 Stock Incentive Plan, our board of directors (or a committee delegated by our board of directors) administers the plan and, subject to any limitations in the plan, will select the recipients of awards and determine:

- the number of shares of our common stock covered by options and the dates upon which the options become exercisable;
- the type of options to be granted;
- the duration of options, which may not be in excess of ten years;
- the exercise price of options, which must be at least equal to the fair market value of our common stock on the date of grant; and
- the number of shares of our common stock subject to and the terms of any stock appreciation rights, restricted stock awards, RSUs or other stock-based awards and the terms and conditions of such awards, including conditions for repurchase, issue price and repurchase price (though the measurement price of stock appreciation rights must be at least equal to the fair market value of our common stock on the date of grant and the duration of such awards may not be in excess of ten years).

If our board of directors delegates authority to an executive officer to grant awards under the 2017 Stock Incentive Plan, the executive officer will have the power to make awards to all of our employees, except executive officers. Our board of directors will fix the terms of the awards to be granted by such executive officer, including the exercise price of such awards (which may include a formula by which the exercise price will be determined), and the maximum number of shares subject to awards that such executive officer may make.

*Effect of Certain Changes in Capitalization.* Upon the occurrence of any stock split, reverse stock split, stock dividend, recapitalization, combination of shares, reclassification of shares, spin-off or other similar change in capitalization or event, or any dividend or distribution to holders of our common stock other than an ordinary cash dividend, our board of directors shall equitably adjust:

- the number and class of securities available under the 2017 Stock Incentive Plan;
- the share counting rules under the 2017 Stock Incentive Plan;

- the number and class of securities and exercise price per share of each outstanding option;
- the share and per-share provisions and the measurement price of each outstanding stock appreciation right;
- the number of shares subject to, and the repurchase price per share subject to, each outstanding restricted stock award; and
- the share and per-share related provisions and the purchase price, if any, of each other stock-based award.

*Effect of Certain Corporate Transactions.* Upon a merger or other reorganization event (as defined in our 2017 Stock Incentive Plan), our board of directors may, on such terms as our board of directors determines (except to the extent specifically provided otherwise in an applicable award agreement or other agreement between the participant and us), take any one or more of the following actions pursuant to the 2017 Stock Incentive Plan as to some or all outstanding awards, other than restricted stock awards:

- provide that all outstanding awards shall be assumed, or substantially equivalent awards shall be substituted, by the acquiring or successor corporation (or an affiliate thereof);
- upon written notice to a participant, provide that all of the participant's unvested and/or vested but unexercised awards will terminate immediately prior to the consummation of such reorganization event unless exercised by the participant (to the extent then exercisable);
- provide that outstanding awards shall become exercisable, realizable or deliverable, or restrictions applicable to an award shall lapse, in whole or in part, prior to or upon such reorganization event;
- in the event of a reorganization event pursuant to which holders of shares of our common stock will receive a cash payment for each share surrendered in the reorganization event, make or provide for a cash payment to the participants with respect to each award held by a participant equal to (1) the number of shares of our common stock subject to the vested portion of the award (after giving effect to any acceleration of vesting that occurs upon or immediately prior to such reorganization event) multiplied by (2) the excess, if any, of the cash payment for each share surrendered in the reorganization event over the exercise, measurement or purchase price of such award and any applicable tax withholdings, in exchange for the termination of such award; and/or
- provide that, in connection with a liquidation or dissolution, awards shall convert into the right to receive liquidation proceeds (if applicable, net of the exercise, measurement or purchase price thereof and any applicable tax withholdings).

Our board of directors does not need to take the same action with respect to all awards, all awards held by a participant or all awards of the same type.

In the case of certain RSUs, no assumption or substitution is permitted, and the RSUs will instead be settled in accordance with the terms of the applicable RSU agreement.

Upon the occurrence of a reorganization event other than a liquidation or dissolution, the repurchase and other rights with respect to outstanding restricted stock awards will continue for the benefit of the successor company and will, unless the board of directors may otherwise determine, apply to the cash, securities or other property into which shares of our common stock are converted or exchanged pursuant to the reorganization event. Upon the occurrence of a reorganization event involving a liquidation or dissolution, all restrictions and conditions on each outstanding restricted stock award will automatically be deemed terminated or satisfied, unless otherwise provided in the agreement evidencing the restricted stock award or any other agreement between the participant and us.

At any time, our board of directors may, in its sole discretion, provide that any award under the 2017 Stock Incentive Plan will become immediately exercisable in full or in part, free of some or all restrictions or conditions, or otherwise realizable in whole or in part as the case may be.

No award may be granted under the 2017 Stock Incentive Plan after December 13, 2027. Our board of directors may amend, suspend or terminate the 2017 Stock Incentive Plan at any time, except that stockholder approval may be required to comply with applicable law or stock market requirements.

As of February 28, 2018, options to purchase 664,000 shares of common stock were outstanding under the 2017 Stock Incentive Plan, at a weighted-average exercise price of \$13.38 per share, and no options to purchase shares of our common stock had been exercised. In addition, as of such date, 32,691 RSUs were outstanding under the 2017 Stock Incentive Plan.



## 2011 Stock Incentive Plan

The 2011 Stock Incentive Plan provided for the grant of incentive stock options, nonstatutory stock options, stock appreciation rights, restricted stock units and shares, restricted or otherwise, of our common stock. Our employees, officers, directors, consultants and advisors were eligible to receive awards under our 2011 Stock Incentive Plan; however incentive stock options could only be granted to our employees. The type of award granted under our 2011 Stock Incentive Plan and the terms of such award are set forth in the applicable award agreement.

Pursuant to the terms of the 2011 Stock Incentive Plan, our board of directors (or a committee assigned by our board of directors) administers the 2011 Stock Incentive Plan. The board of directors has complete discretion to take any actions it deems necessary or advisable for the administration of the 2011 Stock Incentive Plan. All decisions, interpretations and other actions of our board of directors are final and binding on all participants and all persons deriving their rights from a participant. In addition, subject to any limitations in the 2011 Stock Incentive Plan, our board of directors selected the recipients of awards and determined:

- the number of shares of our common stock covered by options and the dates upon which the options become exercisable;
- the type of options to be granted;
- the duration of options, which could not be in excess of ten years;
- the exercise price of options, which was required to be at least equal to the fair market value of our common stock on the date of grant; and
- the number of shares of our common stock subject to, and the terms of any restricted stock awards or restricted stock units, and the terms and conditions of such awards, including conditions for repurchase, issue price and repurchase price.

*Effect of Certain Changes in Capitalization.* Pursuant to the 2011 Stock Incentive Plan, in the event of stock split, stock dividend, a combination of shares, reverse stock-split, a reclassification, or any other increase or decrease in the number of issued shares of our common stock effected without receipt of consideration by us, proportionate adjustments shall automatically be made in each of:

- the number of shares of our common stock available for issuance under the 2011 Stock Incentive Plan;
- the number of shares of our common stock covered by each outstanding option or RSU granted under the 2011 Stock Incentive Plan; and
- the exercise price under each outstanding option granted under the 2011 Stock Incentive Plan.

Our board of directors, in its sole discretion, may also make appropriate adjustments to one or more of the same items described above in the event of a declaration of an extraordinary dividend payable in a form other than shares of our common stock that has a material effect on the fair market value of shares of our common stock, a recapitalization, a spin-off or any similar occurrence.

*Effect of Certain Corporate Transactions.* In the event that we are a party to a merger or consolidation, all shares of our common stock acquired under the 2011 Stock Incentive Plan and all awards outstanding under the 2011 Stock Incentive Plan on the effective date of the transaction shall be treated in the manner described in the agreement of merger or consolidation, which agreement need not treat all awards in an identical manner but which must preserve an award's status as exempt from or compliant with Section 409A of the Internal Revenue Code of 1986, as amended, or the Code, and must provide for one or more of the following:

- continuation of the outstanding award by us if we are the surviving corporation;
- assumption, or substitution of substantially equivalent awards, of the outstanding award by the surviving corporation or its parent, provided that the assumption or substitution is accomplished in a manner that complies with the rules regarding assumptions or substitutions that apply to incentive stock options under the Code (whether the outstanding award is an incentive stock option or a nonstatutory stock option);
- acceleration of the date of exercise or vesting of an option (which may be contingent on the closing of the merger or consolidation) followed by the termination of the option if it is not timely exercised prior to the closing of the merger or consolidation (which exercise may also be contingent on the closing of the merger or consolidation); or

- cancellation of the outstanding award in exchange for a payment (if any) equal to the fair market value of a share of common stock as of the closing date of the merger or consolidation minus the per-share exercise price of the award (if any).

Subject to the limitations of the 2011 Stock Incentive Plan, our board of directors may modify, extend or assume outstanding options and RSUs and may accept the cancellation of outstanding options in return for the grant of new options for the same or a different number of shares of our common stock or a different exercise price.

As of February 28, 2018, options to purchase 14,723,365 shares of common stock were outstanding under the 2011 Stock Incentive Plan, at a weighted-average exercise price of \$4.23 per share, and options to purchase 3,207,780 shares of our common stock had been exercised. In addition, as of such date, 371,855 RSUs were outstanding under the 2011 Stock Incentive Plan.

No further awards will be made under our 2011 Stock Incentive Plan; however, awards outstanding under our 2011 Stock Incentive Plan will continue to be governed by their existing terms.

### **2003 Stock Incentive Plan**

The 2003 Stock Incentive Plan provided for the grant of incentive stock options, nonstatutory stock options, stock appreciation rights, restricted stock units and shares, restricted or otherwise, of our common stock. Our employees, officers, directors, consultants and advisors were eligible to receive awards under our 2003 Stock Incentive Plan; however incentive stock options could only be granted to our employees.

The type of award granted under our 2003 Stock Incentive Plan and the terms of such award are set forth in the applicable award agreement.

Pursuant to the terms of the 2003 Stock Incentive Plan, our board of directors (or a committee assigned by our board of directors) administers the 2003 Stock Incentive Plan. The board of directors has complete discretion to take any actions it deems necessary or advisable for the administration of the 2003 Stock Incentive Plan. All decisions, interpretations and other actions of our board of directors are final and binding on all participants and all persons deriving their rights from a participant. In addition, subject to any limitations in the 2003 Stock Incentive Plan, our board of directors selected the recipients of awards and determined:

- the number of shares of our common stock covered by options and the dates upon which the options become exercisable;
- the type of options to be granted;
- the duration of options, which could not be in excess of ten years;
- the exercise price of options, which was required to be at least equal to the fair market value of our common stock on the date of grant; and
- the number of shares of our common stock subject to, and the terms of any restricted stock awards or restricted stock units, and the terms and conditions of such awards, including conditions for repurchase, issue price and repurchase price.

*Effect of Certain Changes in Capitalization.* Pursuant to the 2003 Stock Incentive Plan, in the event of stock split, stock dividend, a combination of shares, reverse stock-split, a reclassification, or any other increase or decrease in the number of issued shares of our common stock effected without receipt of consideration by us, proportionate adjustments shall automatically be made in each of:

- the number of shares of our common stock available for issuance under the 2003 Stock Incentive Plan;
- the number of shares of our common stock covered by each outstanding option or RSU granted under the 2003 Stock Incentive Plan; and
- the exercise price under each outstanding option granted under the 2003 Stock Incentive Plan.

Our board of directors, in its sole discretion, may also make appropriate adjustments to one or more of the same items described above in the event of a declaration of an extraordinary dividend payable in a form other than shares of our common stock that has a material effect on the fair market value of shares of our common stock, a recapitalization, a spin-off or any similar occurrence.

*Effect of Certain Corporate Transactions.* In the event that we are a party to a merger or consolidation, all shares of our common stock acquired under the 2003 Stock Incentive Plan and all awards outstanding under the 2003 Stock Incentive Plan on the effective date of the transaction shall be treated in the manner described in the agreement of merger or consolidation, which agreement need not treat all awards in an identical manner but which must preserve an award's status as exempt from or compliant with Section 409A of the Code and must provide for one or more of the following:

- continuation of the outstanding award by us if we are the surviving corporation;
- assumption, or substitution of substantially equivalent awards, of the outstanding award by the surviving corporation or its parent, provided that the assumption or substitution is accomplished in a manner that complies with the rules regarding assumptions or substitutions that apply to incentive stock options under the Code (whether the outstanding award is an incentive stock option or a nonstatutory stock option);
- acceleration of the date of exercise or vesting of an option (which may be contingent on the closing of the merger or consolidation) followed by the termination of the option if it is not timely exercised prior to the closing of the merger or consolidation (which exercise may also be contingent on the closing of the merger or consolidation); or
- cancellation of the outstanding award in exchange for a payment (if any) equal the fair market value of a share of common stock as of the closing date of the merger or consolidation minus the per-share exercise price of the award (if any).

Subject to the limitations of the 2003 Stock Incentive Plan, our board of directors may modify, extend or assume outstanding options and RSUs and may accept the cancellation of outstanding options in return for the grant of new options for the same or a different number of shares of our common stock or a different exercise price.

As of February 28, 2018, options to purchase 145,830 shares of common stock were outstanding under the 2003 Stock Incentive Plan, at a weighted-average exercise price of \$0.25 per share, and options to purchase 2,564,170 shares of our common stock had been exercised. In addition, as of such date no RSUs were outstanding under the 2003 Stock Incentive Plan.

No further awards will be made under our 2003 Stock Incentive Plan; however, awards outstanding under our 2003 Stock Incentive Plan continue to be governed by their existing terms.

#### **Limitation of Liability and Indemnification**

Our restated certificate of incorporation limits the personal liability of directors for breach of fiduciary duty to the maximum extent permitted by the Delaware General Corporation Law and provides that no director will have personal liability to us or to our stockholders for monetary damages for breach of fiduciary duty or other duty as a director. However, these provisions do not eliminate or limit the liability of any of our directors:

- for any breach of the director's duty of loyalty to us or our stockholders;
- for acts or omissions not in good faith or which involve intentional misconduct or a knowing violation of law;
- for voting or assenting to unlawful payments of dividends, stock repurchases or other distributions; or
- for any transaction from which the director derived an improper personal benefit.

Any amendment to, or repeal of, these provisions will not eliminate or reduce the effect of these provisions in respect of any act, omission or claim that occurred or arose prior to such amendment or repeal. If the Delaware General Corporation Law is amended to provide for further limitations on the personal liability of directors of corporations, then the personal liability of our directors will be further limited to the greatest extent permitted by the Delaware General Corporation Law.

In addition, our restated certificate of incorporation provides that we must indemnify our directors and officers and we must advance expenses, including attorneys' fees, to our directors and officers in connection with legal proceedings, subject to very limited exceptions.

We maintain a general liability insurance policy that covers certain liabilities of our directors and officers arising out of claims based on acts or omissions in their capacities as directors or officers. In addition, we have entered into indemnification agreements with each of our directors and executive officers. These indemnification agreements may require us, among other things, to indemnify each such director and executive officer for some expenses, including attorneys' fees, judgments, fines and settlement amounts incurred by him or her in any action or proceeding arising out of his or her service as one of our directors or executive officers.

Certain of our non-employee directors may, through their relationships with their employers, be insured and/or indemnified against certain liabilities incurred in their capacity as members of our board of directors. We have agreed that we will be the indemnitor of "first resort," however, with respect to any claims against these directors for indemnification claims that are indemnifiable by both us and their employers. Accordingly, to the extent that indemnification is permissible under applicable law, we will have full liability for such claims (including for the advancement of any expenses) and we have waived all related rights of contribution, subrogation or other recovery that we might otherwise have against these directors' employers.

#### **Rule 10b5-1 Sales Plans**

Our directors and executive officers may adopt written plans, known as Rule 10b5-1 plans, in which they will contract with a broker to buy or sell shares of our common stock on a periodic basis. Under a Rule 10b5-1 plan, a broker executes trades pursuant to parameters established by the director or officer when entering into the plan, without further direction from them. The director or officer may amend or terminate the plan in some circumstances. Our directors and executive officers may also buy or sell additional shares outside of a Rule 10b5-1 plan when they are not in possession of material, nonpublic information.

#### **Compensation Committee Interlocks and Insider Participation**

None of our executive officers serves as a member of the board of directors or compensation committee, or other committee serving an equivalent function, of any entity that has one or more executive officers who serve as members of our board of directors or our compensation committee. None of the members of our compensation committee is an officer or employee of our company, nor have they ever been an officer or employee of our company.

#### **Item 12. Security Ownership of Certain Beneficial Owners and Management and Related Stockholder Matters**

The following table sets forth information with respect to the beneficial ownership of our common stock, as of February 28, 2018, by:

- each person, or group of affiliated persons, known by us to beneficially own more than 5% of our common stock;
- each of our directors;
- each of our named executive officers; and
- all of our executive officers and directors as a group.

The column entitled "Percentage of Shares Beneficially Owned" is based on a total of 81,580,281 shares of our common stock outstanding as of February 28, 2018.

The number of shares beneficially owned by each stockholder is determined under rules of the SEC and includes voting or investment power with respect to securities. Under these rules, beneficial ownership includes any shares as to which the individual or entity has sole or shared voting power or investment power. In computing the number of shares beneficially owned by an individual or entity and the percentage ownership of that person, shares of common stock subject to options or other rights held by such person that are currently exercisable or will become exercisable within 60 days after February 28, 2018, are considered outstanding, although these shares are not considered outstanding for purposes of computing the percentage ownership of any other person. Unless otherwise indicated, the address of all listed stockholders is c/o Casa Systems, Inc., 100 Old River Road, Andover, Massachusetts 01810. Each of the stockholders listed has sole voting and investment power with respect to the shares beneficially owned by the stockholder unless noted otherwise, subject to community property laws where applicable. Beneficial ownership representing less than 1% is denoted with an asterisk (\*).

Name of Beneficial Owner	Shares Beneficially Owned	Percentage of Shares Beneficially Owned
<b>5% Stockholders</b>		
Entities affiliated with Summit Partners(1)	38,842,000	47.6%
Liberty Global Ventures Holding B.V.(2)	4,432,870	5.4%
<b>Executive Officers and Directors</b>		
Jerry Guo(3)	12,647,735	15.3%
Gary Hall(4)	600,000	*
Weidong Chen(5)	7,476,145	9.1%
Lucy Xie(6)	2,565,400	3.1%
Abraham Pucheril(7)	600,000	*
Bruce R. Evans(8)	38,842,000	47.6%
Bill Stysliger(9)	600,000	*
Joe Tibbetts(10)	1,923	*
All executive officers and directors as a group (8 persons)(11)	63,333,203	74.3%

- (1) Consists of 24,208,726 shares of common stock held by Summit Partners Private Equity Fund VII-A, L.P., 14,540,155 shares of common stock held by Summit Partners Private Equity Fund VII-B, L.P., 82,642 shares of common stock held by Summit Investors I, LLC and 10,477 shares of common stock held by Summit Investors I (UK), L.P. Summit Partners, L.P. is the managing member of Summit Partners PE VII, LLC, which is the general partner of Summit Partners PE VII, L.P., which is the general partner of each of Summit Partners Private Equity Fund VII-A, L.P. and Summit Partners Private Equity Fund VII-B, L.P. Summit Master Company, LLC is the managing member of Summit Investors Management, LLC, which is the manager of Summit Investors I, LLC, and the general partner of Summit Investors I (UK), L.P. Summit Master Company, LLC, as the managing member of Summit Investors Management, LLC, has delegated investment decisions, including voting and dispositive power, to Summit Partners, L.P. and its investment committee responsible for voting and investment decisions with respect to Casa. Summit Partners, L.P., through a three-person investment committee responsible for voting and investment decisions with respect to Casa, currently comprised of Peter Y. Chung, Bruce R. Evans and Martin J. Mannion, has voting and dispositive power over the shares held by each of these entities and therefore may be deemed to beneficially own such shares. Each of the Summit entities and persons mentioned in this footnote disclaims beneficial ownership of the shares, except for those shares held of record by such entity, and except to the extent of their pecuniary interest therein. The address of the entities and persons mentioned in this footnote is 222 Berkeley Street, 18th Floor, Boston, Massachusetts 02116. This information is based on a Schedule 13G filed with the SEC on February 12, 2018 by entities affiliated with Summit Partners.
- (2) Consists of shares of common stock held by Liberty Global Ventures Holding B.V. Liberty Global Ventures Holding B.V. has delegated investment decisions, including voting and dispositive power, to Liberty Global Europe Holding B.V. Liberty Global Europe Management B.V. may be deemed to have voting and dispositive control over Liberty Global Europe Holding B.V. Liberty Global Europe Management B.V., Liberty Global Europe Holding B.V. and Liberty Global Ventures Holding B.V. each disclaim beneficial ownership of such shares, except for those shares held of record by such entity, and except to the extent of its pecuniary interest therein. The address of Liberty Global Ventures Holding B.V. is Boeing Avenue 53, 1119PE Schiphol-Rijk, The Netherlands.
- (3) Consists of (i) 11,303,860 shares of common stock held by Mr. Guo and (ii) options to purchase 1,343,875 shares of common stock that may be exercised within 60 days of February 28, 2018.
- (4) Consists of options to purchase 600,000 shares of common stock held by Mr. Hall that may be exercised within 60 days of February 28, 2018.
- (5) Consists of (i) 2,703,215 shares of common stock held by Mr. Chen, (ii) options to purchase 772,930 shares of common stock that may be exercised within 60 days of February 28, 2018 and (iii) 4,000,000 shares of common stock held by Dragonfly 2012 Irrevocable Trust, a family trust established for the children of Mr. Guo and Ms. Xie. Mr. Chen serves as trustee for Dragonfly 2012 Irrevocable Trust and has voting and dispositive control over the shares held by Dragonfly 2012 Irrevocable Trust. Mr. Chen and Dragonfly 2012 Irrevocable Trust each disclaim beneficial ownership of such shares, except for those shares held of record by such person or entity, and except to the extent of such person or entity's pecuniary interest therein.
- (6) Consists of (i) 2,262,755 shares of common stock held by Ms. Xie and (ii) options to purchase 302,645 shares of common stock that may be exercised within 60 days of February 28, 2018.
- (7) Consists of (i) 218,220 shares of common stock held by Mr. Pucheril and (ii) options to purchase 381,780 shares of common stock held by Mr. Pucheril that may be exercised within 60 days of February 28, 2018.
- (8) Consists of the shares noted in note (1) above. Mr. Evans is a Managing Director at Summit Partners, the general partner of the Summit-affiliated entities listed in note (1), and may be deemed the indirect beneficial owner of such shares.

- (9) Consists of (i) 300,000 shares of common stock held by Mr. Styslinger and (ii) an option to purchase 300,000 shares of common stock that may be exercised within 60 days of February 28, 2018.
- (10) Consists of 1,923 shares of common stock held by Mr. Tibbetts.
- (11) Includes (i) 16,789,973 shares of common stock held by our current directors and executive officers and (ii) options to purchase 3,701,230 shares of common stock that may be exercised within 60 days of February 28, 2018 by our current directors and executive officers.

### Securities authorized for issuance under equity compensation plans

The following table contains information about our equity compensation plans as of December 31, 2017.

Plan category	Number of securities to be issued upon exercise of outstanding options, warrants and rights (a)	Weighted-average exercise price of outstanding options, warrants and rights (1) (b)	Number of securities remaining available for future issuance under equity compensation plans (excluding securities reflected in column(a)) (c)
Equity compensation plans approved by security holders(2)	16,475,044	(3)\$ 4.55	9,363,356
Equity compensation plans not approved by security holders	—	—	—
Total	16,475,044	\$ 4.55	9,363,356

- (1) The weighted-average exercise price information does not include any outstanding restricted stock units, which are settled in shares of common stock upon vesting.
- (2) Consists of our 2003 Stock Incentive Plan, our 2011 Stock Incentive Plan and our 2017 Stock Incentive Plan. Our 2017 Stock Incentive Plan provides for further annual increases in the number of shares authorized for issuance under the plan, to be added on the first day of each fiscal year, beginning with the fiscal year ending December 31, 2019 and continuing until, and including, the fiscal year ending December 31, 2027, equal to the lowest of 20,000,000 shares of our common stock, 4% of the number of shares of our common stock outstanding on the first day of such fiscal year and an amount determined by our board of directors.
- (3) This amount includes 15,578,690 shares subject to outstanding stock options and 896,354 shares subject to outstanding restricted stock units.

### Item 13. Certain Relationships and Related Transactions, and Director Independence

The following is a description of transactions since January 1, 2017 to which we were a party or will be a party, in which:

- the amounts involved exceeded or will exceed \$120,000; and
- any of our directors, executive officers or holders of more than 5% of our capital stock, or any member of the immediate family of, or person sharing the household with, the foregoing persons, had or will have a direct or indirect material interest.

### Purchase of Shares in Initial Public Offering

Summit Partners, our largest stockholder and a venture capital firm of which one of our directors, Bruce Evans, is Chairman and a Managing Director, purchased 250,000 shares of our common stock in our initial public offering for an aggregate purchase price of \$3,250,000. In addition, our President and Chief Executive Officer, Jerry Guo, purchased 100,000 shares of our common stock in the initial public offering for an aggregate purchase price of \$1,300,000. Such purchases were made through the underwriters at the initial public offering price of \$13.00 per share.

### Transactions Involving Liberty Global Ventures Holding B.V. and its Affiliates

Liberty Global Ventures Holding B.V., one of our 5% stockholders, is affiliated with certain of our customers. In the year ended December 31, 2017, sales to these customers accounted for \$39,370,288 of our revenue.

### Equitable Adjustment Payments to Bill Styslinger

In May 2012, we granted to Mr. Styslinger an option to purchase 600,000 shares of common stock, at an exercise price of \$1.69 per share, which vested as to one-third (1/3) of the option shares on February 1, 2013 and as to the remainder in equal monthly installments over the following two years. The option had a grant-date fair value of \$526,837. In connection

with special dividends declared by our board of directors in December 2016, May 2017 and November 2017, our board of directors also approved cash payments to be made to holders of our stock options, stock appreciation rights and restricted stock units as equitable adjustments in accordance with the provisions of our equity incentive plans. In connection with the special dividend declared in December 2016, we paid Mr. Styslinger \$615,522 as an equitable adjustment in January 2017. In connection with the special dividend declared in May 2017, we paid Mr. Styslinger \$303,993 as an equitable adjustment in June 2017. In connection with the special dividend declared in November 2017, we paid Mr. Styslinger \$155,653 as an equitable adjustment in December 2017.

### **Employment of Rongke Xie**

Rongke Xie, who serves as Deputy General Manager of Guangzhou Casa Communication Technology LTD, one of our subsidiaries, is the sister of Lucy Xie, our Senior Vice President of Operations and a member of our board of directors. We paid Rongke Xie \$159,609 in total compensation in the year ended December 31, 2017 for her services as an employee.

### **Indemnification Agreements**

Our restated certificate of incorporation provides that we will indemnify our officers and directors to the fullest extent permitted by Delaware law. In addition, we have entered into indemnification agreements with each of our other directors and executive officers. See “Item 11. Executive Compensation—Limitation of Liability and Indemnification.”

### **Arrangements with Executive Officers**

For a description of the compensation arrangements that we have with our named executive officers and directors, see “Item 11. Executive Compensation”.

### **Policies and Procedures for Related Person Transactions**

We have adopted written policies and procedures for the review of any transaction, arrangement or relationship in which our company is a participant, the amount involved exceeds \$120,000, and one of our executive officers, directors, director nominees or 5% stockholders (or their immediate family members), each of whom we refer to as a “related person,” has a direct or indirect material interest.

If a related person proposes to enter into such a transaction, arrangement or relationship, which we refer to as a “related person transaction,” the related person must report the proposed related person transaction. The policy will call for the proposed related person transaction to be reviewed and, if deemed appropriate, approved by the audit committee of our board of directors. Whenever practicable, the reporting, review and approval will occur prior to entry into the transaction. If advance review and approval is not practicable, the committee will review, and, in its discretion, may ratify the related person transaction. The policy will also permit the chairman of the audit committee to review and, if deemed appropriate, approve proposed related person transactions that arise between audit committee meetings, subject to ratification by the audit committee at its next meeting. Any related person transactions that are ongoing in nature will be reviewed annually.

A related person transaction reviewed under the policy will be considered approved or ratified if it is authorized by the audit committee after full disclosure of the related person’s interest in the transaction. As appropriate for the circumstances, the audit committee will review and consider:

- the related person’s interest in the related person transaction;
- the approximate dollar value of the amount involved in the related person transaction;
- the approximate dollar value of the amount of the related person’s interest in the transaction without regard to the amount of any profit or loss;
- whether the transaction was undertaken in the ordinary course of our business;
- whether the terms of the transaction are no less favorable to us than terms that could have been reached with an unrelated third party;
- the purpose of, and the potential benefits to us of, the transaction; and
- any other information regarding the related person transaction or the related person in the context of the proposed transaction that would be material to investors in light of the circumstances of the particular transaction.

The audit committee may approve or ratify the transaction only if it determines that, under all of the circumstances, the transaction is in or is not inconsistent with our company's best interests. The audit committee may impose any conditions on the related person transaction that it deems appropriate.

In addition to the transactions that are excluded by the instructions to the SEC's related person transaction disclosure rule, the policy will provide that the following transactions do not create a material direct or indirect interest on behalf of related persons and, therefore, are not related person transactions for purposes of this policy:

- interests arising only from the related person's position as a director of another corporation or organization that is a party to the transaction;
- interests arising only from the direct or indirect ownership by the related person and all other related persons in the aggregate of less than a 10% equity interest (other than a general partnership interest) in another entity which is a party to the transaction;
- interests arising from both the position and ownership level described above;
- interests arising solely from the related person's position as an executive officer of another entity (whether or not the person is also a director of such entity), that is a participant in the transaction, where (a) the related person and all other related persons own in the aggregate less than a 10% equity interest in such entity, (b) the related person and his or her immediate family members are not involved in the negotiation of the terms of the transaction and do not receive any special benefits as a result of the transaction and (c) the amount involved in the transaction equals less than the greater of \$200,000 or 5% of the annual gross revenues of the company receiving payment under the transaction;
- interests arising solely from the ownership of a class of our equity securities if all holders of that class of equity securities receive the same benefit on a pro rata basis;
- a transaction that involves compensation to an executive officer if the compensation has been approved, or recommended to our board of directors for approval, by the compensation committee of the board of directors or a group of independent directors of ours performing a similar function;
- a transaction that involves compensation to a director for services as one of our directors if such compensation will be reported pursuant to Item 402(k) of Regulation S-K;
- a transaction that is specifically contemplated by provisions of our certificate of incorporation or bylaws;
- interests arising solely from indebtedness of a significant stockholder or an immediate family member of a significant stockholder of ours, as such terms are defined under the policy;
- a transaction where the rates or charges involved in the transaction are determined by competitive bids;
- a transaction that involves the rendering of services as a common or contract carrier or public utility at rates or charges fixed in conformity with law or governmental authority; and
- a transaction that involves services as a bank depository of funds, transfer agent, registrar, trustee under a trust indenture, or similar services.

The policy will provide that transactions involving compensation of executive officers shall be reviewed and approved by the compensation committee in the manner specified in its charter.

### **Director Independence**

Rule 5605 of the Nasdaq Listing Rules requires a majority of a listed company's board of directors to be comprised of independent directors within one year of listing. In addition, the Nasdaq Listing Rules require that, subject to specified exceptions, each member of a listed company's audit, compensation and nominations committees be independent, or, if a listed company has no nominations committee, that director nominees be selected or recommended for the board's selection by independent directors constituting a majority of the board's independent directors, and that audit committee members also satisfy independence criteria set forth in Rule 10A-3 under the Exchange Act and compensation committee members must also satisfy the independence criteria set forth in Rule 10C-1 under the Exchange Act. Under Rule 5605(a)(2), a director will only qualify as an "independent director" if, in the opinion of our board of directors, that person does not have a relationship that would interfere with the exercise of independent judgment in carrying out the responsibilities of a director. In order to be considered independent for purposes of Rule 10A-3, a member of an audit committee of a listed company may not, other than in his or her capacity as a member of the audit committee, the board of directors, or any other board committee, accept,



directly or indirectly, any consulting, advisory or other compensatory fee from the listed company or any of its subsidiaries or otherwise be an affiliated person of the listed company or any of its subsidiaries.

The phase-in periods with respect to director independence under the Nasdaq Listing Rules allow us to have only one independent member on each of the audit committee and compensation committee upon the listing date of our common stock, a majority of independent members on each committee within 90 days of the listing date (or the effective date of the registration statement, in the case of the audit committee) and fully independent committees and a majority of independent directors on our board of directors within one year of the listing date (or the effective date of the registration statement, in the case of the audit committee).

In November 2017, our board of directors undertook a review of the composition of our board of directors and its committees and the independence of each director. Based upon information requested from and provided by each director concerning his or her background, employment and affiliations, including family relationships, our board of directors has determined that each of Messrs. Evans and Tibbetts is an “independent director” as defined under Rule 5605(a)(2) of the Nasdaq Listing Rules. In making such determinations, our board of directors considered the relationships that each such non-employee director has with our company and all other facts and circumstances our board of directors deemed relevant, including the beneficial ownership of our capital stock by each non-employee director and any institutional stockholder with which he is affiliated. Mr. Evans, Mr. Tibbetts and Ms. Xie are the current members of our audit committee, and Mr. Evans and Mr. Styslinger are the current members of our compensation committee.

We expect to satisfy the member independence requirements for each of the audit and compensation committees of our board of directors prior to the end of the transition period provided under Nasdaq Listing Rules and SEC rules and regulations for companies that have recently completed their initial public offering.

We do not intend to form a nominating and corporate governance committee at this time, and the independent members of our board of directors will be responsible for nominations.

#### Item 14. Principal Accounting Fees and Services

The following table presents fees billed for professional services and other services rendered by PricewaterhouseCoopers LLP, our independent registered public accounting firm, for the years ended December 31, 2017 and 2016.

	Year Ended December 31,	
	2017	2016
Audit Fees (1)	\$ 1,066,170	\$ 1,442,916
All Other Fees (2)	\$ 2,756	\$ 4,774
	<u>\$ 1,068,926</u>	<u>\$ 1,447,690</u>

- (1) Audit fees represent fees for professional services provided in connection with the audit of our annual consolidated financial statements, the reviews of our quarterly consolidated financial statements, statutory audits and the submission of our Registration Statement on Form S-1 in connection with our initial public offering.
- (2) All Other Fees represent fees for products and services provided by PricewaterhouseCoopers LLP that are not included in the service categories above.

#### Pre-Approval Policies and Procedures

The audit committee of our board of directors has adopted policies and procedures for the pre-approval of audit and non-audit services for the purpose of maintaining the independence of our independent auditor. We may not engage our independent auditor to render any audit or non-audit service unless either the service is approved in advance by the audit committee, or the engagement to render the service is entered into pursuant to the audit committee’s pre-approval policies and procedures. Notwithstanding the foregoing, pre-approval is not required with respect to the provision of services, other than audit, review or attest services, by the independent auditor if the aggregate amount of all such services is no more than 5% of the total amount paid by us to the independent auditor during the fiscal year in which the services are provided, such services were not recognized by us at the time of the engagement to be non-audit services and such services are promptly brought to the attention of the audit committee and approved prior to completion of the audit by the audit committee or its chairman.

From time to time, our audit committee may pre-approve services that are expected to be provided to us by the independent auditor during the following 12 months. At the time such pre-approval is granted, the audit committee must identify the particular pre-approved services in a sufficient level of detail so that our management will not be called upon to make a judgment as to whether a proposed service fits within the pre-approved services and, at each regularly scheduled meeting of the audit committee following such approval, management or the independent auditor shall report to the audit committee regarding each service actually provided to us pursuant to such pre-approval.

The audit committee has delegated to its chairman the authority to grant pre-approvals of audit or non-audit services to be provided by the independent auditor. Any approval of services by the chairman of the audit committee is reported to the committee at its next regularly scheduled meeting.

**PART IV**

**Item 15. Exhibits, Financial Statement Schedules.**

(1) Financial Statements

Our consolidated financial statements are set forth in Part II, Item 8 of this Annual Report on Form 10-K and are incorporated herein by reference.

(2) Financial Statement Schedules

All financial schedules have been omitted because the required information is either presented in the consolidated financial statements or the notes thereto or is not applicable or required.

(3) Exhibits

Exhibit Number	Description of Exhibit	Incorporated by Reference			Filed Herewith
		Form	File No.	Date of Filing	
3.1	<a href="#">Restated Certificate of Incorporation of the Registrant</a>	8-K	001-38324	12/19/2017	3.1
3.2	<a href="#">By-laws of the Registrant</a>	8-K	001-38324	12/19/2017	3.2
4.1	<a href="#">Specimen Stock Certificate evidencing the shares of common stock</a>	S-1/A	333-221658	12/4/2017	4.1
10.1#	<a href="#">Form of Indemnification Agreement between the Registrant and its executive officers and directors</a>	S-1	333-221658	11/17/2017	10.1
10.2#	<a href="#">2003 Stock Incentive Plan, as amended</a>	S-1	333-221658	11/17/2017	10.2
10.3#	<a href="#">Form of Incentive Stock Option Agreement under 2003 Stock Incentive Plan</a>	S-1	333-221658	11/17/2017	10.3
10.4#	<a href="#">Form of Nonstatutory Stock Option Agreement under 2003 Stock Incentive Plan</a>	S-1	333-221658	11/17/2017	10.4
10.5#	<a href="#">Form of Restricted Stock Agreement under 2003 Stock Incentive Plan</a>	S-1	333-221658	11/17/2017	10.5
10.6#	<a href="#">2011 Stock Incentive Plan, as amended</a>	S-1	333-221658	11/17/2017	10.6
10.7#	<a href="#">Form of Incentive Stock Option Agreement under 2011 Stock Incentive Plan</a>	S-1	333-221658	11/17/2017	10.7
10.8#	<a href="#">Form of Nonstatutory Stock Option Agreement under 2011 Stock Incentive Plan</a>	S-1	333-221658	11/17/2017	10.8
10.9#	<a href="#">Form of Restricted Stock Agreement under 2011 Stock Incentive Plan</a>	S-1	333-221658	11/17/2017	10.9
10.10#	<a href="#">Form of Restricted Stock Unit Agreement under 2011 Stock Incentive Plan</a>	S-1	333-221658	11/17/2017	10.10
10.11#	<a href="#">Form of Stock Appreciation Rights Agreement under 2011 Stock Incentive Plan</a>	S-1	333-221658	11/17/2017	10.11
10.12#	<a href="#">2017 Stock Incentive Plan</a>	S-1	333-221658	11/17/2017	10.12
10.13#	<a href="#">Form of Stock Option Agreement under 2017 Stock Incentive Plan</a>	S-1	333-221658	11/17/2017	10.13
10.14#	<a href="#">Form of Restricted Stock Unit Agreement under 2017 Stock Incentive Plan</a>	S-1	333-221658	11/17/2017	10.14

Exhibit Number	Description of Exhibit	Incorporated by Reference			Exhibit Number	Filed Herewith
		Form	File No.	Date of Filing		
10.15#	<a href="#">Offer Letter between the Registrant and Gary Hall, dated May 25, 2011</a>	S-1	333-221658	11/17/2017	10.15	
10.16#	<a href="#">Offer Letter between the Registrant and Abraham Pucheril, dated August 18, 2012</a>	S-1	333-221658	11/17/2017	10.16	
10.17#	<a href="#">Consulting Agreement between the Registrant and Bill Styslinger, dated March 5, 2012, as amended</a>	S-1	333-221658	11/17/2017	10.17	
10.18	<a href="#">Mortgage, Security Agreement and Financing Statement, dated July 1, 2015, between Casa Properties LLC and Middlesex Savings Bank</a>	S-1	333-221658	11/17/2017	10.18	
10.19	<a href="#">Registration Rights Agreement, dated April 26, 2010, between the Registrant and the investors party thereto</a>	S-1	333-221658	11/17/2017	10.19	
10.20	<a href="#">Credit Agreement, dated as of December 20, 2016, by and among the Registrant and JPMorgan Chase Bank, N.A., as agent, and the other agents, arrangers and lenders party thereto</a>	S-1	333-221658	11/17/2017	10.20	
10.21	<a href="#">Letters, dated as of February 1, 2017 and April 14, 2017, from the Registrant to the lenders party to the Credit Agreement</a>	S-1	333-221658	11/17/2017	10.21	
10.22	<a href="#">Security Agreement, dated as of December 20, 2016, by and among the Registrant, each of the subsidiaries of the Registrant party thereto, and JPMorgan Chase Bank, N.A., as Collateral Agent</a>	S-1	333-221658	11/17/2017	10.22	
10.23†	<a href="#">Master Purchase Agreement, dated October 31, 2013, between Time Warner Cable Enterprises LLC and Casa Systems, Inc., as amended</a>	S-1	333-221658	11/17/2017	10.23	
10.24#	<a href="#">Employment Agreement, dated November 17, 2017, by and between the Registrant and Jerry Guo</a>	S-1	333-221658	11/17/2017	10.24	
10.25#	<a href="#">Employment Agreement, dated November 17, 2017, by and between the Registrant and Lucy Xie</a>	S-1	333-221658	11/17/2017	10.25	
10.26#	<a href="#">Employment Agreement, dated November 17, 2017, by and between the Registrant and Weidong Chen</a>	S-1	333-221658	11/17/2017	10.26	
21.1	<a href="#">Subsidiaries of the Registrant</a>	S-1	333-221658	11/17/2017	21.1	
23.1	<a href="#">Consent of PricewaterhouseCoopers LLP, Independent Registered Public Accounting Firm.</a>					✓
31.1	<a href="#">Certification of Principal Executive Officer Pursuant to Rules 13a-14(a) and 15d-14(a) under the Securities Exchange Act of 1934, as Adopted Pursuant to Section 302 of the Sarbanes-Oxley Act of 2002.</a>					✓
31.2	<a href="#">Certification of Principal Financial Officer Pursuant to Rules 13a-14(a) and 15d-14(a) under the Securities Exchange Act of 1934, as Adopted Pursuant to Section 302 of the Sarbanes-Oxley Act of 2002.</a>					✓

Exhibit Number	Description of Exhibit	Incorporated by Reference			Filed Herewith
		Form	File No.	Date of Filing	
32.1	<a href="#">Certification of Principal Executive Officer Pursuant to 18 U.S.C. Section 1350, as Adopted Pursuant to Section 906 of the Sarbanes-Oxley Act of 2002.</a>				✓
32.2	<a href="#">Certification of Principal Financial Officer Pursuant to 18 U.S.C. Section 1350, as Adopted Pursuant to Section 906 of the Sarbanes-Oxley Act of 2002.</a>				✓

# Management contracts or compensatory plans or arrangements required to be filed as an exhibit hereto pursuant to Item 15(b) of Form 10-K.

† Confidential treatment requested as to certain portions, which portions have been omitted and filed separately with the Securities and Exchange Commission.

**Item 16. Form 10-K Summary.**

Not applicable.



**CONSENT OF INDEPENDENT REGISTERED PUBLIC ACCOUNTING FIRM**

We hereby consent to the incorporation by reference in the Registration Statements on Form S-8 (Form 333-222073) of Casa System's Inc. of our report dated March 6, 2018, relating to the consolidated financial statements, which appears in this Form 10-K.

/s/ PricewaterhouseCoopers LLP  
Boston, Massachusetts  
March 6, 2018

**CERTIFICATION PURSUANT TO  
RULES 13a-14(a) AND 15d-14(a) UNDER THE SECURITIES EXCHANGE ACT OF 1934,  
AS ADOPTED PURSUANT TO SECTION 302 OF THE SARBANES-OXLEY ACT OF 2002**

I, Jerry Guo, certify that:

1. I have reviewed this Annual Report on Form 10-K of Casa Systems, Inc.;
2. Based on my knowledge, this report does not contain any untrue statement of a material fact or omit to state a material fact necessary to make the statements made, in light of the circumstances under which such statements were made, not misleading with respect to the period covered by this report;
3. Based on my knowledge, the financial statements, and other financial information included in this report, fairly present in all material respects the financial condition, results of operations and cash flows of the Registrant as of, and for, the periods presented in this report;
4. The Registrant's other certifying officer(s) and I are responsible for establishing and maintaining disclosure controls and procedures (as defined in Exchange Act Rules 13a-15(e) and 15d-15(e)) for the Registrant and have:
  - (a) Designed such disclosure controls and procedures, or caused such disclosure controls and procedures to be designed under our supervision, to ensure that material information relating to the Registrant, including its consolidated subsidiaries, is made known to us by others within those entities, particularly during the period in which this report is being prepared;
  - (b) Evaluated the effectiveness of the Registrant's disclosure controls and procedures and presented in this report our conclusions about the effectiveness of the disclosure controls and procedures, as of the end of the period covered by this report based on such evaluation; and
  - (c) Disclosed in this report any change in the Registrant's internal control over financial reporting that occurred during the Registrant's most recent fiscal quarter (the Registrant's fourth fiscal quarter in the case of an annual report) that has materially affected, or is reasonably likely to materially affect, the Registrant's internal control over financial reporting; and
5. The Registrant's other certifying officer(s) and I have disclosed, based on our most recent evaluation of internal control over financial reporting, to the Registrant's auditors and the audit committee of the Registrant's board of directors (or persons performing the equivalent functions):
  - (a) All significant deficiencies and material weaknesses in the design or operation of internal control over financial reporting which are reasonably likely to adversely affect the Registrant's ability to record, process, summarize and report financial information; and
  - (b) Any fraud, whether or not material, that involves management or other employees who have a significant role in the Registrant's internal control over financial reporting.

Date: March 6, 2018

By: \_\_\_\_\_  
/s/ Jerry Guo  
Jerry Guo  
President, Chief Executive Officer and Chairman







