

**UNITED STATES
SECURITIES AND EXCHANGE COMMISSION
Washington, DC 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, 2016
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: 001-34674

Calix, Inc.

(Exact Name of Registrant as Specified in Its Charter)

Delaware
(State or Other Jurisdiction of
Incorporation or Organization)

1035 N. McDowell Blvd.
Petaluma, California
(Address of Principal Executive Offices)

68-0438710
(I.R.S. Employer
Identification No.)

94954
(Zip Code)

Registrant's telephone number, including area code (707) 766-3000

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

Title of each class
Common Stock, \$0.025 par value

Name of each exchange on which registered
The New York Stock Exchange

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 Section 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 of this chapter) 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, or a smaller reporting company. See the definitions of "large accelerated filer," "accelerated filer" and "smaller reporting company" in Rule 12b-2 of the Exchange Act.

Large Accelerated Filer Accelerated Filer

Non-accelerated filer (Do not check if a smaller reporting Company) Smaller Reporting Company

Indicate by check mark whether the registrant is a shell company (as defined in Rule 12b-2 of the Exchange Act). Yes: No:

The aggregate market value of the Common Stock held by non-affiliates of the registrant based upon the closing sale price on the New York Stock Exchange on June 24, 2016, the last business day of the Registrant's most recently completed second fiscal quarter, was approximately \$278 million. Shares held by each executive officer, director and by each other person (if any) who owns more than 10% of the outstanding common stock have been excluded in that such persons may be deemed to be affiliates. This determination of affiliate status is not necessarily a conclusive determination for other purposes.

As of February 16, 2017, the number of shares of the registrant's common stock outstanding was 49,589,197.

DOCUMENTS INCORPORATED BY REFERENCE

Portions of the registrant's definitive proxy statement for its 2017 annual meeting of stockholders are incorporated by reference in Items 10, 11, 12, 13 and 14 of Part III.

Calix, Inc.

Form 10-K

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SPECIAL NOTE REGARDING FORWARD-LOOKING STATEMENTS

This report includes forward-looking statements that involve substantial risks and uncertainties. All statements other than statements of historical facts contained in this report, including statements regarding Calix's future financial position, business strategy and plans and objectives of management for future operations, are forward-looking statements. In some cases, you can identify forward-looking statements by terminology such as "believe," "may," "estimate," "continue," "anticipate," "intend," "should," "plan," "expect," "predict," "potential," or the negative of these terms or other similar expressions. Forward-looking statements include Calix's expectations concerning the outlook for its business, productivity, plans and goals for future operational improvements and capital investments, operational performance, future market conditions or economic performance and developments in the capital and credit markets and expected future financial performance.

Forward-looking statements involve a number of risks, uncertainties and assumptions, and actual results or events may differ materially from those projected or implied in those statements. Important factors that could cause such differences include:

- our ability to predict our revenue and reduce and control costs related to our products or service offerings, including larger scale turnkey network improvement projects that may span several quarters;
- our ability to increase our sales to larger communications service providers ("CSPs") globally;
- the capital spending patterns of CSPs, and any decrease or delay in capital spending by CSPs due to macro-economic conditions, regulatory uncertainties, or other reasons;
- the impact of government-sponsored programs on our customers;
- intense competition;
- our ability to develop new products or enhancements that support technological advances and meet changing CSP requirements;
- our ability to achieve market acceptance of our products and CSPs' willingness to deploy our new products;
- the concentration of our customer base;
- the length and unpredictability of our sales cycles and timing of orders;
- our focus on CSPs with limited revenue potential;
- our lack of long-term, committed-volume purchase contracts with our customers;
- our exposure to the credit risks of our customers;
- fluctuations in our gross margin;
- the interoperability of our products with CSP networks;
- our dependence on sole-, single- and limited-source suppliers;
- our ability to manage our relationships with our contract manufacturers and suppliers;
- our ability to forecast our manufacturing requirements and manage our inventory;
- our products' compliance with industry standards;
- our ability to expand our international operations;
- our ability to protect our intellectual property and the cost of doing so;
- the quality of our products, including any undetected hardware defects or bugs in our software;
- our ability to estimate future warranty obligations due to product failure rates;
- our ability to obtain necessary third-party technology licenses at reasonable costs;
- the regulatory and physical impacts of climate change and other natural events;
- the attraction and retention of qualified employees and key management personnel;
- our ability to build and sustain the proper information technology infrastructure; and
- our ability to maintain proper and effective internal controls.

Calix cautions you against placing undue reliance on forward-looking statements, which reflect our current beliefs and are based on information currently available to us as of the date a forward-looking statement is made. Forward-looking statements set forth in this Annual Report on Form 10-K speak only as of the date of its filing. We undertake no obligation to revise forward-looking statements to reflect future events, changes in circumstances, or changes in beliefs. In the event that we do update any forward-looking statements, no inference should be made that we will make additional updates with respect to that statement, related matters, or any other forward-looking statements.

PART I

ITEM 1. Business

Overview

Calix, Inc. (together with its subsidiaries, "Calix," the "Company," "our," "we," or "us") was incorporated in August 1999 and is a Delaware corporation. We are a leading global provider of broadband communications access platforms, systems and software for fiber- and copper-based network architectures and a pioneer in software defined access that enable communications service providers ("CSPs") to transform their networks and enhance how they connect to their residential and business subscribers. We enable CSPs to provide a wide range of revenue-generating services, from basic voice and data to advanced broadband services, over legacy and next-generation access networks. We focus solely on CSP access networks, the portion of the network that governs available bandwidth and determines the range and quality of services that can be offered to subscribers. We develop and sell carrier-class hardware and cloud products that are designed to enhance and transform CSP access networks to meet the changing demands of subscribers rapidly and cost-effectively. Our most advanced systems operate on Access eXtensible Operating System ("AXOS"), a network operating system and software platform built for the specific needs of the access network that allows for all software functions in the access network to be developed and run without dependence on underlying hardware and associated silicon chipsets.

The Calix portfolio consists of three core systems and/or nodes: E-Series access systems and nodes ("E-Series systems and nodes"), B6 access nodes ("B-Series nodes"), and the C7 multiservice, multiprotocol access system ("C-Series system"). These systems and nodes are complemented by the P-Series optical network terminals ("ONTs") and residential gateways, the GigaFamily of GigaCenters, GigaHubs, and GigaPoints, the Calix Management System ("CMS"), OpenLink Cable software and Compass Cloud family of software-as-a-service products. Our broad and comprehensive portfolio serves the CSP network from the central office or data center to the subscriber premises and enables CSPs to deliver voice, high-speed data and an unmatched broadband experience over legacy and next-generation access networks. These packet-based systems and nodes are complemented by Compass Cloud to enable CSPs to rapidly introduce new revenue-generating services while minimizing the capital and operational costs of CSP networks. The Calix portfolio allows CSPs to evolve their networks and service delivery capabilities at a pace that balances their financial, competitive and technological needs.

We believe that the rapid growth of Internet and data traffic, introduction of bandwidth-intensive advanced broadband services, such as gigabit-speed Internet, Internet protocol television ("IPTV") and over-the-top ("OTT") video, mobile broadband, high-definition and ultra high-definition video, and online gaming, the rise of the cloud as a mainstream vehicle for content delivery over broadband, the proliferation of broadband-ready consumer devices, and the increasingly competitive market for residential and business subscribers are driving CSPs to invest in and upgrade their access networks. We also believe that CSPs will gradually transform their access networks to deliver these advanced broadband services over fiber-based networks complemented by advanced wireless technologies, thereby preparing networks for continued bandwidth growth, the introduction of new services and more cost-effective operations. During this time, CSPs will increasingly deploy new fiber-based network infrastructure to enable this transition while continuing to support basic voice and data services over legacy networks. Our portfolio is designed to enable this evolution of the access network efficiently and flexibly.

We market our access systems and related software to CSPs globally through our direct sales force as well as a limited number of international resellers. As of December 31, 2016, over 23 million ports of the Calix portfolio have been deployed at a growing number of CSPs worldwide. Our customers include many of the world's largest communications providers. In addition, we have enabled over 1,300 customers to deploy gigabit passive optical network, Active Ethernet and point-to-point Ethernet fiber access networks.

We have a single reportable operating segment. Additional information about geographic areas required by this item is incorporated herein by reference to Note 13, "*Segment Information*" of the Notes to Consolidated Financial Statements of this Annual Report on Form 10-K.

Industry Background

CSPs compete in a rapidly changing market to deliver a range of voice, data and video services to their residential and business subscribers. CSPs include wireline and wireless service providers, cable multiple system operators ("MSOs"), electrical cooperatives, and municipalities. The rise in Internet-enabled communications has created an environment in which CSPs are competing to deliver voice, data and video offerings to their subscribers across fixed and mobile networks. Residential and business subscribers now have the opportunity to purchase an array of services such as basic voice and data as well as advanced broadband services such as high-speed Internet, IPTV, mobile broadband, high-definition and ultra high-definition video, OTT video, and online gaming from a variety of CSPs. The rapid growth in new services is generating increased network traffic.

For example, Cisco Systems, Inc. estimates that global IP traffic will grow at a compound annual growth rate of 22% per year from 2015 to reach approximately 194 exabytes per month in 2020. We believe that increased network traffic will be largely driven by video applications, which are expected to account for 85% of global consumer traffic by 2020. CSPs are also broadening their offerings of bandwidth-intensive advanced broadband services, while maintaining support for their widely utilized basic voice and data services. CSPs are being driven to evolve their access networks to enable cost-effective delivery of a broad range of services demanded by their subscribers.

With strong subscriber demand for low latency and bandwidth-intensive applications, CSPs are seeking to offer new services, realize new revenue streams, build out new infrastructure and differentiate themselves from their competitors. CSPs typically compete on their cost to acquire and retain subscribers, the quality of their service offerings, including such measures as the speed, latency, and reliability of their broadband services, and the cost to deploy and operate their networks. In the past, CSPs offered different solutions delivered over distinct networks designed for specific services and were generally not in direct competition. For example, traditional wireline service providers

provided voice services while cable MSOs delivered cable television services. Currently, CSPs are increasingly offering services that leverage Internet protocol ("IP"), thereby enabling CSPs of all types to offer a comprehensive bundle of IP-based voice, data and video services to their subscribers. This has increased the level of competition among CSPs as wireline and wireless service providers, cable MSOs and other CSPs can all compete for the same residential and business subscribers using similar types of IP-based services. Over the last few years, Google has been selectively overbuilding major U.S. cities with fiber and delivering data and video service packages that include symmetrical 1 gigabit per second (gigabit) high-speed data services. Google's program has spurred both traditional wireline service providers and cable MSOs to invest in gigabit capable networks in both the Google serviced cities as well as other communities around the world.

Access Networks are Critical and Strategic to CSPs and Policymakers

Access networks, also known as the local loop or last mile, directly and physically connect the residential or business subscriber to the CSP's data center, central office or similar facilities. The access network is critical for service delivery as it governs the bandwidth capacity, service quality available to subscribers and ultimately the services and experience CSPs can provide to subscribers. Connecting the cloud to a growing number of broadband-ready consumer devices and providing differentiated, high-speed, high quality connectivity has become increasingly critical for CSPs to retain and expand their subscriber base and to launch new services. Typically, subscribers consider overall broadband service experience, including service breadth, bandwidth speed, latency, reliability, price, ease of use and technical support as key factors in the decision to purchase services from a CSP. As CSPs face increasing pressure to retain their basic voice and data customers in response to competitive CSPs offering voice, data and video services, it is critical for CSPs to continue to invest in and upgrade their access networks in order to maintain a compelling broadband service experience, drive new revenue opportunities and maintain and grow their subscriber base. Access networks can meaningfully affect the ongoing success of CSPs.

Governments around the world recognize the importance of expanding broadband networks and delivering advanced broadband services to more people and businesses. As a result, many governments are establishing one-time stimulus programs or other incentives for broadband investment on an on-going basis. In the United States, programs like the Connect America Fund ("CAF") and E-Rate provide billions of dollars each year to CSPs in the form of capital investment incentives, grants, and loans targeted at encouraging broadband network investment in unserved or underserved communities and schools. In 2015 for example, the CAF program was authorized to distribute \$3.8 billion to offset the costs of installing and operating CSP operated broadband and voice networks, and the E-Rate program was authorized to offer \$1.5 billion in grants to build gigabit capable network connections to schools. The CAF program is funded to distribute this same amount of funds to CSPs through 2020, and the E-Rate program targeted at networks is funded at its current level indefinitely. The Canadian Radio-television and Telecommunications Commission in 2016 created a \$750 million fund targeted at increasing broadband coverage and speeds, and the European Commission is pursuing similar goals via its Connecting Europe Facility and other programs.

Limitations of Traditional Access Networks

CSPs rely on the capabilities and quality of their access networks, as well as network data analytics, to sustain their businesses and relationships with their subscribers through an enhanced subscriber experience. In the past, subscribers had little influence over the types of services provided by CSPs. Today, subscribers can be more selective among CSPs, and these device-enabled subscribers are increasingly demanding advanced broadband services on both a wireline and wireless basis in addition to basic voice and data services. In general, access networks are highly capital intensive and CSPs have historically upgraded capacity as technology and subscriber demands on their networks have changed. We believe CSPs will increasingly integrate fiber-and Ethernet-based access networks to enable the delivery of more advanced broadband services at a lower cost while at the same time enabling the continued delivery of basic voice and data services. Thus far, CSPs have taken an incremental approach to capacity upgrades in their access networks. As a result, CSPs face multiple challenges concerning their access networks, business models and service delivery capabilities, including:

- ***A Complex Patchwork of Networks and Technologies*** — In order to upgrade their access networks, CSPs have typically added networks for new residential or business services that they deliver, such as digital subscriber line ("DSL") or G.fast, data over cable service interface specification ("DOCSIS"), GPON or Gigabit Ethernet, on top of existing networks. This led to an overbuild of access technologies and an unnecessarily complex patchwork of physical connections between the central office or data center and the subscriber. In addition, CSPs have expanded the penetration of fiber into their access networks, thereby shortening the length of the subscriber connection through lower bandwidth media types (such as copper-based or coaxial cable-based networks). CSPs have also attempted to evolve their access networks to enable more efficient packet-based services by adding Ethernet protocol on top of existing asynchronous transfer mode ("ATM") and DSL protocols. In addition, CSPs have often deployed separate equipment to facilitate the delivery of synchronous optical networking ("SONET"), Gigabit Ethernet and 10 Gigabit Ethernet transport, which connects CSP central offices and data centers with their access networks, further increasing the complexity and the cost of their networks. This approach has left most CSPs with disparate architectures, features, functions and capabilities in different parts of their networks. This increasingly complex, patchwork approach to deploying access networks and delivering new services to their subscribers has created potential complications for CSPs within their access networks. These potential complications limit data transmission capability, increase the cost of operation and maintenance and can negatively impact the subscriber experience.
- ***Limited Capacity from Legacy Access Architectures*** — Legacy access network architectures were designed to address earlier-generation communication demands of wireline telephone, cable television and cellular services. Such access networks have physical limitations in their ability to scale bandwidth, avoid latency issues and deliver the advanced broadband services subscribers demand today and are expected to increasingly demand in the future. In addition, CSPs understand the need to add fiber to their networks to provide the bandwidth required to scale advanced broadband services. However, it is costly and complex to integrate fiber-based technologies into legacy access networks.

- ***Inflexible Technologies Increase Network Switching Costs*** — Legacy access networks were architected around a narrow set of technologies. For example, traditional voice calls use circuit switching technology to allocate a fixed amount of network capacity to each call, regardless of whether such capacity is fully utilized. The emergence of packet-based technologies, primarily IP and Ethernet, has significantly improved the ability to transmit data efficiently across networks as bandwidth is only consumed when signals are actually being transmitted. Most legacy access networks do not allow circuit- and packet-based technologies to co-exist or to evolve from one technology to another.
- ***Inefficient Service Roll-out Constrains Subscriber Offerings*** — Legacy access networks were designed to support a narrow range of services, and as a result, they limit the ability of CSPs to provision the advanced broadband services increasingly demanded by their subscribers. Packet-based networks are more flexible and efficient than traditional circuit-switched networks. For example, to provision additional business services in a legacy access network, a CSP would typically deploy additional physical connections and equipment, while packet-based infrastructure allows a CSP to change or add services virtually without the presence of a service technician or the installation of new equipment. In order to deploy these services quickly and efficiently, CSPs must be able to utilize their existing infrastructure while upgrading the legacy access network to packet-based technologies.
- ***Highly Reliable Access Products are Difficult to Engineer and Manage*** — Given the critical nature of access networks and their typical deployment in remote and distant locations, access infrastructure products must be highly reliable. Unlike most other communications equipment which is deployed in environmentally controlled data centers, central offices or similar facilities, a great deal of access equipment is deployed in outdoor environments and must be specifically engineered to operate in variable and often extremely harsh conditions, as well as fit into smaller spaces, such as on a street corner, near office buildings or on the side of a house or cellular tower. Since the access portion of the network is broadly distributed, it is expensive as well as difficult to manage and maintain. CSPs require access network equipment that can perform reliably in these uncontrolled environments and be deployed in a variety of form factors, thereby adding significant engineering and product development challenges as compared to most other forms of communications infrastructure equipment. In addition, some portion of the access market is supported by government initiatives and products sold into this segment require additional government certifications and approvals in order to qualify for deployment.
- ***Expensive to Deploy and Operate*** — As a result of deploying multiple networks with discrete functions, legacy access networks require a wide variety of equipment to be installed, maintained and ultimately replaced, thereby placing a significant and recurring capital and operating expense burden on the CSP. Once installed, this equipment occupies valuable space inside a data center or central office, requires frequent labor-intensive maintenance and consumes meaningful amounts of power. Moreover, the lack of integration across protocols and fiber- and copper-based network architectures negatively impacts network performance. Inferior network performance diminishes the subscriber experience and increases network operating costs by increasing service calls, the number of required support staff and the frequency of equipment upgrades and replacements.
- ***Onerous Backoffice Systems Slow Deployment of New Technologies and Services*** — Traditional methods for operationalizing new products and services often require significant testing and lengthy backoffice integration activities, often directly proportional to the size of the CSP. This often places CSPs at a competitive disadvantage when competing with emerging service providers that can leverage for streamlined or virtualized processes. Emerging frameworks like Software Defined Networking ("SDN") and Network Functions Virtualization ("NFV") can help CSPs overcome these operational challenges and bring new products and services to market faster.

Given these limitations of legacy access networks, we believe CSPs will over time increasingly emphasize fiber- and Ethernet-based technologies and frameworks like SDN and NFV in their access networks thereby enabling the rapid, cost-effective deployment of advanced broadband services. Such technologies and frameworks reduce overhead expenses, simplify network architectures and seamlessly integrate legacy and next-generation networks. We therefore believe that successful CSPs will be those that evolve from providing basic subscriber connectivity to providing the most relevant services and subscriber experience.

The Calix Solution

We are a leading global provider of broadband communications access platforms, systems and software for fiber- and copper-based network architectures and a pioneer in software defined access that enable CSPs to transform their networks and enhance how they connect to their residential and business subscribers. The Calix portfolio enables CSPs to quickly meet subscriber demands for both basic voice and data as well as advanced broadband and Wi-Fi services, while providing CSPs with the flexibility to optimize and transform their networks at a pace that balances their financial, competitive and technological needs. Our systems and software leverage packet-based technologies that enable CSPs to offer a wide range of revenue-generating services, regardless of protocol or network connection media. Our portfolio consists of our E-Series systems and nodes, as well as our B-Series nodes and C-Series system. These systems and nodes are complemented by the P-Series ONTs and residential gateways; the GigaFamily of premises service delivery centers, hubs, and points; CMS; Open Link Cable software and the Compass Cloud family of software-as-a-service products.

We believe that the Calix portfolio of network and premises-based solutions provides the following benefits to CSPs:

- ***Single Intelligent Access Network for Basic and Advanced Services*** — The Calix portfolio allows for a broad range of subscriber services to be provisioned and delivered over a single unified network. These systems can deliver basic voice and data, advanced broadband services, including high-speed Internet, IPTV, mobile broadband, high-definition video and online gaming, as well as integrated transport within our portfolio, all of which can be monitored and managed by Compass Cloud. In addition, our systems can be deployed in both small and large form factors across multiple deployment scenarios depending on subscriber proximity and service requirements. Introduced in 2014, the Open Link Cable software solution provides cable MSOs with the operational advantage of being able to provision GPON services via their traditional DOCSIS back office infrastructure. These are examples of our multiservice approach that allows CSPs to utilize their legacy access networks during the course of their equipment upgrade

and network transformation, saving them time and money in delivering both basic voice and data and advanced broadband services.

- **High Capacity and Operational Efficiency** — The Calix portfolio is designed to facilitate the evolution of CSP access networks to fiber- and Ethernet-based network architectures. Our portfolio includes systems and nodes that exceed the capacity of the products of our competitors. Our systems and nodes are designed and optimized for fiber- and copper-based network architectures. We also have a broad portfolio of fiber ONTs and GigaFamily products that serve as the on-premises gateways and service delivery platforms for new services to subscribers. Many of our ONTs auto-detect fiber access technologies, support both GPON and point-to-point Gigabit Ethernet, and can co-exist with next generation PON technologies to provide CSPs additional cost and management efficiencies.
- **Highly Flexible Technology Solutions** — The Calix portfolio enables CSPs to utilize legacy access network infrastructure during their migration towards fiber- and Ethernet-based access networks. Our portfolio supports multiple protocols, different form factors and modular options optimized for a variety of installation locations and environments, and multiple services delivered over fiber- and copper-based network architectures.
- **Seamless Transition to Advanced Services** — The Calix portfolio enables CSPs to better manage the evolution of their access networks by transitioning the delivery of basic voice and data services to advanced broadband services. Our C-Series system supports ongoing demand for basic voice and data services, and facilitates a seamless and controlled migration to IP-based services. For CSPs without legacy network constraints, our E-Series and B-Series systems allow CSPs to deploy advanced broadband services rapidly and cost effectively to their subscribers.
- **Highly Reliable and Purpose-Built Solutions for Demands of Access** — The Calix portfolio is designed for high availability and purpose-built for the demands of access network deployments. Our carrier class products are environmentally hardened and field-tested to be capable of withstanding harsh environmental conditions, including temperatures between -40 and 65 degrees Celsius, extremely dry or wet conditions and physical abuse. Our access systems are built and tested to meet or exceed network equipment-building system standards, which are a set of safety, spatial and environmental design guidelines for telecommunications equipment. Our products are highly compatible and designed to be easily integrated into the existing operational and management infrastructure of CSP access networks. Our portfolio can be deployed in multiple form factors and power configurations to address a wide range of deployment scenarios influenced by space and power constraints.
- **An Operating System and Software Platform Built to Meet the Emerging Demands of the Access Network** — Our AXOS platform is an architecture built to leverage the best of data center software design and network virtualization in the challenging environment and variability of the ever-changing access network. Completely hardware independent, AXOS allows for all software functions in the access network to be developed and run without dependence on the underlying hardware and associated silicon chipsets. This always-on architecture and consistent provisioning of services accelerates time-to-revenue, reduces service disruptions, and reduces operational complexity for service providers.
- **Compelling Customer Value Proposition** — We believe the Calix portfolio and AXOS platform offer CSPs a compelling value proposition. Our portfolio provides CSPs the flexibility to upgrade their networks over time, reduce operational costs and maximize their return on capital expenditures. Our packet-based systems and nodes and AXOS platform enable CSPs to offer new services more quickly and generate new revenue opportunities. We believe the interoperability and compatibility of our portfolio reduces the complexity and cost of managing CSP networks.

Our Strategy

The Calix portfolio enables the delivery of basic voice and data and advanced broadband services across multiple protocols and form factors over fiber- and copper-based network architectures. Our objective is to leverage our portfolio to become the leading supplier of access systems and software that enable CSPs to transform their networks and business models to meet the changing demands of their subscribers. The principal elements of our strategy are:

- **Continue Our Sole Focus on Access Systems and Cloud Software** — Our dedicated focus on access has been an important driver of our success with our customers. We believe our focus has allowed us to develop the highly innovative AXOS platform, our powerful operative system optimized for the access network, which allows us to develop access systems and solutions faster than our competitors. AXOS also allows our CSP customers to integrate, deploy, and upgrade our systems and solutions at an accelerated rate. This has proven to be a key differentiator for Calix. In contrast, virtually all of our large competitors in the access market devote some percentage of their resources to products outside of the access network, and in some cases, products not even designed for CSPs. We intend to continue to focus our efforts on the access market, which we believe will enable us to continue to deliver compelling, timely and innovative access solutions to CSPs.
- **Continue to Enable our Customers to Transform Their Networks and Business Models** — We believe that residential and business subscribers are pressuring CSPs to expand their offerings through the delivery of superior subscriber experiences. In response, CSPs need to transform their networks and business models by rapidly provisioning new services while minimizing the capital and operational costs of their networks. We believe the Calix portfolio enables CSPs to introduce new revenue-generating services as demanded by their subscribers.
- **Continue to Engage Directly with Customers** — We operate a differentiated business model focused on aligning with our customers, predominantly through direct engagement, service, and support, complemented in most international markets by a high touch Fiber Forward Partner Program, a selective program for Calix Channel Partners that focuses on matching the access innovation of Calix with the local market leadership of our channel partners to drive new market opportunities, rapid results, and an improved bottom line. Our direct customer engagement model allows us to target our sales resources as well as align our

product development efforts closely to our customers' needs. Our direct engagement model is a key differentiator for our business and is critical to our continued market leadership.

- **Build on our Growing Customer Footprint** — As of December 31, 2016, over 23 million ports of the Calix portfolio have been deployed at a growing number of CSPs worldwide. Our over 1,300 customers include many of the world's largest communications providers. This footprint provides us with the opportunity to sell additional components of the Calix portfolio to existing customers. For example, the vast majority of our existing customers have purchased additional line cards and other products from us after their initial purchase. We have also demonstrated that our footprint, combined with the flexibility of our portfolio, gives us incumbency benefits to sell complementary or new offerings in the future.
- **Expand Deliberately into New Market and Applications** — We believe that a disciplined approach to targeting markets and applications is critical to our long-term success. For example, we initially focused on rural Incumbent Local Exchange Carrier ("ILEC") customers and have achieved an industry leadership position as the majority of U.S. Independent Operating Companies ("IOCs") have deployed our access systems and software. We will continue our disciplined approach of targeting new markets and applications in which we believe our products will rapidly gain customer adoption. For example, we are targeting additional markets for our fiber access solutions, including the mobile backhaul market, the municipal, open access, and electrical cooperative markets, and cable MSO markets. We have also entered new geographic markets, including Africa, Asia, Australia, Europe, and Latin America. These deployments complement our significant deployments in Canada and the Caribbean.
- **Pursue Strategic Relationships, Alliances and Acquisitions** — We intend to continue to pursue strategic technology and distribution relationships, alliances and acquisitions that align us with CSPs' strategic directions to increase revenue-generating services while reducing the cost to deploy and operate their access networks. We believe these relationships, alliances and acquisitions will allow us to grow our footprint and enhance our ability to sell our access systems and cloud software. We developed and invested in the Calix Compatible Program to assure interoperability across the ecosystems of the majority of vendors critical for implementing and delivering new advanced broadband services. This program has approximately 61 technology members to date and enables our customers to rapidly deploy proven solutions in their access networks. We work with Ericsson Inc. ("Ericsson") and others to provide advanced broadband solutions globally, including efforts to ensure successful interoperation between our products and Ericsson's MediaFirst and Mediaroom IPTV platforms. In addition, our acquisitions of Optical Solutions, Inc. ("OSI") in 2006, Occam Networks, Inc. ("Occam") in 2011, and the fiber access assets from Ericsson in November 2012 have provided us with leading copper and fiber access technologies that have been integrated into the Calix portfolio.

Customers

We operate a differentiated customer engagement model that focuses on direct alignment with our customers through sales, service and support. In order to allocate our product development and sales efforts efficiently, we believe that it is critical to target markets, customers and applications deliberately. We have traditionally targeted CSPs, which own, build and upgrade their own access networks and which also value strong relationships with their access systems and software suppliers.

The U.S. ILEC market is composed of three distinct "tiers" of carriers, which we categorize based on their subscriber line counts and geographic coverage. Tier 1 CSPs are very large with wide geographic footprints. They have greater than ten million subscriber lines, and they generally correspond with the former Regional Bell Operating Companies. Tier 2 CSPs also operate typically within a wide geographic footprint, but are smaller in scale with subscriber line counts that range from approximately half a million to approximately seven million subscriber lines. Their service coverage areas are predominantly regional in scope and therefore they are often known as Regional Local Exchange Carriers ("RLECs"). Tier 3 CSPs consist primarily of over 1,000 predominantly local operators (often called IOCs) typically focused on a single community or a cluster of communities, although they also include a growing number of municipalities, electric cooperatives, fiber overbuilders, and wireless internet solutions providers. These entities range in size from a few hundred to approximately half a million subscriber lines.

To date, we have focused primarily on CSPs in the North American market. Our existing customers' networks serve over 100 million subscriber lines. In North America, our customers include CenturyLink, Inc. ("CenturyLink"), Frontier and Windstream. Our Tier 3 CSP customers have historically accounted for a large percentage of our sales. We also serve new entrants to the access services market who are building their own access networks, including cable MSOs and municipalities.

We have a few large customers who have represented a significant portion of our sales in any given period. In 2016, 2015 and 2014, CenturyLink accounted for 21%, 22%, and 23% of our revenue, respectively. In 2016, Windstream accounted for 15% of our revenue and less than 10% of our revenue in 2015 and 2014.

Some of our customers within the United States use or expect to use government-supported loan programs or grants to finance capital spending. Loans and grants through Rural Utility Service ("RUS"), which is a part of the United States Department of Agriculture, are used to promote the development of telecommunications infrastructure in rural areas.

Sales to customers outside the United States represented approximately 9%, 12%, and 12% of our revenues for the years ended December 31, 2016, 2015, and 2014, respectively. Historically, our sales outside the United States were predominantly to customers in the Caribbean, Canada and Europe.

Customer Engagement Model

We design, market and sell our access systems and software predominantly through our direct sales force, supported by marketing and product management personnel. We have expanded this model to include a small number of select channel partners in North America, 80 international channel partners who are part of our Fiber Forward Partner Program, and a global reseller relationship with Ericsson. Our sales

effort is organized either by named accounts or regional responsibilities. Account teams comprise sales managers, supported by sales engineers and account managers, who work to target and sell to existing and prospective CSPs. The sales process includes analyzing CSPs' existing networks and identifying how they can utilize our products within their networks. We also offer advice regarding eligibility for, and support proposals to, appropriate sources of government funding. Even in circumstances where a channel partner is involved, our sales and marketing personnel are often selling side-by-side with the channel partner. We believe that our direct customer engagement approach provides us with significant differentiation in the customer sales process by aligning us more closely with our customers' changing needs.

As part of our sales process, CSPs will often perform a lab trial or a field trial of our access systems prior to full-scale commercial deployment. This is most common for CSPs purchasing a particular access system for the first time. Upon successful completion, the CSP generally accepts the lab and field trial equipment installed in its network and may continue with deployment of additional access systems. Our sales cycle, from initial contact with a CSP through the signing of a purchase agreement, may, in some cases, take several quarters.

Typically, our customer agreements contain general terms and conditions applicable to purchases of our access systems and cloud software. By entering into a customer agreement with us, a customer does not become obligated to order or purchase any fixed or minimum quantities of our access systems and software. Our customers generally order access systems and software from us by submitting purchase orders that describe, among other things, the type and quantities of our access systems and software that they desire to order, delivery and installation terms and other terms. Customers who have been awarded RUS loans or grants are required to contract under form contracts approved by RUS.

Our direct customer engagement model extends to service and support. Our service and support organization works closely with our customers to ensure the successful installation and ongoing support and consulting services for the Calix portfolio. Our service and support organization provides technical product support and consults with our customers to address their needs. More recently, we have ramped our services organization to offer our customers professional services associated with turnkey network upgrade projects that generally involve our services to design and implement network improvements over multiple sites using Calix equipment. We anticipate the market and customer demand for such services to increase as customers increasingly look to supply partners, such as Calix, to support such projects. We offer our customers a range of support offerings, including program management, training, installation, post-sales technical support, and marketing and network planning consulting services. As a part of our pre-sales effort, our engineers design the implementation of our products in our customers' access networks to meet our customers' performance and interoperability requirements. Although some of our reseller arrangements allow resellers to provide support, training, installation, and post-sales technical support, these resellers still rely heavily on us to provide support to the customer.

Our U.S.- and China-based technical support organization offers support 24 hours a day, seven days a week. With an active Calix Advantage agreement, customers receive a license to CMS, access to telephone support and online technical information, software product upgrades and maintenance releases, advance return materials authorization and on-site support, if necessary. Calix Advantage agreements are renewable on an annual basis. Most of our customers renew their Calix Advantage agreements. In addition, we offer extended warranty periods for our products in one- to five-year durations, which include the right to warranty coverage beyond the standard warranty period. The purchase of such extended warranties is initially recorded as deferred revenue. At the end of 2016, we had \$23.6 million of deferred revenue associated with such extended warranties. For customers not under a Calix Advantage agreement or who have not purchased extended warranty services, product support and warranty services are provided for a fee on a per-incident basis. Outside North America, we typically cooperate with channel partners to provide local service and support to our end customers in those locations.

Platforms, Software and Systems

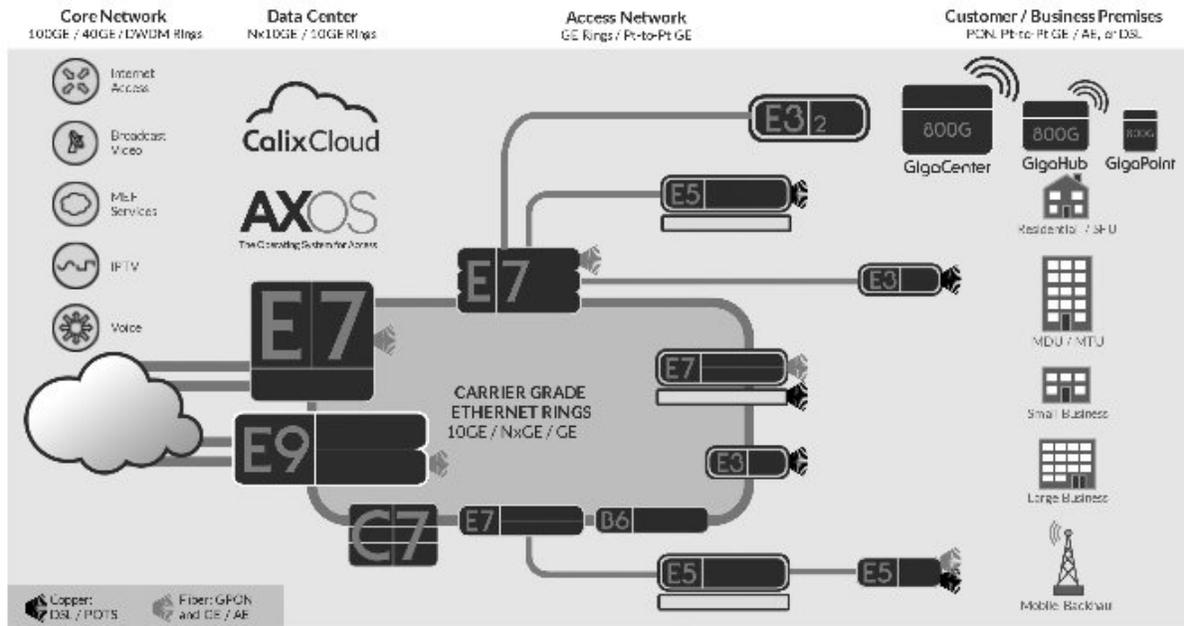
We develop, sell and support carrier-class hardware and cloud software products. The Calix portfolio enables CSPs to deliver both basic voice and data and advanced broadband services over legacy and next-generation access networks. The Calix portfolio consists of the following key features:

- **Broad Product Offering** — We offer a comprehensive portfolio of access systems and cloud software that is deployed in the portion of the network that extends from the data center, central office, or similar facilities to a subscriber's premises. We sell our access systems and nodes in a variety of form factors, modular options and configurations that are important to CSPs. Our network-based products include our E-Series systems and nodes, which provide cost-effective, flexible service delivery of IP-based services, as well as our B-Series nodes, which provides multiservice over Ethernet via distributed nodes, and our C-Series system, which is our multiservice, multiprotocol access system. Our premises-based offerings consist of our P-Series ONTs and residential gateways as well as our GigFamily of premises service delivery centers, hubs, and points which are deployed in combination with our E-Series, B-Series, and C-Series systems and nodes to enable our customers to connect to their subscribers across a diverse set of form factors, protocols and functionality requirements.
- **Multiservice and Multiprotocol** — We develop our products and an extensive offering of service interfaces to ensure CSPs can connect to their subscribers to enable the delivery of basic voice and data or advanced broadband services over fiber- and copper-based network architectures regardless of protocol. Our C-Series system also enables CSPs to integrate IP and legacy protocols, as well as fiber- and copper-based connectivity, in a single chassis. In doing so, the C-Series system allows CSPs to evolve their access infrastructures over time. Our E-Series systems and nodes and B-Series nodes are multiservice but focus solely on Ethernet. Our E-Series systems and nodes are well suited for CSPs who are using Ethernet to transform their networks. Our B-Series nodes are focused on CSPs using Ethernet over copper and fiber and a distributed architecture to transform their networks. Our E-Series, B-Series, and C-Series systems and nodes are often, but are not required to be, deployed together so that the C-Series system can act as a protocol gateway for our E-Series and B-Series systems and nodes.

- **Powerful Operating Systems** — Our access systems are interoperable and are designed to be easily deployed and managed together as a single, unified access network. The C7, E7 and most other E-Series nodes utilize a common Ethernet kernel, which we refer to as the Ethernet eXtensible Architecture ("EXA"), which was developed based on industry standard protocols and focused on the needs of the access network. Our AXOS platform, available on an expanding family of E-Series systems and nodes, has taken EXA to another level by allowing all software functions in the access network to be developed and run without dependence on the underlying hardware and associated silicon chipsets. Both environments allow Calix to develop, test and introduce new access systems and software rapidly, and enable our customers to deploy advanced broadband services at their desired pace.
- **Unified Network Management** — Our CMS is server-based network management software capable of overseeing and managing multiple E-Series, B-Series, and C-Series networks. Activate is a cloud-based network management software optimized for AXOS systems. CMS and Activate perform all provisioning, maintenance and troubleshooting operations across disparate access technologies and networks through a common user interface. This enables CSPs to manage and unify the various elements of the Calix portfolio as a single, scalable platform. CMS and Activate are often integrated by our customers with their back-office systems for billing and provisioning.

The Calix portfolio allows CSPs to transform their legacy and mixed protocol access networks to fiber and Ethernet over time. CSPs often deploy our E-Series systems and nodes, B-Series nodes, and C-Series system together in data centers, central offices, or similar facilities to interconnect data centers and central offices. Our C-Series system can act as a protocol gateway when deployed with our E-Series and B-Series systems and nodes. Our E-Series and B-Series systems and nodes can be deployed either in data centers, central offices, remote network locations, existing cabinets or in customer premises locations depending upon the CSP's requirements. All of our E-Series, B-Series and C-Series systems and nodes interoperate with and can terminate network traffic from our P-Series ONTs. The GigaFamily of centers, hubs, and points only works with E-Series systems and nodes, with the exception of the 844E which is Ethernet-fed and can work with all Calix systems and nodes as well as those of other standards-based vendors.

A graphic representation of how the various components of the Calix portfolio work together as of the end of 2016 is shown in the network diagram below:

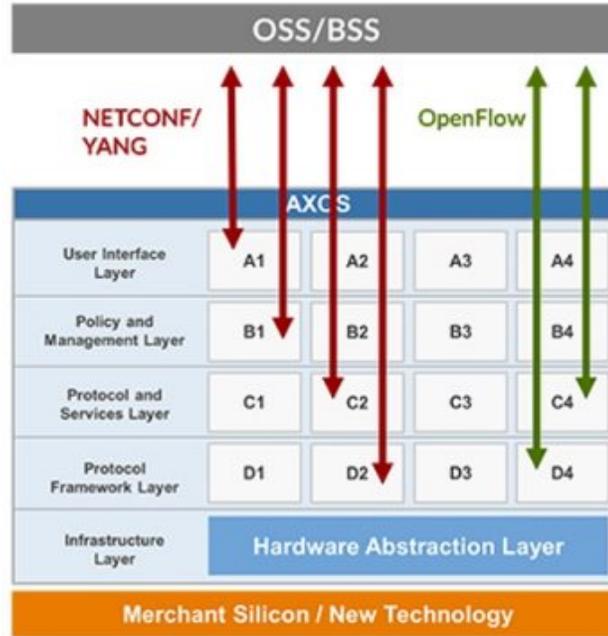


The graphic above depicts how a CSP might deploy the Calix portfolio in a CSP network. The network is divided into four segments: (1) the cloud, (2) the data center / central office, (3) the outside plant and (4) the premises. First, voice, video or data content is aggregated by a router in the cloud and transferred to an E9, E7, B6, or C7. The content is then sent around a redundant Ethernet transport ring, which operates using the 10 Gigabit Ethernet or Gigabit Ethernet standard. The ring consists of a variety of Calix access systems or nodes, including E9s, E7s, E5s, E3s, B6s, and C7s, each of which may be located in a central office or in remote terminal locations closer to subscribers. Content can be pulled from any one of these locations and delivered either to a Calix system located at a remote node or directly to a subscriber premises. In the case where content is delivered to another Calix system, the content can be delivered over a variety of fiber-based technologies, such as 10 Gigabit Ethernet, Gigabit Ethernet or multiple Gigabit Ethernet, or NxGE. Delivery to the subscriber premises over fiber or copper transmission lines is the final part of the access network. Delivery over fiber lines uses GPON, point-to-point Ethernet services, and delivery over copper lines uses DSL or G.fast services or telephone service. Both CMS and Activate manage all aspects of the Calix portfolio and supports features that allow remote management of equipment across the network, including equipment at the subscriber premises.

Access eXtensible Operating System (AXOS)

AXOS, or Access eXtensible Operating System, is a Linux-based network operating system and software platform built for the specific needs of the access network. Completely hardware independent, AXOS allows for all software functions in the access network to be developed and run without dependence on the underlying hardware and associated silicon chipsets. With an always-on architecture and consistent provisioning services, AXOS is designed to accelerate time-to-revenue, eliminate service disruptions, and reduce operational complexity for service providers. Introduced in 2015, AXOS is currently implemented in the E9-2, E3-2, E3-16F, E5-16F, and E5 business systems and is expected to expand in the future to other E3, E5, E7, and E9 systems and nodes. Within AXOS, containerized software components ride on top of a unique hardware abstraction layer that preserves software independence from the underlying hardware. All components and operational functions within AXOS use standard NETCONF protocol and YANG data models that enable AXOS powered systems to fit into any open SDN orchestration and control framework. Open, published APIs also allow customers to directly program unique network applications and services.

The following graphic depicts the components and operational functions of AXOS:



Compass Cloud

Compass Cloud is an expanding family of software-as-a-service products that enables CSPs to accelerate their business transformation. Each Compass Cloud product is designed to directly affect key business and market roles within CSPs, and can help them increase revenue, improve customer satisfaction, optimize network resources, and reduce the cost of delivering services. Compass Cloud products are offered using a software-as-a-service ("SaaS") model based on a low monthly service fee and no upfront hardware or licensing fees. The products are hosted in a cloud-based data center, alleviating CSPs' need to deploy, operate, or maintain physical hardware for Compass services, and are accessed through our Command Center subscriber interface.

Flow Analyze Plus offers a tool that provides an in-depth view of the traffic in CSP networks on a real-time basis. This view of traffic is non-intrusive and can be focused on a per-service, per-subscriber, per-location, and per-interface basis - both in real time and as a historical report. As a result, service providers can see what actually happened when a problem occurs in their network at any time. By monitoring subscriber usage data, as well as tracking universal subscriber identification mapping, Flow Analyze Plus provides a low-cost solution for generating monthly usage billing reports and diagnosing subscriber complaints.

Consumer Connect Plus enables service providers to remotely activate new broadband devices and manage home networks, creating new revenue sources, improved customer satisfaction, and reduced service delivery costs. Consumer Connect provides TR-069 ACS device management via a cloud-based SaaS solution hosted by Calix and offers such features as auto-discovery of intelligent devices within the home, auto-support of new TR-069 devices, bulk gateway maintenance, and DHCP server functionality as well as the ability to push service profiles to gateways. Consumer Connect Plus also shares a common customer ID with Flow Analyze Plus, allowing the applications to work closely together. Consumer Connect Plus can also provide remote customer LAN diagnostics as well as LAN visibility to help track consumer electronics trends.

Service Verify gives service providers the tools to comprehensively validate quality of service commitments for their business subscribers. Service Verify automates collection and analysis of key performance metrics from intelligent Ethernet access devices, and provides custom, real-time reporting that can be analyzed internally or shared externally with demanding business customers. Predictive analytics help identify performance issues before service level agreements are jeopardized.

Complementary to Compass Cloud, Open Link Cable is a software product that enables cable operators to deliver gigabit services over Calix E3-2, E7-2 and E7-20 GPON optical line terminals (OLTs) and Calix ONUs/ONTs/GigaFamily while continuing to use traditional back office and DOCSIS command and control procedures. In addition, Open Link Cable is designed to support the CableLabs DPoG 1.0 standards in order to accelerate deployments without changing operational procedures and systems.

Access Analyze is a Compass software product that enables CSPs to point their CMS server at the cloud and correlate their access data across Compass Cloud products. It also provides cloud back-up for CMS data. Access Analyze enables reporting across network, subscriber, and application data, including in-home Wi-Fi device data and CSP backoffice systems information like customer billing and service offering data.

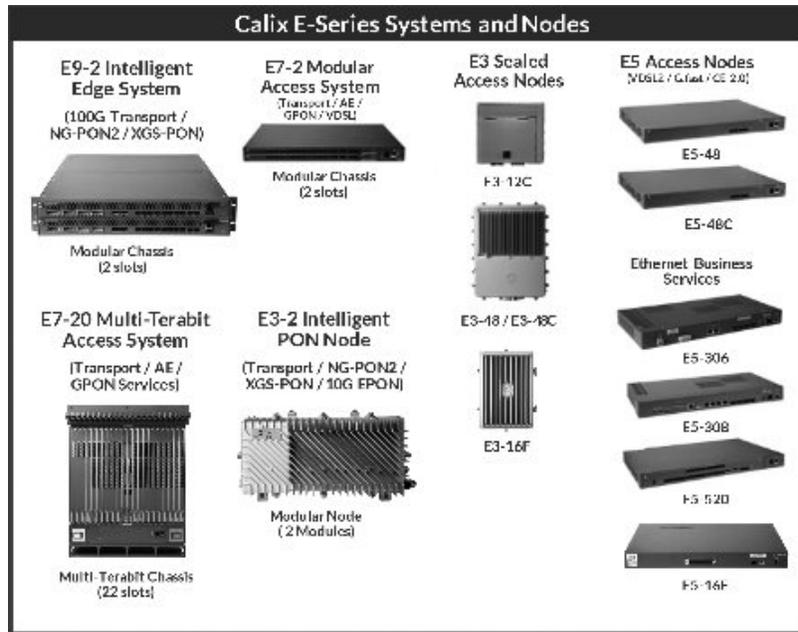
Our CMS server-based network management software system and Activate cloud-based element management for AXOS systems enable CSPs to remotely manage their access networks and scale bandwidth capacity to support advanced broadband services and video. Our CMS and Activate systems are capable of overseeing and managing multiple standalone networks and perform all provisioning, maintenance and troubleshooting operations for these networks across our E-Series, B-Series and C-Series systems and nodes. Additionally, our CMS and Activate systems are designed to scale from small networks to large, geographically dispersed networks consisting of hundreds or even thousands of our access systems. CMS and Activate provide an enhanced graphical user interface and delivers a detailed view and interactive control of various management functions, such as access control lists, alarm reporting and security. For very large CSPs, our CMS and Activate systems can be used in conjunction with operational support systems to manage large, global networks with tens of millions of subscribers. Our CMS and Activate systems are scalable to support large and small networks and enables integration into the other management systems of our customers.

We offer CSPs a graphical user interface-based management system for provisioning and troubleshooting service, and the capacity for bulk provisioning and reporting for thousands of elements simultaneously. Both CMS and Activate also have open application programming interfaces that allow third-party software developers to extend our functionality to include home provisioning, remote troubleshooting and applications monitoring and management.

Calix E-Series Access Systems and Nodes

Our E-Series access systems and access nodes consist of chassis-based systems as well as fixed form factor nodes that are designed to support an array of advanced IP-based services offered by CSPs. Our E-Series systems and nodes are designed to be carrier-class and enable CSPs to implement advanced Ethernet transport and aggregation, as well as voice, data and video services over both fiber- and copper-based network architectures. Many of our E-Series systems and nodes are environmentally hardened and can be deployed in a variety of network locations, including data centers, central offices, remote terminals, video headends and co-location facilities. In addition, due to the small size of many of our E-Series systems and nodes, most can be installed in confined locations such as remote nodes and multi-dwelling units. As such, many of our E-Series systems and nodes can be deployed in most competitor and other third-party cabinets or as stand-alone sealed nodes in our access network. The majority of our E-Series systems and nodes are managed using Activate and can be deployed in conjunction with our B-Series nodes, C-Series system, P-Series and GigaFamily premises products. We believe the deployment flexibility and Ethernet focus of our E-Series systems and nodes make them well suited for CSPs extending Ethernet services and fiber closer to the subscriber premises.

The following pictures depict the E-Series systems and nodes:



Our AXOS E9-2 Intelligent Edge System is a revolutionary, non-blocking, high-density NG-PON2 services modular chassis that enables service providers to move to a converged services network. The disruptive architecture of the E9-2 extends the access edge and delivers a dramatic reduction in total cost of ownership for service providers by collapsing access, aggregation, and service edge functions, including routing and subscriber management, into a single system. Our E7 has two form factors. Our E7-2 is a one rack unit chassis with two line card slots, while the E7-20 is a 13 rack unit chassis with two common control card slots and 20 service line card slots. Our E7s deliver Ethernet services over copper and fiber, including a wide range of GPON, point-to-point Gigabit Ethernet, VDSL2 with vectoring support, and 10 Gigabit Ethernet and NG-PON2 services. Our AXOS E3-2 Intelligent PON Node is a revolutionary design that disrupts access and edge architecture by integrating with legacy networks while collapsing access and service edge functions in a distributed fiber architecture. Its modular design provides a typically easy upgrade path to any next generation 10G PON technology while leveraging existing fiber deep designs, management systems, power, and rights-of-way. Our other E-Series nodes include the fixed form factor E5-48, E5-48C, E5-16F, E5-300, and E5-500 node families, as well as the E3-12C, E3-48, E3-48C, and E3-16F sealed access nodes, which collectively deliver high-speed broadband with interfaces that range from 10 Gigabit Ethernet transport and aggregation to ADSL2+, VDSL2 with vectoring support, G.fast, GPONm XGS-PON, NG-PON2, and point-to-point Gigabit Ethernet, as well as Carrier Ethernet 2.0 business services.

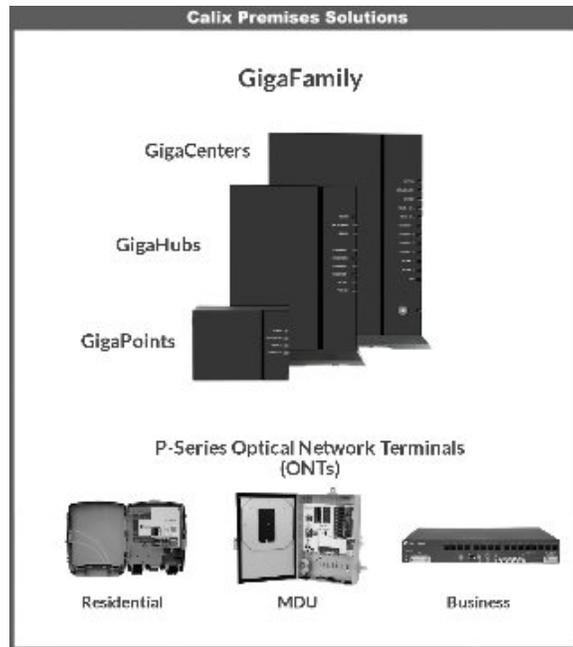
Key technology differentiators of the E-Series systems and nodes are:

- **Standards-Based Switching Architecture** — Most of our E-Series systems and nodes currently utilize EXA, however, an expanding family of our E-Series systems and nodes leverage the AXOS platform, our Linux-based network operating system and software platform built for the specific needs of the access network. Completely hardware independent, AXOS allows for all software functions in the access network to be developed and run without dependence on the underlying hardware and associated silicon chipsets. With its always-on architecture and consistent provisioning services, AXOS accelerates time-to-revenue, eliminates service disruptions, and reduces operational complexity for service providers. All future E-Series systems will be based on this open, standards-based, SDN-aligned platform.
- **Multiservice over Ethernet** — Our E-Series systems and nodes enable CSPs to offer high bandwidth, advanced broadband and low latency services across Ethernet over fiber- and copper-based network architectures.
- **Deployment Flexibility** — Our E-Series systems and nodes are composed of a variety of distinct small form factor configurations as little as a single rack unit in height to a 13-rack unit large chassis. The E-Series systems and nodes are designed to deliver operational efficiencies without sacrificing deployment flexibility or service functionality. Our E-Series systems are optimally sized to deliver high bandwidth services from a data center, central office, remote terminal, remote node or MDU. For CSPs seeking additional flexibility and performance, the modular E7-2 and E9-2 and the high capacity E7-20 can be combined with other E7s or other B-Series, C-Series and E-Series systems and nodes and managed uniformly.

- **High Capacity and Reliability** — Our E-Series systems and nodes have high data throughput capacity and are designed to meet the demanding bandwidth and low latency requirements of advanced broadband services for residential and business subscribers. Our E-Series systems and nodes support a range of transport options from multiple 100 Gigabit Ethernet uplinks in each E9-2 chassis down to redundant Gigabit Ethernet in the E5-48 node family. Our E9-2 was architected to be the industry's first fully distributed and non-blocking system. Our chassis-based E7-2 supports a redundant 100 gigabits per second backplane in each deployable module with line cards that further support a minimum of 100 gigabits per second switching capacity. The E7-20 supports the same 100 gigabits per second line card switching capacity per card, but houses each card in a 20-service line card slot chassis with a two terabits per second backplane. The E7 also supports transparent local area network services and are designed to be Metro Ethernet Forum compliant and to meet NEBS requirements.
- **Broad Array of Advanced Services Support** — Our E-Series systems and nodes support a broad array of advanced services. Our E3-12C supports up to 12 VDSL2 combination voice and DSL services ports as well as DSL port bonding, and offers multiple Gigabit Ethernet network uplinks. Our E3-48, E3-48C, E5-48, and E5-48C support up to 48 VDSL2 service ports as well as DSL port bonding and vectoring, and offer multiple 10 Gigabit Ethernet and 2.5 or single Gigabit Ethernet uplinks. Our E7s, E5-300s, and E5-520 support a mix of GPON, multiple Gigabit Ethernet and 10 Gigabit Ethernet ports, and well as select Metro Ethernet Forum (MEF) advanced business services. Our E9-2 supports both NG-PON2 and XGS-PON while the E3-2 supports NG-PON2, XGS-PON, and GPON. E7 line card options include a mix of GPON, point-to-point Gigabit Ethernet, 10 Gigabit Ethernet services, and in the case of the E7-2, 48 ports of VDSL2 combo and vectoring services on a line card, which translates into an industry-leading 96 VDSL2 combo ports in a 1 rack unit form factor, as well as traffic management and queuing, performance monitoring and virtual local area network stacking to support quality of service.

Calix GigaFamily, P-Series Optical Network Terminals and Residential Gateways

Our GigaFamily, P-Series ONTs, and residential gateways consist of a broad range of customer premises solutions, including standards-based GigaCenters, GigaHubs, GigaPoints, ONTs, and residential gateways for residential and business use in conjunction with our E-Series, B-Series and C-Series systems. GigaCenter premises service delivery platforms combine the ability to support a gigabit experience and host advanced applications with Carrier Class Wi-Fi - a wireless technology that enables extraordinary coverage and capacity through the use of the 802.11ac protocol, a 4x4 multiple-in, multiple-out (MIMO) antenna array, and beamforming technology. GigaHubs are multi-port service demarcation hubs and serve as fully integrated GPON broadband access and service delivery solutions. GigaPoint single port broadband demarcation points deliver gigabit services to subscribers, are simple to activate and manage, and are sometimes deployed in conjunction with subtended residential gateways as well as 844E GigaCenters. The GigaFamily of centers, hubs, and points are designed to be deployed in conjunction with the powerful Compass software application suite to provide meaningful insights into subscriber usage trends and quality of services. Our portfolio of ONTs, residential gateways, and GigaFamily centers, hubs, and points is designed to support advanced broadband services, such as IPTV, RF video, business services and mobile backhaul (including Ethernet OAM support for conformance with service level agreements). The design and flexibility of the P-Series and GigaFamily portfolio allows CSPs to lower initial capital expenditures as well as reduce operational costs. Our P-Series ONTs and residential gateways can auto-detect the bandwidth of the network and enable CSPs to change line rates and features without expensive truck rolls or hardware replacements. To meet the deployment and service requirement needs of CSPs, we offer a growing number of ONT, residential gateway, and GigaFamily models available in a variety of form factors tailored to multiple deployment scenarios, including single homes, MDUs, businesses and cellular towers as illustrated below:



Calix B-Series Access Nodes

Our B-Series access nodes consist of chassis-based nodes that are designed to support an array of advanced IP-based services offered by CSPs. Our B-Series nodes are designed to be carrier-class and enable CSPs to implement advanced Ethernet transport and aggregation, as well as voice, data and video services over both fiber- and copper-based network architectures. Our B-Series nodes are environmentally hardened and can be deployed in a variety of network locations, including data centers, central offices, remote terminals, video headends and co-location facilities. In addition, due to the small size of some of our B-Series nodes, many can be installed in confined locations such as remote nodes and multi-dwelling units. As such, many of our B-Series nodes can be deployed in most competitor and other third-party cabinets or as stand-alone sealed nodes in our access network. Our B-Series nodes are managed using our CMS and can be deployed in conjunction with our E-Series and C-Series systems as well as our P-Series ONTs. We believe the deployment flexibility and Ethernet focus of our B-Series nodes make them well suited for CSPs extending Ethernet services and fiber closer to the subscriber premises.

Our B6 has three form factors. Our B6-001 is a 1 rack unit chassis with one line card slot, whereas the B6-006 is a 7 rack unit chassis with six line card slots and the B6-012 is a 12 rack unit chassis with 20 line card slots. Our B6s deliver Ethernet services over fiber, including a wide range of GPON, point-to-point Gigabit Ethernet, and 10 Gigabit Ethernet services.

Key technology differentiators of the B-Series nodes are:

- **Multiservice over Ethernet** — Our B-Series nodes enable CSPs to offer high bandwidth, advanced broadband and low latency services across Ethernet over fiber- and copper-based network architectures.
- **Deployment Flexibility** — Our B-Series nodes are composed of three distinct form factor chassis between 1 and 12 rack units in height. The B-Series nodes are designed to deliver operational efficiencies without sacrificing deployment flexibility or service functionality. Our B-Series node options are optimally sized to deliver high bandwidth services from a data center, central office, remote terminal, remote node or MDU. For CSPs seeking additional flexibility and performance, the B6s can be combined with C-Series and E-Series systems and nodes, all of which are managed by our CMS.
- **High Capacity and Reliability** — Our B-Series nodes have high data throughput capacity and are designed to meet the demanding bandwidth and low latency requirements of advanced broadband services for residential and business subscribers. Our B-Series nodes support a range of transport options from multiple 10 Gigabit Ethernet uplinks in each chassis down to redundant Gigabit Ethernet ports. The distributed intelligence of the B6s supports 10 gigabits per second in each deployed line card. The B6s also support T1 circuit emulation and are designed to be Metro Ethernet Forum (MEF 9 and MEF 14) compliant and to meet Network Equipment-Building System ("NEBS") requirements.
- **Broad Array of Advanced Services Support** — Our B-Series nodes support a broad array of advanced services, including up to 48 VDSL2 and 48 ADSL2+ overlay or combination voice and DSL services ports as well as DSL port bonding on each line card, and offer multiple Gigabit Ethernet network uplinks. Our B6s also support a mix of GPON, point-to-point gigabit Ethernet and multiple Gigabit Ethernet and 10 Gigabit Ethernet ports. Line card options include a mix of GPON, point-to-point gigabit Ethernet, and 10 Gigabit Ethernet services, as well as traffic management and queuing, performance monitoring, and virtual local area network stacking to support quality of service.

Calix C-Series Multiservice Access System

Our C7 multiservice access system is designed to support a wide array of basic voice and data services offered by CSPs while also supporting advanced, high-speed, packet-based services such as Gigabit Ethernet, GPON, DSL (including very high-speed digital subscriber line 2 ("VDSL2") and asymmetrical digital subscriber line 2+ ("ADSL2+")) and advanced applications like IPTV. In so doing, our C-Series system facilitates network transformation by integrating the functions required to transport and deliver voice, data and video services over both fiber- and copper-based network architectures. Our C-Series system is a chassis-based product with 23 line card slots, three of which are used for common logic, switching fabric and uplinks, with the remaining 20 slots available for any service interface card we offer. Our C-Series system is managed using our CMS. Our high-capacity C-Series system is flexible and is designed to be deployed in a variety of locations, including data centers, central offices, remote terminals, video headends and co-location facilities. Our C-Series system leverages a common operating system kernel, the EXA, that it shares with many of our E-Series systems and nodes, allowing for common provisioning and facilitated platform interoperability. The multiprotocol and integrated transport capabilities of our C-Series system allow it to be deployed as an aggregation or gateway device for our E-Series and B-Series systems and nodes, and P-Series ONTs.

Key technology differentiators of the C-Series system are:

- **Protocol Independent** — Our C-Series system enables the integration of multiple protocols through a system architecture where line cards perform specific protocol processing.
- **High Capacity** — Our C-Series system can enable up to 200 gigabits per second total throughput capacity. It can provide service delivery speeds of up to 10 gigabits per second in network transport rings or directly to subscribers, which is significantly greater than the bandwidth that CSPs are typically providing to their subscribers. This enables CSPs to scale their advanced broadband service offerings over time without the need to change their equipment.
- **Flexible Switching Architecture** — Our C-Series system supports a highly scalable switching architecture with characteristics similar to high performance routers. All services are converted to packets on line cards allowing our system to natively switch circuits, cells and packets. As a result, both legacy and advanced packet-based services can be supported simultaneously or uniformly, allowing the C-Series to be deployed as a pure Ethernet delivery system, a traditional service delivery system or a hybrid services system.

- **Density** — In typical applications, a single 14-inch high C-Series system shelf can terminate 480 copper-based subscriber connections, or up to 5,120 fiber-to-the-premises, or FTTP, subscribers using GPON. This functionality allows up to 2,400 subscribers of advanced broadband services over copper-based networks or over 25,000 subscribers over fiber-based networks to be served out of a single seven-foot rack in the central office.
- **Reduced Risk of Technological Obsolescence** — As new services and technologies are introduced to the network, our flexible C-Series architecture allows CSPs to add or swap line cards to introduce new functionality into the access system. Services such as IPTV and voice over Internet protocol require new features like Internet Group Management Protocol channel change processing and protocol gateway support, which can easily be added without substantial changes to existing equipment. As a result, equipment purchased by CSPs can have longer useful lives, which can reduce CSPs' capital expenditures.
- **Extensive Line Card Offering** — Currently our C-Series system offers 47 line cards that enable a diverse set of trunk and subscriber interfaces, ranging from basic voice service and specialized circuits to advanced broadband services such as packet-based Fast and gigabit Ethernet, SONET (up to optical carrier-48, or OC-48), VDSL2 and ADSL2+ across multiple copper pairs and GPON. In addition, our C-Series system supports multiple combinations of service interface cards in any slot at any time. We believe this flexibility provides CSPs the ability to evolve networks toward higher-capacity, packet-based service offerings in a minimally disruptive and cost-effective manner.

Research and Development

Continued investment in research and development is critical to our business. Our research and development team is composed of engineers with expertise in hardware, software and optics. Our team of engineers is located in our Petaluma, San Jose and Santa Barbara facilities located in California; our Minneapolis, Minnesota facility; our Acton, Massachusetts facility and our Nanjing, China facility. We also outsource a portion of our software development to domestic and international third parties. Our research and development team is responsible for designing, developing and enhancing our hardware and software platforms, performing product and quality assurance testing and ensuring the compatibility of our products with third-party hardware and software products. We have made significant investments in the Calix portfolio. We intend to continue to dedicate significant resources to research and development and to develop new product capabilities and invest in innovative technologies to support the performance, scalability and management of the Calix portfolio. For the years ended December 31, 2016, 2015, and 2014, our research and development expenses totaled \$106.9 million, \$89.7 million, and \$80.3 million, respectively.

Manufacturing

We work closely with third parties to manufacture and deliver our products. Our manufacturing organization consists primarily of supply chain managers, new product introduction personnel and test engineers. We outsource our manufacturing and order fulfillment and tightly integrate our supply chain management and new product introduction activities. Although we have multiple contract manufacturing arrangements, we primarily utilize Flex Ltd, formerly Flextronics International Ltd ("Flex"), as our contract manufacturer. Our relationship with Flex allows us to conserve working capital, reduce product costs and minimize delivery lead times while maintaining high product quality. Generally, new product introduction occurs in Flex's facilities in Suzhou, China. Once product manufacturing quality and yields reach a satisfactory level, volume production and testing of circuit board assemblies also occur in Suzhou, China. Final system and cabinet assembly and testing are performed in Flex's facilities in Guadalajara, Mexico. Order fulfillment is performed by Pegasus Logistics Group, Inc. in Texas. We also evaluate and utilize other vendors for various portions of our supply chain from time to time, including order fulfillment of our circuit boards. This model allows us to operate with lower inventory levels while maintaining the ability to scale quickly to handle increased order volume.

Product reliability is essential for our customers, who place a premium on continuity of service for their subscribers. We perform rigorous in-house quality control testing to help ensure the reliability of our systems. Our internal manufacturing organization designs, develops and implements complex test processes to help ensure the quality and reliability of our products.

The manufacturing of our products by contract manufacturers is a complex process and involves certain risks, including the potential absence of adequate capacity, the unavailability of or interruptions in access to certain process technologies, and the reduced control over delivery schedules, manufacturing yields, quality and costs. As such, we may experience production problems or manufacturing delays in the future. Additionally, shortages in components that we use in our systems are possible and our ability to predict the availability of such components, some sourced from a single or limited source of supply, may be limited. Our systems include some components that are proprietary in nature and only available from a single source, as well as some components that are generally available from a number of suppliers. The lead times associated with certain components are lengthy and preclude rapid changes in product specifications or delivery schedules. In some cases, significant time would be required to establish relationships with alternate suppliers or providers of proprietary components. We generally do not have long-term contracts with component providers that guarantee the supply of components or their manufacturing services. If we experience any difficulties in managing relationships with our contract manufacturers, or any interruption in our own operations or our contract manufacturers operations or if a supplier is unable to meet our needs, we may encounter manufacturing delays that could impede our ability to meet our customers' requirements and harm our business, operating results and financial condition. Our ability to deliver products in a timely manner to our customers would be adversely impacted materially if we needed to qualify replacements for any of the components used in our systems.

Seasonality

Fluctuations in our revenue occur due to many factors, including the varying budget cycles and seasonal buying patterns of our customers. More specifically, our customers tend to spend less in the first fiscal quarter as they are finalizing their annual budgets, and in certain regions, customers are also challenged by winter weather conditions that inhibit fiber deployment in outside plants.

Intellectual Property

Our success depends upon our ability to protect our core technology and intellectual property. To accomplish this, we rely on a combination of intellectual property rights, including patents, trade secrets, copyrights and trademarks as well as customary contractual protections. In addition, we generally control access to and the use of our proprietary technology and other confidential information. This protection is accomplished through a combination of internal and external controls, including contractual protections with employees, contractors, customers and partners, and through a combination of U.S. and international intellectual property laws.

As of December 31, 2016, we held 111 U.S. patents and had 25 pending U.S. patent applications. One of the U.S. patents is also covered by granted international patents in three countries. As of December 31, 2016, we had no pending international patent applications. U.S. patents generally have a term of twenty years from filing. As our patent portfolio has been built over time, the remaining terms on the individual patents vary. Information pertaining to our patents such as filing dates and terms is available free-of-charge at the United States Patent and Trademark Office website at www.uspto.gov.

We rely on intellectual property laws as well as nondisclosure agreements, licensing arrangements and confidentiality provisions to establish and protect our proprietary rights. U.S. patent, copyright and trade secret laws afford us only limited protection, and the laws of some foreign countries do not protect proprietary rights to the same extent. Our pending patent applications may not result in issued patents, and the issued patents may not be enforceable. Any infringement of proprietary rights could result in significant litigation costs. Further, any failure by us to adequately protect our proprietary rights could result in competitors offering similar products, resulting in the loss of our competitive advantage and decreased sales.

We believe that the frequency of assertions of patent infringement continues to increase in our industry. In particular, patent holders, including entities and organizations that purchase or hold patents to monetize such rights, assert patent infringement claims as a competitive tactic as well as a source of revenue. Any claim of infringement from a third party, even those without merit, could cause us to incur substantial costs defending against such claims and could distract our management from operating our business. Furthermore, a party making such a claim, if successful, could secure a judgment that requires us to pay substantial damages. A judgment could also include an injunction or other court order that could prevent us from selling our products. In addition, we might be required to seek a license for the use of such intellectual property, which may not be available on commercially reasonable terms or at all. Alternatively, we may be required to develop non-infringing technology, which would require significant effort and expense and may ultimately not be successful.

Competition

The communications access equipment market is highly competitive. Competition in this market is based on any one or a combination of the following factors:

- price;
- functionality;
- existing business and customer relationships;
- the ability of products and services, including turnkey professional services capabilities, to meet customers' immediate and future network requirements;
- product quality;
- installation capability;
- service and support;
- scalability; and
- manufacturing capability.

We compete with a number of companies within markets that we serve, and we anticipate that competition will intensify. ADTRAN, Inc. enjoys strong supplier relationships with the largest U.S. ILECs and has a broad international business. Other established suppliers with which we compete include Alcatel-Lucent S.A., which was acquired by Nokia Corporation in January 2016; Arris Group, Inc.; Ciena Corporation; Huawei Technologies Co. Ltd.; and ZTE Corporation. There are also a number of smaller companies with which we compete in various geographic or vertical markets, including DASAN Zhong Solutions, Inc. While most of these smaller competitors lack broad national scale and product portfolios, they can offer strong competition on a deal-by-deal basis. As we expand into adjacent markets, we expect to encounter new competitors. Many of our competitors have substantially greater name recognition, manufacturing capacity and technical, financial and marketing resources as well as better established relationships with CSPs than we do. Many of our competitors have greater resources to develop products or pursue acquisitions and more experience in developing or acquiring new products and technologies and in creating market awareness for their products and technologies. In addition, a number of our competitors have the financial resources to offer competitive products at below market pricing levels that could prevent us from competing effectively.

Government Funding Initiatives

Many of our customers fund deployment of and improvements to telecommunications network infrastructure using government funds. In the United States, CSPs are required under the Federal Communications Commission's rules to contribute a percentage of their revenues to the federal Universal Service Fund. In early October 2011, the then-chairman of the Federal Communications Commission (the "FCC") outlined a plan to transform the Universal Service Fund, an \$8 billion fund that is paid for by the nation's telephone customers and used to subsidize basic telephone service in rural areas, into one that will help expand broadband Internet service to 18 million Americans who lack high-speed access. These funds, now governed by a new set of rules called the Connect America Fund, or CAF, are distributed as subsidies to CSPs serving rural subscribers that are expensive to reach as well as to low-income consumers, schools, libraries, and rural health care

facilities. As of the end of 2016, the FCC continued to finalize the rules for the annual \$3.8 billion in CAF distributions targeted at broadband deployment in underserved and unserved parts of the U.S. RUS administers funds through a separate U.S. government initiative to promote the development of telecommunications infrastructure in rural areas through loans, loan guarantees and grants. Some of our U.S. customers have been awarded RUS loans and/or have received subsidies from CAF programs, and we have provided the network equipment for such projects.

Employees

As of December 31, 2016, we employed a total of 1,109 full-time employees, of which 820 employees were located in the United States. None of our United States employees is represented by a labor union with respect to his or her employment with us. Four of our Brazilian employees and two of our French employees are subject to relevant collective bargaining arrangements. We have not experienced any work stoppages, and we consider our relations with our employees to be good.

Corporate Information

Calix, Inc., a Delaware corporation, was founded in August 1999. Our principal executive offices are located at 1035 N. McDowell Boulevard, Petaluma, California 94954, and our telephone number is (707) 766-3000. Our website address is www.calix.com. We do not incorporate the information on or accessible through our website into this Annual Report on Form 10-K, and you should not consider any information on, or that can be accessed through, our website as part of this Annual Report on Form 10-K. Calix®, the Calix logo design, B6®, C7®, E3®, E5®, E7®, Compass®, Consumer ConnectSM, Fiber ForwardTM, and other trademarks or service marks of Calix appearing in this Annual Report on Form 10-K are the property of Calix. Trade names, trademarks and service marks of other companies appearing in this Annual Report on Form 10-K are the property of the respective holders. Calix is subject to the information and periodic reporting requirements of the Securities Exchange Act of 1934 ("Exchange Act") and files periodic reports, proxy statements and other information with the Securities and Exchange Commission ("SEC"). Such periodic reports, proxy statements and other information are available for inspection and copying at the SEC's Public Reference Room at 100 F Street, NE., Washington, DC 20549 or may be obtained by calling the SEC at 1-800-SEC-0330. In addition, the SEC maintains a website at www.sec.gov that contains reports, proxy statements and other information regarding issuers that file electronically with the SEC. Calix posts on the Investor Relations page of its website, www.calix.com, a link to its filings with the SEC, as soon as reasonably practical after they are filed electronically with the SEC.

ITEM 1A. Risk Factors

We have identified the following additional risks and uncertainties that may affect our business, financial condition and/or results of operations. Investors should carefully consider the risks described below, together with the other information set forth in this Annual Report on Form 10-K, before making any investment decision. The risks described below are not the only ones we face. Additional risks not currently known to us or that we currently believe are immaterial may also significantly impair our business operations. Our business could be harmed by any of these risks. The trading price of our common stock could decline due to any of these risks, and investors may lose all or part of their investment.

Risks Related to Our Business and Industry

Our markets are rapidly changing, which makes it difficult to predict our future revenue and plan our expenses appropriately.

We compete in markets characterized by rapid technological change, changing needs of communications service providers, or CSPs, evolving industry standards and frequent introductions of new products and services. In addition, on an ongoing basis we expect to be required to reposition our product and service offerings and introduce new products and services as we encounter rapidly changing CSP requirements and increasing competitive pressures. We may not be successful in doing so in a timely and responsive manner, or at all. As a result, it is difficult to forecast our future revenues and plan our operating expenses appropriately, which makes it difficult to predict our future operating results.

We have a history of losses, and we may not be able to generate positive operating income and positive cash flows in the future.

We have experienced net losses in each year of our existence. For the years ended December 31, 2016, December 31, 2015, and December 31, 2014, we incurred net losses of \$27.4 million, \$26.3 million, and \$20.8 million, respectively. As of December 31, 2016, we had an accumulated deficit of \$584.3 million.

We expect to continue to incur significant expenses and cash outlays for research and development, growth of our services operations, investments in innovative technologies, expansion of our product portfolio, sales and marketing, customer support and general and administrative functions as we expand our business and operations and target new customer segments, primarily larger CSPs including cable multiple system operators, or MSOs. Given our growth rate and the intense competitive pressures we face, we may be unable to control our operating costs.

We cannot guarantee that we will achieve profitability in the future. We will have to generate and sustain significant and consistent increased revenue, while continuing to control our expenses, in order to achieve and then maintain profitability. We may also incur significant losses in the future for a number of reasons, including the risks discussed in this "Risk Factors" section and other factors that we cannot anticipate. If we are unable to generate positive operating income and positive cash flows from operations, our liquidity, results of operations and financial condition will be adversely affected. If we are unable to generate cash flows to support our operational needs, we may need to seek other sources of liquidity, including borrowings, to support our working capital needs. In addition, we may choose to seek other sources of liquidity even if we believe we have generated sufficient cash flows to support our operational needs. There is no assurance that any other sources of liquidity may be available to us on acceptable terms or at all. If we are unable to generate sufficient cash flows or obtain other

sources of liquidity, we will be forced to limit our development activities, reduce our investment in growth initiatives and institute cost-cutting measures, all of which would adversely impact our business and growth.

Our quarterly and annual operating results may fluctuate significantly, which may make it difficult to predict our future performance and could cause the market price of our stock to decline.

A number of factors, many of which are outside of our control, may cause or contribute to significant fluctuations in our quarterly and annual operating results. These fluctuations may make financial planning and forecasting difficult. Comparing our operating results on a period-to-period basis may not be meaningful, and you should not rely on our past results as an indication of our future performance. If our revenue or operating results fall below the expectations of investors or securities analysts or below any guidance we may provide to the market, the market price of our stock would likely decline. Moreover, we may experience delays in recognizing revenue under applicable revenue-recognition rules. For example, revenues associated with large turnkey network improvement projects are generally deferred until customer acceptance is received and may be subject to delays, rework requirements and unexpected costs among other uncertainties. Certain government-funded contracts, such as those funded by U.S. Department of Agriculture's RUS, also include acceptance and administrative requirements that delay revenue recognition. The extent of these delays and their impact on our revenues can fluctuate considerably depending on the number and size of purchase orders under these contracts for a given time period. In addition, unanticipated decreases in our available liquidity due to fluctuating operating results could limit our growth and delay implementation of our expansion plans.

In addition to the other risk factors listed in this "Risk Factors" section, factors that have in the past and may continue to contribute to the variability of our operating results include:

- our ability to predict our revenue and reduce and control product costs;
- our ability to increase our sales to larger CSPs globally;
- the capital spending patterns of CSPs and any decrease or delay in capital spending by CSPs due to macro-economic conditions, regulatory uncertainties, or other reasons;
- the impact of government-sponsored programs on our customers;
- intense competition;
- our ability to develop new products or enhancements that support technological advances and meet changing CSP requirements;
- our ability to achieve market acceptance of our products and CSPs' willingness to deploy our new products;
- the concentration of our customer base;
- the length and unpredictability of our sales cycles and timing of orders;
- our focus on CSPs with limited revenue potential;
- our lack of long-term, committed-volume purchase contracts with our customers;
- our exposure to the credit risks of our customers;
- fluctuations in our gross margins;
- the interoperability of our products with CSP networks;
- our dependence on sole-, single- and limited-source suppliers;
- our ability to manage our relationships with our contract manufacturers and suppliers;
- our ability to forecast our manufacturing requirements and manage our inventory;
- our products' compliance with industry standards;
- our ability to expand our international operations;
- our ability to protect our intellectual property and the cost of doing so;
- the quality of our products, including any undetected hardware defects or bugs in our software;
- our ability to estimate future warranty obligations due to product failure rates;
- our ability to obtain necessary third-party technology licenses at reasonable costs;
- the regulatory and physical impacts of climate change and other natural events;
- the attraction and retention of qualified employees and key management personnel;
- our ability to build and sustain the proper information technology infrastructure; and
- our ability to maintain proper and effective internal controls.

Our business is dependent on the capital spending patterns of CSPs, and any decrease or delay in capital spending by CSPs in response to economic conditions, uncertainties associated with the implementation of regulatory reforms, or otherwise would reduce our revenues and harm our business.

Demand for our products depends on the magnitude and timing of capital spending by CSPs as they construct, expand, upgrade and maintain their access networks. Any future economic downturn may cause a slowdown in telecommunications industry spending, including in the specific geographies and markets in which we operate. In response to reduced consumer spending, challenging capital markets or declining liquidity trends, capital spending for network infrastructure projects of CSPs could be delayed or canceled. In addition, capital spending is cyclical in our industry, sporadic among individual CSPs and can change on short notice. As a result, we may not have visibility into changes in spending behavior until nearly the end of a given quarter.

CSP spending on network construction, maintenance, expansion and upgrades is also affected by reductions in their budgets, delays in their purchasing cycles, access to external capital (such as government grants and loan programs or the capital markets), and seasonality and delays in capital allocation decisions. For example, our CSP customers tend to spend less in the first fiscal quarter as they are still finalizing their annual budgets and in certain regions customers are also challenged by winter weather conditions that inhibit fiber deployment in outside plants. Also, softness in demand across any of our customer markets, including due to macro-economic conditions beyond our control or uncertainties associated with the implementation of regulatory reforms, has in the past and could in the future lead to unexpected slowdown in capital expenditures by service providers. In some countries where we do business, such as Russia, the weakened economy has

resulted in economic instability which has had negative effects, including a decrease in purchasing power due to currency devaluations, as well as generally more cautious purchasing decisions.

Many factors affecting our results of operations are beyond our control, particularly in the case of large CSP orders and network infrastructure deployments involving multiple vendors and technologies where the achievement of certain thresholds for acceptance is subject to the readiness and performance of the CSP or other providers and changes in CSP requirements or installation plans. Further, CSPs may not pursue infrastructure upgrades that require our access systems and software. Infrastructure improvements may be delayed or prevented by a variety of factors including cost, regulatory obstacles (including uncertainties associated with the implementation of regulatory reforms), mergers, lack of consumer demand for advanced communications services and alternative approaches to service delivery. Reductions in capital expenditures by CSPs, particularly CSPs that are significant customers, may have a material negative impact on our revenues and results of operations and slow our rate of revenue growth. As a consequence, our results for a particular period may be difficult to predict, and our prior results are not necessarily indicative of results in future periods.

Government-sponsored programs could impact the timing and buying patterns of CSPs, which may cause fluctuations in our operating results.

We sell to CSPs, which include U.S.-based Independent Operating Companies ("IOCs"), which have revenues that are particularly dependent upon interstate and intrastate access charges and federal and state subsidies. The Federal Communications Commission ("FCC") and some states may consider changes to such payments and subsidies, and these changes could reduce IOC revenues. Furthermore, many IOCs use or expect to use government-supported loan programs or grants, such as RUS loans and grants, to finance capital spending. Changes to these programs, including uncertainty from government and administrative change, could reduce the ability of IOCs to access capital and thus reduce our revenue opportunities.

Many of our customers were awarded grants or loans under government stimulus programs such as the Broadband Stimulus ("BBS") programs under the American Recovery and Reinvestment Act of 2009 ("ARRA") and the funds distributed under the FCC's CAF program, and have purchased and will continue to purchase products from us or other suppliers while such programs and funding are available. However, customers may substantially curtail future purchases of products as ARRA funding winds down or because all purchases have been completed. For example, the Broadband Initiatives Program administered by RUS ended on July 31, 2015, the date by which funded projects were to be completed.

Under the terms of a RUS equipment contract that includes installation services, the customer does not take possession and control and title does not pass until formal acceptance is obtained from the customer. Under this type of arrangement, we do not recognize revenue until we have received formal acceptance from the customer. The timing of revenue recognition related to the sales of our products to CSPs who have received RUS funds may create significant fluctuations in our revenue and operating results from period to period, which could harm our financial results for certain periods. In addition, any changes in government regulations and subsidies could cause our customers to change their purchasing decisions, which could have an adverse effect on our operating results and financial condition.

We face intense competition that could reduce our revenue and adversely affect our financial results.

The market for our products is highly competitive, and we expect competition from both established and new companies to increase. Our competitors include companies such as ADTRAN, Inc., Alcatel-Lucent S.A. (now part of Nokia), Arris Group, Inc., Ciena Corporation, Huawei Technologies Co. Ltd., ZTE Corporation and DASAN Zhong Solutions, Inc., among others.

Our ability to compete successfully depends on a number of factors, including:

- the successful development of new products;
- our ability to anticipate CSP and market requirements and changes in technology and industry standards;
- our ability to differentiate our products from our competitors' offerings based on performance, cost-effectiveness or other factors;
- our ongoing ability to successfully integrate acquired product lines and customer bases into our business;
- our ability to gain customer acceptance of our products; and
- our ability to market and sell our products.

The broadband access equipment market has undergone and continues to undergo consolidation, as participants have merged, made acquisitions or entered into partnerships or other strategic relationships with one another to offer more comprehensive solutions than they individually had offered. Examples include our acquisitions of Occam in February 2011 and Ericsson's fiber access assets in November 2012; Adtran's acquisition of Nokia Siemens's broadband access line business in May 2012; Arris's acquisitions of BigBand Networks in October 2011, Motorola Mobility's Home Unit from Google in December 2012 and Pace plc in January 2016; Nokia's acquisition of Alcatel-Lucent in January 2016; and the merger of DASAN Zhong Solutions with DASAN Network Solutions in September 2016. We expect this trend to continue as companies attempt to strengthen or maintain their market positions in an evolving industry.

Many of our current or potential competitors have longer operating histories, greater name recognition, larger customer bases and significantly greater financial, technical, sales, marketing and other resources than we do and are better positioned to acquire and offer complementary products and services. Many of our competitors have broader product lines and can offer bundled solutions, which may appeal to certain customers. Our competitors may also invest additional resources in developing more compelling product offerings. Potential customers may also prefer to purchase from their existing suppliers rather than a new supplier, regardless of product performance or features, because the products that we and our competitors offer require a substantial investment of time and funds to install.

Some of our competitors may offer substantial discounts or rebates to win new customers or to retain existing customers. If we are forced to reduce prices in order to secure customers, we may be unable to sustain gross margins at desired levels or achieve profitability. Competitive pressures could result in increased pricing pressure, reduced profit margins, increased sales and marketing expenses and failure to increase, or the loss of, market share, any of which could reduce our revenue and adversely affect our financial results.

Product development is costly, and if we fail to develop new products or enhancements that meet changing CSP requirements, we could experience lower sales.

Our market is characterized by rapid technological advances, frequent new product introductions, evolving industry standards and unanticipated changes in subscriber requirements. Our future success will depend significantly on our ability to anticipate and adapt to such changes, and to offer, on a timely and cost-effective basis, products and features that meet changing CSP demands and industry standards.

We intend to continue making significant investments in developing new products and enhancing the functionality of our existing products. Developing our products is expensive, complex and involves uncertainties. We may not have sufficient resources to successfully manage lengthy product development cycles. For the years ended December 31, 2016, 2015, and 2014, our research and development expenses were \$106.9 million or 23% of our revenue, \$89.7 million or 22% of our revenue, and \$80.3 million or 20% of our revenue, respectively. We believe that we must continue to dedicate a significant amount of resources to our research and development efforts to maintain our competitive position. These investments may take several years to generate positive returns, if ever. In addition, we may experience design, manufacturing, marketing and other difficulties that could delay or prevent the development, introduction or marketing of new products and enhancements. If we fail to meet our development targets, demand for our products will decline.

In addition, the introduction of new or enhanced products also requires that we manage the transition from older products to these new or enhanced products in order to minimize disruption in customer ordering patterns, fulfill ongoing customer commitments and ensure that adequate supplies of new products are available for delivery to meet anticipated customer demand. If we fail to maintain compatibility with other software or equipment found in our customers' existing and planned networks, we may face substantially reduced demand for our products, which would reduce our revenue opportunities and market share. Moreover, as customers complete infrastructure deployments, they may require greater levels of service and support than we have provided in the past. We may not be able to provide products, services and support to compete effectively for these market opportunities. If we are unable to anticipate and develop new products or enhancements to our existing products on a timely and cost-effective basis, we could experience lower sales, which would harm our business.

Our new products are early in their life cycles and subject to uncertain market demand. If our customers are unwilling to install our new products or deploy our new services or we are unable to achieve market acceptance of our new products, our business and financial results will be harmed.

Our new products are early in their life cycles and subject to uncertain market demand. They also may face obstacles in manufacturing, deployment and competitive response. Potential customers may choose not to invest the additional capital required for initial system deployment of new products. In addition, demand for new products is dependent on the success of our customers in deploying and selling advanced services to their subscribers. Our products support a variety of advanced broadband services, such as high-speed Internet, Internet protocol television, mobile broadband, high-definition video and online gaming. If subscriber demand for such services does not grow as expected or declines or our customers are unable or unwilling to deploy and market these services, demand for our products may decrease or fail to grow at rates we anticipate.

Our customer base is concentrated, and there are a limited number of potential customers for our products. The loss of any of our key customers, a decrease in purchases by our key customers or our inability to grow our customer base would adversely impact our revenues.

Historically, a large portion of our sales has been to a limited number of customers. For example, one customer accounted for 21%, 22% and 23% of our revenue for the years ended December 31, 2016, 2015, and 2014, respectively, and another customer accounted for 15% of our revenue for the year ended December 31, 2016. However, we cannot anticipate the level of purchases in the future by these customers. Any decrease or delay in purchases and/or capital expenditure plans of any of our key customers, or our inability to grow our sales with existing customers, may have a material negative impact on our revenues and results of operations.

We anticipate that a large portion of our revenues will continue to depend on sales to a limited number of customers. In addition, some larger customers may demand discounts and rebates or desire to purchase their access systems and software from multiple providers. As a result of these factors, our future revenue opportunities may be limited, our margins could be reduced, and our profitability may be adversely impacted. The loss of, or reduction in, orders from any key customer would significantly reduce our revenues and harm our business.

Furthermore, in recent years, the CSP market has undergone substantial consolidation. Industry consolidation generally has negative implications for equipment suppliers, including a reduction in the number of potential customers, a decrease in aggregate capital spending, and greater pricing leverage on the part of CSPs over equipment suppliers. Continued consolidation of the CSP industry and among the ILEC and IOC customers, who represent a large part of our business, could make it more difficult for us to grow our customer base, increase sales of our products and maintain adequate gross margins.

Our sales cycles can be long and unpredictable, and our sales efforts require considerable time and expense. As a result, our sales are difficult to predict and may vary substantially from quarter to quarter, which may cause our operating results to fluctuate significantly.

The timing of our revenues is difficult to predict. Our sales efforts often involve educating CSPs about the use and benefits of our products. CSPs typically undertake a significant evaluation process, which frequently involves not only our products but also those of our competitors and results in a lengthy sales cycle. Sales cycles for larger customers are relatively longer and require considerably more time and expense. We spend substantial time, effort and money in our sales efforts without any assurance that our efforts will produce sales. In addition, product purchases are frequently subject to budget constraints, multiple approvals and unplanned administrative, processing and other delays. The timing of revenues related to sales of products and services that have installation requirements may be difficult to predict due to interdependencies that may be beyond our control, such as CSP testing and turn-up protocols or other vendors' products, services or installations of equipment upon which our products and services rely. In addition, larger projects may have longer periods between project commencement and completion and recognition of revenues. Such delays may result in fluctuations in our quarterly revenues. If sales expected from a specific customer for a particular quarter are not realized in that quarter or at all, we may not achieve our revenue forecasts and our financial results would be adversely affected.

Our focus on CSPs with relatively small networks limits our revenues from sales to any one customer and makes our future operating results difficult to predict.

A large portion of our sales efforts continue to be focused on CSPs with relatively small networks, MSOs and selected international CSPs. Our current and potential customers generally operate small networks with limited capital expenditure budgets. Accordingly, we believe the potential revenues from the sale of our products to any one of these customers are limited. As a result, we must identify and sell products to new customers each quarter to continue to increase our sales. In addition, the spending patterns of many of our customers are characterized by small and sporadic purchases. As a consequence, we have limited backlog and will likely continue to have limited visibility into future operating results.

We do not have long-term, committed-volume purchase contracts with our customers, and therefore have no guarantee of future revenues from any customer.

We typically have not entered into long-term, committed-volume purchase contracts with our customers, including our key customers which account for a material portion of our revenues. As a result, any of our customers may cease to purchase our products at any time. In addition, our customers may attempt to renegotiate terms of sale, including price and quantity. If any of our key customers stop purchasing our access systems and software for any reason, our business and results of operations would be harmed.

Our efforts to increase our sales to CSPs globally, including MSOs, may be unsuccessful.

Our sales and marketing efforts have been focused on CSPs in North America. Part of our long-term strategy is to increase sales to CSPs globally, including MSOs. We have devoted and continue to devote substantial technical, marketing and sales resources to the pursuit of these larger CSPs, who have lengthy equipment qualification and sales cycles, without any assurance of generating sales. In particular, sales to these larger CSPs may require us to upgrade our products to meet more stringent performance criteria and interoperability requirements, develop new customer-specific features or adapt our product to meet international standards. For example, we have been recently invited by a large CSP to engage in initial testing and laboratory trials for our NG-PON2 technology along with our partner Ericsson. We have invested and expect to continue to invest considerable time, effort and expenditures, including investment in product research and development, related to this opportunity without any assurance that our efforts will produce orders or revenues. If we are unable to successfully increase our sales to larger CSPs, our operating results, financial condition, cash flows and long-term growth may be negatively impacted.

We are exposed to the credit risks of our customers; if we have inadequately assessed their creditworthiness, we may have more exposure to accounts receivable risk than we anticipate. Failure to collect our accounts receivable in amounts that we anticipate could adversely affect our operating results and financial condition.

In the course of our sales to customers, we may encounter difficulty collecting accounts receivable and could be exposed to risks associated with uncollectible accounts receivable. We maintain an allowance for doubtful accounts for estimated losses resulting from the inability or unwillingness of our customers to make required payments. However, these allowances are based on our judgment and a variety of factors and assumptions.

We perform credit evaluations of our customers' financial condition. However, our evaluation of the creditworthiness of customers may not be accurate if they do not provide us with timely and accurate financial information or if their situations change after we evaluate their credit. While we attempt to monitor these situations carefully, adjust our allowances for doubtful accounts as appropriate and take measures to collect accounts receivable balances, we have written down accounts receivable and written off doubtful accounts in prior periods and may be unable to avoid additional write-downs or write-offs of doubtful accounts in the future. Such write-downs or write-offs could negatively affect our operating results for the period in which they occur, and could harm our financial condition.

Our gross margins may fluctuate over time, and our current level of gross margins may not be sustainable.

Our current level of gross margins may not be sustainable and may be adversely affected by numerous factors, including:

- changes in customer, geographic or product mix, including the mix of configurations within each product group;
- increased price competition, including the impact of customer discounts and rebates;
- our ability to reduce and control product costs;
- changes in component pricing;
- changes in contract manufacturer rates;
- charges incurred due to inventory holding periods if parts ordering does not correctly anticipate product demand;
- introduction of new products;
- an increase in revenue mix toward services, which typically have lower margins;
- changes in shipment volume;
- changes in or increased reliance on distribution channels;
- increased expansion efforts into new or emerging markets;
- increased warranty costs;
- excess and obsolete inventory and inventory holding charges;
- expediting costs incurred to meet customer delivery requirements; and
- potential costs associated with contractual liquidated damages obligations.

An increase in revenue mix towards services will adversely affect our gross margins.

Customers are demanding greater professional and support services for our products, which usually have a lower gross margin than product purchases. In particular, we have experienced increased demand for professional services associated with network improvement projects, which typically are turnkey projects whereby we supply products and related professional services such as network planning, product installation, testing and network turn up. Revenue recognized from such professional services may be delayed because of the timing of completion and acceptance of a project or milestone, including third party delays that may be outside our control. Additionally, if we are unable to meet project deadlines for professional and support services due to our suppliers' inability to meet our demands for components or for any other reasons, we will incur additional costs, including higher premiums to source necessary components, additional costs and expedite fees to meet project deadlines, all of which would negatively impact our gross margins. Furthermore, as we grow our professional service business to meet customer demand, we incur ramp up costs and we may not achieve the desired efficiencies as we ramp and scale our professional services business. Increases in professional services as a proportion of our revenue mix have resulted in lower overall gross margins and may continue to result in lower overall gross margins in future periods. This negative impact on gross margins is exacerbated in periods where we experience higher pace of activities for professional services project due to project requirements and customer deadlines. Moreover, the increase in our professional services projects has resulted in increased deferred costs, including costs directly associated with the delivery of the professional services for the arrangement, that are recognized as cost of revenue only when all revenue recognition criteria are met for the arrangement. In the event some or all of such deferred costs are deemed unrecoverable, including as a result of cost overruns, we will incur additional charges to cost of revenue in the period such deferred costs are determined to be unrecoverable. Any charge to cost of revenue for deferred costs determined to be unrecoverable would negatively impact our gross margins.

Our products must interoperate with many software applications and hardware products found in our customers' networks. If we are unable to ensure that our products interoperate properly, our business would be harmed.

Our products must interoperate with our customers' existing and planned networks, which often have varied and complex specifications, utilize multiple protocol standards, include software applications and products from multiple vendors and contain multiple generations of products that have been added over time. As a result, we must continually ensure that our products interoperate properly with these existing and planned networks. To meet these requirements, we must undertake development efforts that require substantial capital investment and employee resources. We may not accomplish these development goals quickly or cost-effectively, if at all. If we fail to maintain compatibility with other software or equipment found in our customers' existing and planned networks, we may face substantially reduced demand for our products, which would reduce our revenue opportunities and market share.

We have entered into interoperability arrangements with a number of equipment and software vendors for the use or integration of their technology with our products. These arrangements give us access to and enable interoperability with various products that we do not otherwise offer. If these relationships fail, we may have to devote substantially more resources to the development of alternative products and processes and our efforts may not be as effective as the combined solutions under our current arrangements. In some cases, these other vendors are either companies that we compete with directly or companies that have extensive relationships with our existing and potential customers and may have influence over the purchasing decisions of those customers. Some of our competitors have stronger relationships with some of our existing and other potential interoperability partners, and as a result, our ability to have successful interoperability arrangements with these companies may be harmed. Our failure to establish or maintain key relationships with third-party equipment and software vendors may harm our ability to successfully sell and market our products.

We do not have manufacturing capabilities, and therefore we depend upon a small number of outside contract manufacturers. We do not have supply contracts with all of these contract manufacturers; consequently, our operations could be disrupted if we encounter problems with any of these contract manufacturers.

We do not have internal manufacturing capabilities and rely upon a small number of contract manufacturers to build our products. In particular, we rely on Flex Ltd., formerly Flextronics ("Flex") for the manufacture of most of our products. Our reliance on a small number of contract manufacturers makes us vulnerable to possible capacity constraints and reduced control over component availability, delivery schedules, manufacturing yields and costs.

We do not have supply contracts with some of our contract manufacturers. Consequently, these contract manufacturers are not obligated to supply products to us for any specific period, in any specific quantity or at any certain price. In addition, we have limited control over our contract manufacturers' quality systems and controls, and therefore may not be able to ensure levels of quality manufacture suitable for our customers.

The revenues that Flex and other contract manufacturers generate from our orders represent a relatively small percentage of those manufacturers' overall revenues. As a result, fulfilling our orders may not be considered a priority if such manufacturers are constrained in their ability to fulfill all of their customer obligations in a timely manner. In addition, a substantial part of our manufacturing is done in our contract manufacturer facilities that are located outside of the United States. We believe that the location of these facilities outside of the United States increases supply risk, including the risk of supply interruptions or reductions in manufacturing quality or controls. Moreover, the administration of United States President Donald Trump may create further uncertainty regarding export or import regulations, economic sanctions or related legislation, which could result in disruption in our operations with our contract manufacturers.

If Flex or any of our other contract manufacturers were unable or unwilling to continue manufacturing our products in required volumes and at high quality levels, we would have to identify, qualify and select acceptable alternative contract manufacturers. An alternative contract manufacturer may not be available to us when needed or may not be in a position to satisfy our production requirements at commercially reasonable prices and quality. Any significant interruption in manufacturing would require us to reduce our supply of products to our customers, which in turn would reduce our revenues and harm our relationships with our customers.

We and our business partners, including our contract manufacturers and suppliers, depend on sole-source, single-source and limited-source suppliers for some key components. If we and our business partners are unable to source these components on a timely basis, we will not be able to deliver our products to our customers.

We and our business partners, including our contract manufacturers and suppliers, depend on sole-source, single-source and limited-source suppliers for some key components of our products. For example, certain of our application-specific integrated circuit processors and resistor networks are purchased from sole-source suppliers.

Any of the sole-source, single-source and limited-source suppliers upon whom we or our business partners rely could stop producing our components, cease operations, or enter into exclusive arrangements with our competitors. In addition, purchase volumes of such components may be too low for Calix to be considered a priority customer by these suppliers. As a result, these suppliers could stop selling to us and our business partners at commercially reasonable prices, or at all. Any such interruption or delay may force us and our business partners to seek similar components from alternative sources, which may not be available. Switching suppliers could also require that we redesign our products to accommodate new components, and could require us to re-qualify our products with our customers, which would be costly and time-consuming. Any interruption in the supply of sole-source, single-source or limited-source components for our products would adversely affect our ability to meet scheduled product deliveries to our customers, could result in lost revenue or higher expenses and would harm our business.

We utilize domestic and international third parties to design and manufacture certain of our products. If these manufacturers fail to provide these products, we could incur additional costs and delays or lose revenue.

From time to time we enter into original design manufacturer ("ODM") and original equipment manufacturer ("OEM") agreements for the design and manufacture of certain products in order to enable us to offer products on an accelerated basis. For example, a third party assisted in the design of and currently manufactures portions of our E-series systems and nodes family. If any of these ODMs or OEMs stop producing these products, for any reason, we would have to obtain similar products from alternative sources, which may not be available on commercially reasonable terms, if at all. We also have limited control over disruptions, such as supply interruptions or manufacturing quality, that may occur at ODM and OEM facilities located outside of the United States. In addition, switching manufacturers could require us to re-qualify our products with our customers, which would also be costly and time-consuming. Any interruption in the supply of products would adversely affect our ability to meet scheduled product deliveries to our customers, could result in lost revenue or higher expenses and would harm our business.

If we fail to forecast our manufacturing requirements accurately or fail to properly manage our inventory with our contract manufacturers, we could incur additional costs, experience manufacturing delays and lose revenue.

We bear inventory risk under our contract manufacturing arrangements and our ODM and OEM agreements. Lead times for the materials and components that we order through our manufacturers vary significantly and depend on numerous factors, including the specific supplier, contract terms and market demand for a component at a given time. Lead times for certain key materials and components incorporated into our products are currently lengthy, requiring our manufacturers to order materials and components several months in advance of manufacture.

If we overestimate our production requirements, our manufacturers may purchase excess components and build excess inventory. If our manufacturers, at our request, purchase excess components that are unique to our products or build excess products, we could be required to pay for these excess parts or products and their storage costs. Historically, we have reimbursed our primary contract manufacturers for a portion of inventory purchases when our inventory has been rendered excess or obsolete. Examples of when inventory may be rendered excess or obsolete include manufacturing and engineering change orders resulting from design changes or in cases where inventory levels greatly exceed projected demand. If we incur payments to our manufacturers associated with excess or obsolete inventory, this would have an adverse effect on our gross margins, financial condition and results of operations.

We have experienced unanticipated increases in demand from customers, which resulted in delayed shipments and variable shipping patterns. If we underestimate our product requirements, our manufacturers may have inadequate component inventory, which could interrupt manufacturing of our products and result in delays or cancellation of sales.

As the market for our products evolves, changing customer requirements may adversely affect the valuation of our inventory.

Customer demand for our products can change rapidly in response to market and technology developments. Demand can be affected not only by customer- or market-specific issues, but also by broader economic and/or geopolitical factors. We may, from time to time, adjust inventory valuations downward in response to our assessment of demand from our customers for specific products or product lines.

If we fail to comply with evolving industry standards, sales of our existing and future products would be adversely affected.

The markets for our products are characterized by a significant number of standards, both domestic and international, which are evolving as new technologies are developed and deployed. As we expand into adjacent markets and increase our international footprint, we are likely to encounter additional standards. Our products must comply with these standards in order to be widely marketable. In some cases, we are compelled to obtain certifications or authorizations before our products can be introduced, marketed or sold in new markets or to customers that we have not historically served. For example, our ability to maintain Operations System Modification for Intelligent Network Elements ("OSMINE") certification for our products will affect our ongoing ability to continue to sell our products to Tier 1 CSPs.

In addition, our ability to expand our international operations and create international market demand for our products may be limited by regulations or standards adopted by other countries that may require us to redesign our existing products or develop new products suitable for sale in those countries. Although we believe our products are currently in compliance with domestic and international standards and regulations in countries in which we currently sell, we may not be able to design our products to comply with evolving standards and

regulations in the future. This ongoing evolution of standards may directly affect our ability to market or sell our products. Further, the cost of complying with the evolving standards and regulations or the failure to obtain timely domestic or foreign regulatory approvals or certification could prevent us from selling our products where these standards or regulations apply, which would result in lower revenues and lost market share.

We may be unable to successfully expand our international operations. In addition, we may be subject to a variety of international risks that could harm our business.

We currently generate most of our sales from customers in North America and have limited experience marketing, selling and supporting our products and services outside North America or managing the administrative aspects of a worldwide operation. While we are in the process of expanding our international operations, we may not be able to create or maintain international market demand for our products. In addition, as we expand our operations internationally, our support organization will face additional challenges including those associated with delivering support, training and documentation in languages other than English. If we invest substantial time and resources to expand our international operations and are unable to do so successfully and in a timely manner, our business, financial condition and results of operations will suffer.

In the course of expanding our international operations and operating overseas, we will be subject to a variety of risks, including:

- differing regulatory requirements, including tax laws, trade laws, data privacy laws, labor regulations, tariffs, export quotas, custom duties or other trade restrictions;
- liability or damage to our reputation resulting from corruption or unethical business practices;
- fluctuation in currency exchange rates;
- longer collection periods and difficulties in collecting accounts receivable;
- greater difficulty supporting and localizing our products;
- different or unique competitive pressures as a result of, among other things, the presence of local equipment suppliers;
- challenges inherent in efficiently managing an increased number of employees over large geographic distances, including the need to implement appropriate systems, policies, and compensation, benefits and compliance programs;
- limited or unfavorable intellectual property protection;
- risk of change in international political or economic conditions, terrorist attacks or acts of war; and
- restrictions on the repatriation of earnings.

We engage resellers to promote, sell, install and support our products to some customers in North America and internationally. Their failure to do so or our inability to recruit or retain appropriate resellers may reduce our sales and thus harm our business.

We engage some value added resellers ("VARs"), who provide sales and support services for our products. In particular, the non-exclusive reseller agreement entered into with Ericsson in 2012 has provided us with an extensive global reseller channel. More recently we have partnered with Ericsson on larger customer opportunities. We compete with other telecommunications systems providers for our VARs' business and many of our VARs, including Ericsson, are free to market competing products. Our use of VARs and other third-party support partners and the associated risks of doing so are likely to increase as we expand sales outside of North America. If Ericsson or any other VAR promotes a competitor's products to the detriment of our products or otherwise fails to market our products and services effectively, we could lose market share. In addition, the loss of a key VAR or the failure of VARs to provide adequate customer service could have a negative effect on customer satisfaction and could cause harm to our business. If we do not properly recruit and train VARs to sell, install and service our products, our business, financial condition and results of operations may suffer.

The results of the United Kingdom's referendum on withdrawal from the European Union may have a negative effect on global economic conditions, financial markets and our business.

In June 2016, a majority of voters in the United Kingdom elected to withdraw from the European Union in a national referendum. The referendum was advisory, and the terms of any withdrawal are subject to a negotiation period that could last at least two years after the government of the United Kingdom formally initiates a withdrawal process. Nevertheless, the referendum has created significant uncertainty about the future relationship between the United Kingdom and the European Union, including with respect to the laws and regulations that will apply as the United Kingdom determines which European Union laws to replace or replicate in the event of a withdrawal. The referendum has also given rise to calls for the governments of other European Union member states to consider withdrawal. These developments, or the perception that any of them could occur, have had and may continue to have a material adverse effect on global economic conditions and the stability of global financial markets, and may significantly reduce global market liquidity and restrict the ability of key market participants to operate in certain financial markets. Any of these factors could depress economic activity and restrict our access to capital, or the access to capital of our customers or partners, which could have a material adverse effect on our business, financial condition and results of operations and reduce the price of our securities.

We may have difficulty evolving and scaling our business and operations to meet customer and market demand, which could result in lower profitability or cause us to fail to execute on our business strategies.

In order to grow our business, we believe we will need to continually evolve and scale our business and operations to meet customer and market demand. Evolving and scaling our business and operations place increased demands on our management as well as our financial and operational resources to effectively:

- manage organizational change;
- manage a larger organization;
- accelerate and/or refocus research and development activities;
- expand our manufacturing, supply chain and distribution capacity;
- increase our sales and marketing efforts;

- broaden our customer-support and services capabilities;
- maintain or increase operational efficiencies;
- scale support operations in a cost-effective manner;
- implement appropriate operational and financial systems; and
- maintain effective financial disclosure controls and procedures.

If we cannot evolve and scale our business and operations effectively, we may not be able to execute our business strategies in a cost-effective manner and our business, financial condition, profitability and results of operations would be adversely affected.

We may not be able to protect our intellectual property, which could impair our ability to compete effectively.

We depend on certain proprietary technology for our success and ability to compete. We rely on intellectual property laws as well as nondisclosure agreements, licensing arrangements and confidentiality provisions to establish and protect our proprietary rights. U.S. patent, copyright and trade secret laws afford us only limited protection, and the laws of some foreign countries do not protect proprietary rights to the same extent. Our pending patent applications may not result in issued patents, and our issued patents may not be enforceable. Any infringement of our proprietary rights could result in significant litigation costs. Further, any failure by us to adequately protect our proprietary rights could result in our competitors offering similar products, resulting in the loss of our competitive advantage and decreased sales.

Despite our efforts to protect our proprietary rights, attempts may be made to copy or reverse engineer aspects of our products or to obtain and use information that we regard as proprietary. Accordingly, we may be unable to protect our proprietary rights against unauthorized third-party copying or use. Furthermore, policing the unauthorized use of our intellectual property is difficult and costly. Litigation may be necessary in the future to enforce our intellectual property rights, to protect our trade secrets or to determine the validity and scope of the proprietary rights of others. Litigation could result in substantial costs, diversion of resources and harm to our business.

We could become subject to litigation regarding intellectual property rights that could harm our business.

We may be subject to intellectual property infringement claims that are costly to defend and could limit our ability to use some technologies in the future. Third parties may assert patent, copyright, trademark or other intellectual property rights to technologies or rights that are important to our business. Such claims may originate from non-practicing entities, patent holding companies or other adverse patent owners who have no relevant product revenue, and therefore, our own issued and pending patents may provide little or no deterrence to suit from these entities.

We have received in the past and expect that in the future we may receive communications from competitors and other companies alleging that we may be infringing their patents, trade secrets or other intellectual property rights; offering licenses to such intellectual property; threatening litigation or requiring us to act as a third-party witness in litigation. In addition, we have agreed, and may in the future agree, to indemnify our customers for expenses or liabilities resulting from certain claimed infringements of patents, trademarks or copyrights of third parties. Any claims asserting that our products infringe the proprietary rights of third parties, with or without merit, could be time-consuming, result in costly litigation and divert the efforts of our engineering teams and management. These claims could also result in product shipment delays or require us to modify our products or enter into royalty or licensing agreements. Such royalty or licensing agreements, if required, may not be available to us on acceptable terms, if at all.

The quality of our support and services offerings is important to our customers, and if we fail to continue to offer high quality support and services, we could lose customers, which would harm our business.

Once our products are deployed within our customers' networks, they depend on our support organization to resolve any issues relating to those products. A high level of support is critical for the successful marketing and sale of our products. If we do not effectively assist our customers in deploying our products, succeed in helping them quickly resolve post-deployment issues or provide effective ongoing support, it could adversely affect our ability to sell our products to existing customers and harm our reputation with potential new customers. As a result, our failure to maintain high quality support and services could result in the loss of customers, which would harm our business.

Our products are highly technical and may contain undetected hardware defects or software bugs, which could harm our reputation and adversely affect our business.

Our products are highly technical and when deployed, are critical to the operation of many networks. Our products have contained and may contain undetected defects, bugs or security vulnerabilities. Some defects in our products may only be discovered after a product has been installed and used by customers, and may in some cases only be detected under certain circumstances or after extended use. Any errors, bugs, defects or security vulnerabilities discovered in our products after commercial release could result in loss of revenues or delay in revenue recognition, loss of customers and increased service and warranty cost, any of which could adversely affect our business, operating results and financial condition. In addition, we could face claims for product liability, tort or breach of warranty. Our contracts with customers contain provisions relating to warranty disclaimers and liability limitations, which may not be upheld. Defending a lawsuit, regardless of its merit, is costly and may divert management's attention and adversely affect the market's perception of us and our products. In addition, if our business liability insurance coverage proves inadequate or future coverage is unavailable on acceptable terms or at all, our business, operating results and financial condition could be adversely impacted.

Our estimates regarding future warranty or product obligations may change due to product failure rates, shipment volumes, field service obligations and rework costs incurred in correcting product failures. If our estimates change, the liability for warranty or product obligations may be increased, impacting future cost of revenue.

Our products are highly complex, and our product development, manufacturing and integration testing may not be adequate to detect all defects, errors, failures and quality issues. Quality or performance problems for products covered under warranty could adversely impact our reputation and negatively affect our operating results and financial position. The development and production of new products with high complexity often involves problems with software, components and manufacturing methods. If significant warranty or other product obligations arise due to reliability or quality issues arising from defects in software, faulty components or improper manufacturing methods, our operating results and financial position could be negatively impacted by:

- cost associated with fixing software or hardware defects;
- high service and warranty expenses;
- high inventory obsolescence expense;
- delays in collecting accounts receivable;
- payment of liquidated damages for performance failures; and
- declining sales to existing customers.

Our use of open source software could impose limitations on our ability to commercialize our products.

We incorporate open source software into our products. Although we closely monitor our use of open source software, the terms of many open source software licenses have not been interpreted by the courts, and there is a risk that such licenses could be construed in a manner that could impose unanticipated conditions or restrictions on our ability to sell our products. In such event, we could be required to make our proprietary software generally available to third parties, including competitors, at no cost, to seek licenses from third parties in order to continue offering our products, to re-engineer our products or to discontinue the sale of our products in the event re-engineering cannot be accomplished on a timely basis or at all, any of which could adversely affect our revenues and operating expenses.

If we are unable to obtain necessary third-party technology licenses, our ability to develop new products or product enhancements may be impaired.

While our current licenses of third-party technology generally relate to commercially available off-the-shelf technology, we may from time to time be required to license additional technology from third parties to develop new products or product enhancements. These third-party licenses may be unavailable to us on commercially reasonable terms, if at all. Our inability to obtain necessary third-party licenses may force us to obtain substitute technology of lower quality or performance standards or at greater cost, or may increase the time-to-market of our products or product enhancements, any of which could harm the competitiveness of our products and result in lost revenues.

Our ability to incur debt and the use of our funds could be limited by the restrictive covenants in our loan agreement for our revolving credit facility.

Our Credit Agreement with Bank of America, N.A. provides for a revolving credit facility that contains restrictive covenants, as well as requirements to comply with certain leverage and other financial maintenance tests. These restrictive covenants and requirements limit the amount of borrowings that are available to us. We have incurred operating losses in recent quarters and, if we continue to incur operating losses, we will not be able to make any borrowing under the terms of the Credit Agreement. The Credit Agreement covenants may also affect our ability to obtain future financing and to pursue attractive business opportunities and our flexibility in planning for, and reacting to, changes in business conditions. These covenants could place us at a disadvantage compared to some of our competitors, who may have fewer restrictive covenants and may not be required to operate under these restrictions.

Our failure or the failure of our manufacturers to comply with environmental and other legal regulations could adversely impact our results of operations.

The manufacture, assembly and testing of our products may require the use of hazardous materials that are subject to environmental, health and safety regulations, or materials subject to laws restricting the use of conflict minerals. Our failure or the failure of our contract manufacturers, ODMs and OEMs to comply with any of these requirements could result in regulatory penalties, legal claims or disruption of production. In addition, our failure or the failure of our manufacturers to properly manage the use, transportation, emission, discharge, storage, recycling or disposal of hazardous materials could subject us to increased costs or liabilities. Existing and future environmental regulations and other legal requirements may restrict our use of certain materials to manufacture, assemble and test products. Any of these consequences could adversely impact our results of operations by increasing our expenses and/or requiring us to alter our manufacturing processes.

Regulatory and physical impacts of climate change and other natural events may affect our customers and our contract manufacturers, resulting in adverse effects on our operating results.

As emissions of greenhouse gases continue to alter the composition of the atmosphere, affecting large-scale weather patterns and the global climate, any new regulation of greenhouse gas emissions may result in additional costs to our customers and our contract manufacturers. In addition, the physical impacts of climate change and other natural events, including changes in weather patterns, drought, rising ocean and temperature levels, earthquakes and tsunamis may impact our customers, suppliers, contract manufacturers, and our operations. These potential physical effects may adversely affect our revenues, costs, production and delivery schedules, and cause harm to our results of operations and financial condition.

We have in the past pursued, and may in the future continue to pursue, acquisitions which involve a number of risks and uncertainties. If we are unable to address and resolve these risks and uncertainties successfully, such acquisitions could disrupt our business and result in higher costs than we anticipate.

We acquired Occam Networks in 2011 and Ericsson's fiber access assets in 2012. We may in the future acquire other businesses, products or technologies to expand our product offerings and capabilities, customer base and business. We have evaluated and expect to continue to evaluate a wide array of potential strategic transactions. We have limited experience making such acquisitions or integrating these businesses after such acquisitions. Unanticipated costs to us from these historical transactions as well as both anticipated and unanticipated costs to us related to any future transactions could exceed amounts that are covered by insurance and could have a material adverse impact on our financial condition and results of operations. For example, the Occam acquisition resulted in litigation with defense costs that were in excess of available Directors & Officers liability insurance coverage, including costs for which coverage was denied by our insurance carriers. Although the Delaware Court of Chancery approved a global settlement on the matter at a hearing on August 26, 2016 and, on September 7, 2016, issued its Order and Final Judgment, terminating the case before the court, our indemnity obligations, including our defense costs, in excess of such insurance coverage have been material, as described further in Note 6, "Commitments and Contingencies - Litigation" of the Notes to Consolidated Financial Statements included in Part II, Item 8 of this Annual Report on Form 10-K. In addition, the anticipated benefit of any acquisitions we do may never materialize or the process of integrating acquired businesses, products or technologies may create unforeseen operating difficulties and expenditures.

Some of the areas where we have experienced and may in the future experience acquisition-related risks include:

- expenses and distractions, including diversion of management time related to litigation;
- expenses and distractions related to potential claims resulting from any possible future acquisitions, whether or not they are completed;
- retaining and integrating employees from acquired businesses;
- issuance of dilutive equity securities or incurrence of debt;
- integrating various accounting, management, information, human resource and other systems to permit effective management;
- incurring possible write-offs, impairment charges, contingent liabilities, amortization expense of intangible assets or impairment of goodwill and intangible assets with finite useful lives;
- difficulties integrating and supporting acquired products or technologies;
- unexpected capital expenditure requirements;
- insufficient revenues to offset increased expenses associated with the acquisition; and
- opportunity costs associated with committing capital to such acquisitions.

If our goodwill or intangible assets with finite useful lives become impaired, we may be required to record a significant charge to earnings. We review our goodwill and intangible assets with finite useful lives for impairment when events or changes in circumstances indicate the carrying value may not be recoverable, such as a sustained or significant decline in stock price and market capitalization. We test goodwill for impairment at least annually. If the carrying values of such assets were deemed to be impaired, an impairment loss equal to the amount by which the carrying amount exceeds the estimated fair value would be recognized. Any such impairment could materially and adversely affect our financial condition and results of operations.

Foreign acquisitions would involve risks in addition to those mentioned above, including those related to integration of operations across different cultures and languages, currency risks and the particular economic, political and regulatory risks associated with specific countries. We may not be able to address these risks and uncertainties successfully, or at all, without incurring significant costs, delays or other operating problems.

Our inability to address or anticipate any of these risks and uncertainties could disrupt our business and could have a material impact on our financial condition and results of operations.

Our use of and reliance upon development resources in China may expose us to unanticipated costs or liabilities.

We operate a wholly foreign owned enterprise in Nanjing, China, where a dedicated team of engineers performs product development, quality assurance, cost reduction and other engineering work. We also outsource a portion of our software development to a team of software engineers based in Shenyang, China. Our reliance upon development resources in China may not enable us to achieve meaningful product cost reductions or greater resource efficiency. Further, our development efforts and other operations in China involve significant risks, including:

- difficulty hiring and retaining appropriate engineering resources due to intense competition for such resources and resulting wage inflation;
- the knowledge transfer related to our technology and exposure to misappropriation of intellectual property or confidential information, including information that is proprietary to us, our customers and third parties;
- heightened exposure to changes in the economic, security and political conditions of China;
- fluctuation in currency exchange rates and tax risks associated with international operations;
- development efforts that do not meet our requirements because of language, cultural or other differences associated with international operations, resulting in errors or delays; and
- uncertainty with regards to actions the Trump administration may take with respect to international trade agreements and U.S. tax provisions related to international commerce that could adversely affect our international operations.

Difficulties resulting from the factors above and other risks related to our operations in China could expose us to increased expense, impair our development efforts, harm our competitive position and damage our reputation.

Our customers are subject to government regulation, and changes in current or future laws or regulations that negatively impact our customers could harm our business.

The FCC has jurisdiction over all of our U.S. customers. FCC regulatory policies that create disincentives for investment in access network infrastructure or impact the competitive environment in which our customers operate may harm our business. For example, future FCC regulation affecting providers of broadband Internet access services could impede the penetration of our customers into certain markets or affect the prices they may charge in such markets. Similarly, changes to regulatory tariff requirements or other regulations relating to pricing or terms of carriage on communication networks could slow the development or expansion of network infrastructures. Consequently, such changes could adversely affect the sale of our products and services. Furthermore, many of our customers are subject to FCC rate regulation of interstate telecommunications services and are recipients of CAF capital incentive payments, which are intended to subsidize broadband and telecommunications services in areas that are expensive to serve. Changes to these programs, rules and regulations that could affect the ability of IOCs to access capital, and which could in turn reduce our revenue opportunities, remain possible.

In addition, many of our customers are subject to state regulation of intrastate telecommunications services, including rates for such services, and may also receive funding from state universal service funds. Changes in rate regulations or universal service funding rules, either at the U.S. federal or state level, could adversely affect our customers' revenues and capital spending plans. Moreover, various international regulatory bodies have jurisdiction over certain of our non-U.S. customers. Changes in these domestic and international standards, laws and regulations, or judgments in favor of plaintiffs in lawsuits against CSPs based on changed standards, laws and regulations could adversely affect the development of broadband networks and services. This, in turn, could directly or indirectly adversely impact the communications industry in which our customers operate.

Many jurisdictions, including international governments and regulators, are also evaluating, implementing and enforcing regulations relating to cyber security, privacy and data protection, which can affect the market and requirements for networking and communications equipment. To the extent our customers are adversely affected by laws or regulations regarding their business, products or service offerings, our business, financial condition and results of operations would suffer.

Privacy concerns relating to our products and services could affect our business practices, damage our reputation and deter customers from purchasing our products and services.

Government and regulatory authorities in the United States and around the world have implemented and are continuing to implement laws and regulations concerning data protection. For example, in July 2016, the European Commission adopted the EU-U.S. Privacy Shield to replace Safe Harbor as a compliance mechanism for the transfer of personal data from the European Union to the United States. The interpretation and application of these data protection laws and regulations are often uncertain and in flux, and it is possible that they may be interpreted and applied in a manner that is inconsistent with our data practices. Complying with these various laws could cause us to incur substantial costs or require us to change our business practices in a manner adverse to our business.

Concerns about or regulatory actions involving our practices with regard to the collection, use, disclosure, or security of customer information or other privacy related matters, even if unfounded, could damage our reputation and adversely affect operating results. While we strive to comply with all data protection laws and regulations, the failure or perceived failure to comply may result in inquiries and other proceedings or actions against us by government entities or others, or could cause us to lose customers, which could potentially have an adverse effect on our business.

Interruptions, failures or material breaches in our information technology and communications systems could harm our business, customer relations and financial condition.

Information technology helps us operate efficiently, interface with and provide software solutions to customers, maintain financial accuracy and efficiency and accurately produce our financial statements. If we do not allocate and effectively manage the resources necessary to build and sustain the proper technology infrastructure, we could be subject to transaction errors, processing inefficiencies, the loss of customers, business disruptions or the loss of or damage to intellectual property through security breach. If our data management systems do not effectively collect, store, process and report relevant data for the operation of our business, whether due to equipment malfunction or constraints, software deficiencies or human error, our ability to effectively plan, forecast and execute our business plan and comply with laws and regulations will be impaired, perhaps materially. Any such impairment could materially and adversely affect our financial condition, results of operations, cash flows and the timeliness with which we internally and externally report our operating results.

We have applied multiple layers of security to control access to our information technology systems. We also use encryption and authentication technologies to secure the transmission and storage of data. These security measures may be compromised as a result of third-party security breaches, employee error, malfeasance, faulty password management or other irregularity, and result in persons obtaining unauthorized access to our data or accounts. Third parties may attempt to fraudulently induce employees into disclosing user names, passwords or other sensitive information, which may in turn be used to access our information technology systems.

While we seek to apply best practice policies and devote significant resources to network security, data encryption and other security measures to protect our information technology and communications systems and data, these security measures cannot provide absolute security. We may experience a breach of our systems and be unable to protect sensitive data. The costs to us to eliminate or alleviate network security problems, bugs, viruses, worms, malicious software programs and security vulnerabilities could be significant, and our efforts to address these problems may not be successful and could result in unexpected interruptions, delays and cessation of service which may harm our business operations.

Although our systems have been designed around industry-standard architectures to reduce downtime in the event of outages or catastrophic occurrences, they remain vulnerable to damage or interruption from earthquakes, floods, fires, power loss, telecommunication failures, terrorist attacks, cyber-attacks, viruses, denial-of-service attacks, human error, hardware or software defects or malfunctions, and similar events or disruptions. Some of our systems are not fully redundant, and our disaster recovery planning is not sufficient for all eventualities. Our systems are also subject to break-ins, sabotage, and intentional acts of vandalism. Despite any precautions we may take, the occurrence of a natural disaster, a decision by any of our third-party hosting providers to close a facility we use without adequate notice for financial or other reasons, or other unanticipated problems at our hosting facilities could cause system interruptions and delays which may result in loss of critical data and lengthy interruptions in our services.

We are subject to governmental export and import controls that could subject us to liability or impair our ability to compete in additional international markets.

Our products are subject to U.S. export and trade controls and restrictions. International shipments of certain of our products may require export licenses or are subject to additional requirements for export. In addition, the import laws of other countries may limit our ability to distribute our products, or our customers' ability to buy and use our products, in those countries. Changes in our products or changes in export and import regulations or duties may create delays in the introduction of our products in international markets, prevent our customers with international operations from deploying our products or, in some cases, prevent the export or import of our products to certain countries altogether. Any change in export or import regulations, duties or related legislation, shift in approach to the enforcement or scope of existing regulations, or change in the countries, persons or technologies targeted by such regulations, could negatively impact our ability to sell, profitably or at all, our products to existing or potential international customers.

If we lose any of our key personnel, or are unable to attract, train and retain qualified personnel, our ability to manage our business and continue our growth would be negatively impacted.

Our success depends, in large part, on the continued contributions of our key management, engineering, sales and marketing personnel, many of whom are highly skilled and would be difficult to replace. None of our senior management or key technical or sales personnel is bound by a written employment contract to remain with us for a specified period. In addition, we do not currently maintain key person life insurance covering our key personnel. If we lose the services of any key personnel, our business, financial condition and results of operations may suffer.

Competition for skilled personnel, particularly those specializing in engineering and sales, is intense. We cannot be certain that we will be successful in attracting and retaining qualified personnel, or that newly hired personnel will function effectively, both individually and as a group. In particular, we must continue to expand our direct sales force, including hiring additional sales managers, to grow our customer base and increase sales. If we are unable to effectively recruit, hire and utilize new employees, execution of our business strategy and our ability to react to changing market conditions may be impeded, and our business, financial condition and results of operations may suffer.

Volatility or lack of performance in our stock price may also affect our ability to attract and retain our key personnel. Our executive officers and employees hold a substantial number of shares of our common stock and vested stock options. Employees may be more likely to leave us if the shares they own or the shares underlying their equity awards decline in value, or if the exercise prices of stock options that they hold are significantly above the market price of our common stock. If we are unable to retain our employees, our business, operating results and financial condition will be harmed.

If we fail to maintain proper and effective internal controls, our ability to produce accurate financial statements on a timely basis could be impaired, which would adversely affect our operating results, our ability to operate our business and our stock price.

Ensuring that we have adequate internal financial and accounting controls and procedures in place to produce accurate financial statements on a timely basis is a costly and time-consuming effort that needs to be re-evaluated frequently. We have in the past discovered, and may in the future discover areas of our internal financial and accounting controls and procedures that need improvement.

Our management is responsible for establishing and maintaining adequate internal control over financial reporting to provide reasonable assurance regarding the reliability of our financial reporting and the preparation of financial statements for external purposes in accordance with U.S. generally accepted accounting principles. Our management does not expect that our internal control over financial reporting will prevent or detect all error and all fraud. A control system, no matter how well designed and operated, can provide only reasonable, not absolute, assurance that the control system's objectives will be met. Because of the inherent limitations in all control systems, no evaluation of controls can provide absolute assurance that misstatements due to error or fraud will not occur or that all control issues and instances of fraud, if any, within our company will have been detected.

We are required to comply with Section 404 of the Sarbanes-Oxley Act ("SOX"), which requires us to expend significant resources in developing the required documentation and testing procedures. We cannot be certain that the actions we have taken and are taking to improve our internal controls over financial reporting will be sufficient to maintain effective internal controls over financial reporting in subsequent reporting periods or that we will be able to implement our planned processes and procedures in a timely manner. In addition, new and revised accounting standards and financial reporting requirements may occur in the future and implementing changes required by new standards, requirements or laws may require a significant expenditure of our management's time, attention and resources which may adversely affect our reported financial results. If we are unable to produce accurate financial statements on a timely basis, investors could lose confidence in the reliability of our financial statements, which could cause the market price of our common stock to decline and make it more difficult for us to finance our operations and growth.

We incur significant costs as a result of operating as a public company, which may adversely affect our operating results and financial condition.

As a public company, we incur significant accounting, legal and other expenses, including costs associated with our public company reporting requirements. We also anticipate that we will continue to incur costs associated with corporate governance requirements, including requirements and rules under SOX and the Dodd-Frank Wall Street Reform and Consumer Protection Act (the "Dodd-Frank Act") among other rules and regulations implemented by the SEC, as well as listing requirements of the New York Stock Exchange (the "NYSE"). Furthermore, these laws and regulations could make it difficult or costly for us to obtain certain types of insurance, including director and officer liability insurance, and we may be forced to accept reduced policy limits and coverage or incur substantially higher costs to obtain the same or similar coverage. The impact of these requirements could also make it difficult for us to attract and retain qualified persons to serve on our board of directors, our board committees or as executive officers.

New laws and regulations as well as changes to existing laws and regulations affecting public companies, including the provisions of SOX and the Dodd-Frank Act and rules adopted by the SEC and the NYSE, would likely result in increased costs to us as we respond to their requirements. We continue to invest resources to comply with evolving laws and regulations, and this investment may result in increased general and administrative expense.

Risks Related to Ownership of Our Common Stock

Our stock price may continue to be volatile, and the value of an investment in our common stock may decline.

The trading price of our common stock has been, and is likely to continue to be, volatile, which means that it could decline substantially within a short period of time and could fluctuate widely in response to various factors, some of which are beyond our control. These factors include those discussed in the "Risk Factors" section of this Annual Report on Form 10-K and others such as:

- quarterly variations in our results of operations or those of our competitors;
- failure to meet any guidance that we have previously provided regarding our anticipated results;
- changes in earnings estimates or recommendations by securities analysts;
- failure to meet securities analysts' estimates;
- announcements by us or our competitors of new products, significant contracts, commercial relationships, acquisitions or capital commitments;
- developments with respect to intellectual property rights;
- our ability to develop and market new and enhanced products on a timely basis;
- our commencement of, or involvement in, litigation and developments relating to such litigation;
- changes in governmental regulations; and
- a slowdown in the communications industry or the general economy.

In recent years, the stock market in general, and the market for technology companies in particular, has experienced extreme price and volume fluctuations that have often been unrelated or disproportionate to the operating performance of those companies. Broad market and industry factors may seriously affect the market price of our common stock, regardless of our actual operating performance. In addition, in the past, following periods of volatility in the overall market and the market price of a particular company's securities, securities class action litigation has often been instituted against these companies. This litigation, if instituted against us, could result in substantial costs and a diversion of our management's attention and resources.

If securities or industry analysts do not publish research or reports about our business or if they issue an adverse or misleading opinion regarding our stock, our stock price 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 publish about us or our business. If any of the analysts who cover us issue an adverse or misleading opinion regarding our stock, our stock price would likely decline. If several of these analysts cease coverage of our company or fail to publish reports on us regularly, we could lose visibility in the financial markets, which in turn could cause our stock price or trading volume to decline.

Provisions in our charter documents and under Delaware law could discourage a takeover that stockholders may consider favorable and may lead to entrenchment of our management and board of directors.

Our amended and restated certificate of incorporation and amended and restated bylaws contain provisions that could have the effect of delaying or preventing changes in control or changes in our management or our board of directors. These provisions include:

- a classified board of directors with three-year staggered terms, which may delay the ability of stockholders to change the membership of a majority of our board of directors;
- no cumulative voting in the election of directors, which limits the ability of minority stockholders to elect director candidates;
- the exclusive right of our board of directors to elect a director to fill a vacancy created by the expansion of the board of directors or the resignation, death or removal of a director, which prevents stockholders from being able to fill vacancies on our board of directors;
- the ability of our board of directors to issue shares of preferred stock and to determine the price and other terms of those shares, including preferences and voting rights, without stockholder approval, which could be used to significantly dilute the ownership of a hostile acquirer;
- a prohibition on stockholder action by written consent, which forces stockholder action to be taken at an annual or special meeting of our stockholders;

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- the requirement that a special meeting of stockholders may be called only by the chairman of the board of directors, the chief executive officer or the board of directors, which may delay the ability of our stockholders to force consideration of a proposal or to take action, including the removal of directors; and
- advance notice procedures that stockholders must comply with in order to nominate candidates to our board of directors or to propose matters to be acted upon at a stockholders' meeting, which may discourage or deter a potential acquirer from conducting a solicitation of proxies to elect the acquirer's own slate of directors or otherwise attempting to obtain control of us.

We are also subject to certain anti-takeover provisions under Delaware law. Under Delaware law, a corporation may not, in general, engage in a business combination with any holder of 15% or more of its capital stock unless the holder has held the stock for three years or, among other things, the board of directors has approved the transaction.

We may need additional capital in the future to finance our business.

We may need to raise additional capital to fund operations in the future. Although we believe that, based on our current level of operations and anticipated growth, our existing cash and cash equivalents will provide adequate funds for ongoing operations, planned capital expenditures and working capital requirements for at least the next 12 months, our working capital needs and cash use have continued to increase to support our growth initiatives, and we may need additional capital if our current plans and assumptions change. If future financings involve the issuance of equity securities, our then-existing stockholders would suffer dilution. If we raise additional debt financing, we may be subject to restrictive covenants that limit our ability to conduct our business. We may not be able to raise sufficient additional funds on terms that are favorable to us, if at all. If we fail to raise sufficient funds and continue to incur losses, our ability to fund our operations, take advantage of strategic opportunities, develop products or technologies or otherwise respond to competitive pressures could be significantly limited. Any failure to obtain financing when and as required could force us to curtail our operations, which would harm our business.

We do not currently intend to pay dividends on our common stock and, consequently, our stockholders' ability to achieve a return on their investment will depend on appreciation in the price of our common stock.

We do not currently intend to pay any cash dividends on our common stock for the foreseeable future. We currently intend to invest our future earnings, if any, to fund our growth. Additionally, the terms of our credit facility restrict our ability to pay dividends under certain circumstances. Therefore, our stockholders are not likely to receive any dividends on our common stock for the foreseeable future.

ITEM 1B. Unresolved Staff Comments

None.

ITEM 2. Properties

We currently lease approximately 238,600 square feet of office space worldwide. Information concerning our principal leased properties as of December 31, 2016 is set forth below:

Location	Principal Use	Square Footage	Lease Expiration Date
Petaluma, California ⁽¹⁾	Corporate headquarters, sales, marketing, product design, service and repair engineering, distribution, research and development	82,100	February 2019
San Jose, California	Product design, research and development, administration	46,100	August 2018
Nanjing, China ⁽²⁾	Research and development	42,800	February 2021
Minneapolis, Minnesota ⁽³⁾	Product design, research and development, service and repair engineering	28,500	March 2019
Richardson, Texas	Service and test engineering	14,400	January 2022
Santa Barbara, California	Research and development	12,400	June 2019
Acton, Massachusetts	Research and development	6,200	June 2017
Richardson, Texas ⁽⁴⁾	Service and repair engineering	6,100	July 2017

(1) On January 28, 2013, we entered into an amendment to this Petaluma lease and extended the lease expiration date to February 2019.

(2) In February 2016, we entered into an amendment to extend the lease term from February 2016 to February 2021. Effective on October 1, 2016, we entered into another amendment for the expansion of lease premises from 32,200 to 42,800 square feet.

(3) In October 2013, we entered into an amendment to this Minneapolis lease to extend the lease term from March 2014 to March 2019. Effective as of January 1, 2014, the square footage has been reduced from 33,200 to 28,500 square feet.

(4) This property, for which we have been actively seeking a sublease, was vacated in September 2014. Employees in this location were relocated into our new site also in Richardson, Texas.

We believe that our facilities are in good condition and are generally suitable to meet our needs for the foreseeable future. However, we may continue to seek additional space as needed, and we believe this space will be available on commercially reasonable terms.

ITEM 3. Legal Proceedings

For a description of our material pending legal proceedings, please refer to Note 6, " *Commitments and Contingencies – Litigation* " of the Notes to Consolidated Financial Statements included in Part II, Item 8 of this Annual Report on Form 10-K.

ITEM 4. Mine Safety Disclosures

Not applicable.

PART II**ITEM 5. Market for Registrant's Common Equity, Related Stockholder Matters and Issuer Purchases of Equity Securities****Comparative Stock Prices**

Our common stock has been trading on the New York Stock Exchange, under the trading symbol "CALX" since our initial public offering on March 24, 2010. Prior to this time, there was no public market for our common stock. The following table sets forth, for the fiscal periods indicated, the high and low sale prices per share of our common stock as reported on NYSE.

	High	Low
Fiscal Year 2016		
First Quarter	\$ 7.87	\$ 5.64
Second Quarter	7.76	6.24
Third Quarter	8.20	6.30
Fourth Quarter	8.10	6.15
Fiscal Year 2015		
First Quarter	\$ 10.63	\$ 8.09
Second Quarter	8.96	7.25
Third Quarter	8.79	6.75
Fourth Quarter	9.07	6.30

Number of Common Stock Holders and Number of Shares Outstanding

On February 16, 2017, there were approximately 257 stockholders of record of our common stock who held an aggregate of 49,589,197 shares of our common stock. The closing price of our common stock as of February 16, 2017 was \$6.85. A substantially greater number of holders of Calix common stock are street name or beneficial holders, whose shares are held of record by banks, brokers and other financial institutions.

Dividends

We have never declared or paid any cash dividends on our common stock. Our credit facility does not limit our ability to pay dividends on our common stock if credit extensions under the credit facility are less than \$5 million and certain conditions are met; otherwise the maximum amount of dividends permitted to be paid under the credit facility is \$15 million a year if certain conditions are met. We currently expect to be able to meet these conditions. However, we do not currently intend to pay any cash dividends on our common stock in the foreseeable future.

Recent Sales of Unregistered Securities

None.

Stock Repurchase

On April 26, 2015, our board of directors approved a program to repurchase up to \$40 million of our common stock from time to time. This stock repurchase program commenced in May 2015 and was completed in March 2016.

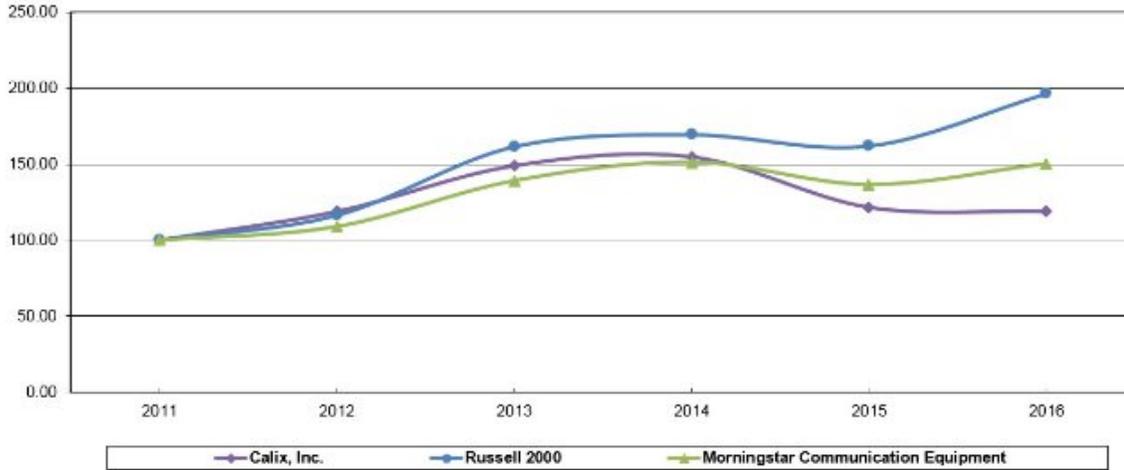
Under this program, stock was purchasable in open market or private transactions, through block trades, and/or pursuant to any trading plan adopted in accordance with Rule 10b5-1 of the Securities Exchange Act of 1934, as amended ("Exchange Act") and any open market purchases were to be made in accordance with the limitations set out in Rule 10b-18 of the Exchange Act. Further, decisions to consummate repurchases (including any decision to adopt a 10b5-1 plan for this purpose) were to be made at management's discretion at prices management considers to be attractive and in the best interests of the Company and its stockholders.

In March 2016, we completed purchases under the \$40 million stock repurchase program and have repurchased a total of 5,329,817 shares of common stock from May 2015 to March 2016 at an average price of \$7.50 per share.

Performance Graph

The following graph shows a comparison of the cumulative total stockholder return on our common stock with the cumulative total returns of the Russell 2000 Index and the Morningstar Communication Equipment Index. The graph tracks the performance of a \$100 investment in our common stock and in each of the indexes during the last five fiscal years ended December 31, 2016. Data for the Russell 2000 Index and the Morningstar Communication Equipment Index assume reinvestment of dividends. Stockholder returns over the indicated period are based on historical data and should not be considered indicative of future stockholder returns.

**Comparison of Cumulative Total Return
Assumes Initial Investment of \$100
December 2016**



This performance graph shall not be deemed "soliciting material" or to be "filed" with the Securities and Exchange Commission for purposes of Section 18 of the Securities Exchange Act of 1934, as amended, or otherwise subject to the liabilities under that Section, and shall not be deemed to be incorporated by reference into any filing of Calix, Inc. under the Securities Act of 1933, as amended.

ITEM 6. Selected Financial Data

The following selected consolidated financial data should be read in conjunction with our consolidated financial statements and the related notes thereto, of this Annual Report on Form 10-K, the section titled "Management's Discussion and Analysis of Financial Condition and Results of Operations" and the other financial information and data appearing elsewhere in this Annual Report on Form 10-K. The selected financial data included in this section is not intended to replace and is not a substitute for, the financial statements and related notes in this Annual Report on Form 10-K.

We derived the statements of operations data for the years ended December 31, 2016, 2015 and 2014 and the balance sheet data as of December 31, 2016 and 2015 from our audited financial statements and related notes thereto of this Annual Report on Form 10-K. We derived the statements of operations data for the years ended December 31, 2013 and 2012, and the balance sheet data as of December 31, 2014, 2013 and 2012 from our audited financial statements and related notes which are not included in this Annual Report on Form 10-K. Historical results for any prior period are not necessarily indicative of future results for any period.

	Years Ended December 31,				
	2016	2015	2014	2013	2012 ⁽¹⁾
(In thousands, except per share data)					
Statements of Operations Data:					
Revenue	\$ 458,787	\$ 407,463	\$ 401,227	\$ 382,618	\$ 330,218
Cost of revenue:					
Products and services ⁽²⁾	253,465	208,681	215,085	203,191	185,103
Amortization of intangible assets	4,104	8,353	8,353	8,353	7,539
Total cost of revenue	257,569	217,034	223,438	211,544	192,642
Gross profit	201,218	190,429	177,789	171,074	137,576
Operating expenses:					
Research and development ⁽²⁾	106,869	89,714	80,311	79,299	66,748
Sales and marketing ⁽²⁾	83,675	78,563	76,283	68,075	62,129
General and administrative ⁽²⁾	41,592	38,454	31,371	31,945	26,114
Amortization of intangible assets	1,701	10,208	10,208	10,208	10,208
Acquisition-related expenses	—	—	—	—	1,401
Litigation settlement gain	(4,500)	—	—	—	—
Total operating expenses	229,337	216,939	198,173	189,527	166,600
Loss from operations	(28,119)	(26,510)	(20,384)	(18,453)	(29,024)
Interest and other income (expense), net ⁽³⁾	1,064	712	151	1,174	856
Loss before provision for (benefit from) income taxes	(27,055)	(25,798)	(20,233)	(17,279)	(28,168)
Provision for (benefit from) income taxes	347	535	581	(14)	158
Net loss	\$ (27,402)	\$ (26,333)	\$ (20,814)	\$ (17,265)	\$ (28,326)
Net loss per common share:					
Basic and diluted	\$ (0.56)	\$ (0.51)	\$ (0.41)	\$ (0.35)	\$ (0.59)
Weighted-average number of shares used to compute net loss per common share:					
Basic and diluted	48,730	51,489	50,808	49,419	48,180

	As of December 31,				
	2016	2015	2014	2013	2012 ⁽¹⁾
(In thousands, except per share data)					
Balance Sheet Data:					
Cash, cash equivalents and marketable securities	\$ 78,107	\$ 73,590	\$ 111,679	\$ 82,747	\$ 46,995
Working capital	97,926	115,561	131,693	114,366	84,255
Total assets	355,475	323,886	370,221	383,599	377,897
Common stock and additional paid-in capital	837,931	820,080	803,101	783,509	761,454
Total stockholders' equity	212,964	235,785	272,591	273,923	269,075

(1) We acquired Ericsson's fiber access assets in November 2012. Our Consolidated Statements of Operations and Consolidated Balance Sheets data include the results of this acquired business only for periods subsequent to the acquisition date.

(2) Includes stock-based compensation as follows:

	2016	2015	2014	2013	2012
Cost of revenue	\$ 672	\$ 709	\$ 1,120	\$ 1,468	\$ 1,433
Research and development	5,125	4,797	5,056	4,896	4,227
Sales and marketing	4,586	4,712	5,601	5,577	5,160
General and administrative	3,902	3,587	4,240	7,980	6,617
Total	\$ 14,285	\$ 13,805	\$ 16,017	\$ 19,921	\$ 17,437

(3) 2013 includes \$1.7 million of gain from utilization of inventory credit from Ericsson and 2012 includes \$1.0 million of gain on bargain purchase of Ericsson's fiber access assets.

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

The Management's Discussion and Analysis of Financial Condition and Results of Operations contains forward-looking statements regarding future events and our future results that are subject to the safe harbors created under the Securities Act of 1933 (the " Securities Act ") and the Securities Exchange Act of 1934 (the " Exchange Act "). All statements other than statements of historical facts are statements that could be deemed forward-looking statements. These statements are based on current expectations, estimates, forecasts, and projections about the industries in which we operate and the beliefs and assumptions of our management. In some cases, forward-looking statements can be identified by the use of words such as " may, " " will, " " expects, " " believes, " " intends, " " plans, " " anticipates, " " estimates, " " projects, " " potential, " or " continue " or the negative thereof or other comparable terminology. In addition, any statements that refer to projections of our future financial performance, our anticipated growth and trends in our businesses, and other characterizations of future events or circumstances are forward-looking statements. Readers are cautioned that these forward-looking statements are only predictions and are subject to risks, uncertainties, and assumptions that are difficult to predict, including those identified in the Risk Factors discussed in Item 1A, in the discussion below, as well as in other sections of this Annual Report on Form 10-K. Therefore, actual results may differ materially and adversely from those expressed in any forward-looking statements. All forward-looking statements and reasons why results may differ included in this report are made as of the date hereof, and we assume no obligation to update these forward-looking statements or reasons why actual results might differ.

Overview

We are a leading global provider of broadband communications access platforms, systems and software for fiber- and copper-based network architectures and a pioneer in software defined access that enable CSPs to transform their networks and enhance how they connect to their residential and business subscribers. We enable CSPs to provide a wide range of revenue-generating services, from basic voice and data to advanced broadband services, over legacy and next-generation access networks. We focus solely on CSP access networks, the portion of the network that governs available bandwidth and determines the range and quality of services that can be offered to subscribers. We develop and sell carrier-class hardware and cloud products that are designed to enhance and transform CSP access networks to meet the changing demands of subscribers rapidly and cost-effectively. Our most advanced systems operate on AXOS, a network operating system and software platform built for the specific needs of the access network that allows for all software functions in the access network to be developed and run without dependence on underlying hardware and associated silicon chipsets.

We market our access systems and related software to CSPs globally through our direct sales force as well as a limited number of resellers. As of December 31, 2016 , over 23 million ports of the Calix portfolio have been deployed at a growing number of CSPs worldwide. Our customers include many of the world's largest CSPs. In addition, we have enabled over 1,300 customers to deploy gigabit passive optical network, Active Ethernet and point-to-point Ethernet fiber access networks.

Our revenue increased to \$458.8 million for 2016 from \$407.5 million for 2015 and \$401.2 million for 2014 , respectively. Our revenue levels and continued revenue growth will depend on our ability to continue to sell our access systems and software to existing customers and to attract new customers, particularly larger CSPs, globally. Since 2015, we have seen increased market demand for turnkey solutions that include professional services together with the supply of equipment and materials, including a project we commenced in 2015 with one of our existing customers. We believe that these services enable us to offer broader solutions to meet customer and market demand and support our growth initiatives. During 2016, we continued to ramp up our services operations for this project along with other professional services projects. Revenue for such projects is generally recognized only when project requirements are completed, typically over longer periods depending on the nature and scope of the project. Similarly, some of the costs incurred by us for such projects, including labor and related costs, are deferred and recognized to cost of revenue when the associated revenue is recognized.

Revenue fluctuations result from many factors, including: increases or decreases in customer orders for our products and services, large customer purchase agreements with delayed revenue recognition, varying budget cycles and seasonal buying patterns of our customers. More specifically, our customers tend to spend less in the first fiscal quarter as they are finalizing their annual budgets, and in certain regions, customers are also challenged by winter weather conditions that inhibit fiber deployment in outside plants . Our revenue levels are also dependent upon our customers' timing of purchases and capital expenditure plans, including expenditure plans for turnkey solutions projects, which are generally non-recurring in nature. As of December 31, 2016 , our deferred revenue of \$48.1 million primarily included extended warranty services contracts that are recognized ratably over the period during which the services are to be performed, as well as those relating to turnkey projects that are recognized only upon acceptance by customers. The timing of recognition of deferred revenue may cause significant fluctuations in our revenue and operating results from period to period.

Cost of revenue is strongly correlated to revenue and tends to fluctuate from all of the above factors that could impact revenue. Factors that impacted our cost of revenue for 2016, and that may impact cost of revenue in future periods, also include: changes in the mix of products delivered, increases in services as a mix of total revenue as well as timing of completion of professional services project requirements, higher than anticipated costs associated with delivery of services for which project pricing is typically set at the outset of the project, charges related to cost overruns on services projects, customer location and regional mix, changes in product warranty and incurrence of retrofit costs, changes in the cost of our inventory and inventory write-downs. Cost of revenue also includes fixed expenses related to our internal operations, which could impact our cost of revenue as a percentage of revenue if there are large fluctuations in revenue.

Cost of revenue has a direct impact on gross profit and gross margins. During 2016, our gross profit and gross margin were negatively impacted by an increase in our services revenue, which carries lower gross margin, as a mix of total revenue. In addition, we incurred higher costs related to the ramp up of our professional services business during the fiscal year to meet customer demand for turnkey network improvement projects and incurred higher costs and cost overruns associated with delivery of services due to project delays as well as an increase in the pace of services activities to complete project requirements towards the end of the year. We expect that the higher pace of services activities to complete project requirements will continue into the first and second quarters of 2017. Our gross profit and gross margin fluctuate based on timing of factors such as new product introduction or upgrades to existing products, changes in customer mix, changes in

the mix of products demanded and sold (and any related write-downs of existing inventory), increase in mix of revenue towards professional services, increase in mix of revenue from channel sales rather than direct sales or other unfavorable customer or product mix, shipment volumes and any related volume discounts, changes in our product and services costs, pricing decreases, customer rebates and incentive programs due to competitive pressure. The timing of our recognition of deferred revenue and related deferred costs related to turnkey professional services projects could also result in lower gross profit and gross margin in the periods such revenue is recognized, and the relative size of these arrangements could cause large fluctuations in our gross profit from period to period. Moreover, to the extent that deferred cost of revenue relating to the professional services portion of turnkey projects is determined to be unrecoverable, we incur a charge to cost of revenue in the period such cost is determined to be unrecoverable.

Our operating expenses have fluctuated based on the following factors: changes in headcount and personnel costs which comprise a significant portion of our operating expenses, timing of variable compensation expenses due to fluctuations in order volumes, timing of research and development expenses including prototype builds and outsourced development projects, fluctuations in stock-based compensation expenses due to timing of equity grants or other factors affecting vesting, changes in acquisition-related expenses, and timing of legal fees and other expenses incurred in connection with the Occam litigation. During 2016, our total operating expense increased due to increases in headcount and outside contractors, primarily for research and development. In 2016, we also recognized a litigation settlement gain of \$4.5 million recovered in our settlement of the Occam litigation, recorded as a reduction in operating expense. We anticipate that our operating expenses will increase in absolute dollar amounts but will decline as a percentage of revenue over time.

During 2016, our costs, operating expenses and working capital needs increased primarily due to the ramp up of our services operations to meet customer and market demand for turnkey network upgrade projects and higher research and development expenditures in strategic investments in our platform, systems and software. We focus our research and development efforts on innovative technologies that we believe will grow our customer base, including through larger customer opportunities. We expect to continue to incur higher capital and operating expenditures, and higher levels of cash use, related to our investments in these initiatives as we seek to grow our market share.

Our net loss was \$27.4 million, \$26.3 million, and \$20.8 million for the years ended December 31, 2016, 2015, and 2014, respectively. Since our inception we have incurred significant losses, and as of December 31, 2016, we had an accumulated deficit of \$584.3 million. Further, as a result of the fluctuations described above and a number of other factors, many of which are outside our control, our annual operating results fluctuate from period to period. Comparing our operating results on a period-to-period basis may not be meaningful, and you should not rely on our past results as an indication of our future performance.

Critical Accounting Policies and Estimates

Our financial statements are prepared in accordance with U.S. GAAP. These accounting principles require us to make certain estimates and judgments that can affect the reported amounts of assets and liabilities as of the date of the financial statements, as well as the reported amounts of revenue and expenses during the periods presented. We base our estimates, assumptions and judgments on historical experience and on various other factors that are believed to be reasonable under the circumstances. To the extent there are material differences between these estimates and actual results, our financial statements will be affected. We evaluate our estimates, assumptions and judgments on an ongoing basis.

We believe the following critical accounting policies affect our more significant judgments and estimates used in the preparation of our financial statements.

Revenue Recognition

We derive revenue primarily from the sale of hardware products and related software. Revenue is recognized when all of the following criteria have been met:

- Persuasive evidence of an arrangement exists. We generally rely upon sales agreements and customer purchase orders as evidence of an arrangement.
- Delivery has occurred. We use the shipping terms of the arrangement or evidence of customer acceptance to verify delivery or performance.
- Sales price is fixed or determinable. We assess whether the sales price is fixed or determinable based on the payment terms and whether the sales price is subject to refund or adjustment. Payment terms to customers can range from net 30 to net 120 days.
- Collectability is reasonably assured. We assess collectability based primarily on creditworthiness of customers and their payment histories.

Revenue from installation and training services is recognized as the services are completed. Post-sales software support revenue and extended warranty services revenue are deferred and recognized ratably over the period during which the services are to be performed. In instances where substantive acceptance provisions are specified in the customer agreement, revenue is deferred until all acceptance criteria have been met. From time to time, we offer customers sales incentives, which include volume rebates and discounts. These amounts are estimated on a quarterly basis and recorded net of revenue.

We enter into arrangements with certain of our customers who receive government supported loans and grants from the RUS to finance capital spending. Under the terms of an RUS equipment contract that includes installation services, the customer does not take possession and control and title does not pass until formal acceptance is obtained from the customer. Under this type of arrangement, we do not recognize revenue until we have received formal acceptance from the customer. For RUS arrangements that do not involve installation services, we recognize revenue when all of the revenue recognition criteria as described above have been met.

Our products contain both software and non-software components that function together to deliver the products' essential functionality. When we enter into sales arrangements that consist of multiple deliverables of our product and service offerings, we allocate the total consideration of the arrangement to each separable deliverable based on their relative selling price. We limit the amount allocable to delivered elements to the amount that is not contingent upon the delivery of additional items or meeting specified performance conditions, and we recognize revenue on each deliverable in accordance with our revenue policy. The determination of selling price for each deliverable is based on a selling price hierarchy, which is vendor-specific objective evidence ("VSOE") if available, third-party evidence ("TPE") if VSOE is not available, or estimated selling price ("ESP") if neither VSOE nor TPE is available. VSOE of selling price is based on the price charged when the element is sold separately. In determining VSOE, we require that a substantial majority of the selling prices of an element fall within a narrow range when each element is sold separately. We have established VSOE for our training and post-sales software support services based on the normal pricing practices of these services when sold separately. TPE of selling price is established by evaluating whether there are similar competitor products or services that are sold in stand-alone sales transaction to similarly situated customers. Generally, our marketing strategy differs from that of our peers and our offerings contain a significant level of customization and differentiation such that the comparable pricing of products with similar functionality cannot be obtained. Additionally, as we are unable to reliably determine what similar competitor products' selling prices are on a stand-alone basis, we are not typically able to determine TPE. ESP is established considering multiple factors including, but not limited to, geographies market conditions, competitive landscape, internal costs, gross margin objectives, characteristics of targeted customers and pricing practices. The determination of ESP is made through consultation with and formal approval by management, taking into consideration the go-to-market strategy.

Stock-Based Compensation

Stock-based awards are recorded at fair value as of the grant date and recognized to expense over the employee's requisite service period (generally the vesting period), which we have elected to amortize on a straight-line basis.

We value restricted stock units ("RSUs") and restricted stock awards ("RSAs") at the closing market price of our common stock on the date of grant.

Stock-based compensation expense associated with performance restricted stock units ("PRsUs") with graded vesting features and which contain both a performance and a service condition is measured based on the closing market price of our common stock on the date of grant, and is recognized, net of forfeitures, as expense over the requisite service period using the graded vesting attribution method. Compensation expense is only recognized if we have determined that it is probable that the performance condition will be met. We reassess the probability of vesting at each reporting period and adjusts compensation expense based on this probability assessment.

The fair value of PRsUs with a market condition is estimated on the date of grant, using a Monte Carlo simulation model to estimate the total return ranking of our common stock in relation to the peer group over each performance period. Compensation cost on PRsUs with a market condition is not adjusted for subsequent changes in the Company's stock performance or the level of ultimate vesting.

We estimate the fair value of stock options and employee stock purchase rights under the Employee Stock Purchase Plan ("ESPP") at the grant date using the Black-Scholes option-pricing model. This model requires the use of highly judgmental assumptions, including expected stock price volatility and expected life of the stock options, which have a significant impact on the fair value estimates and are discussed in detail in Note 8, " *Stockholders' Equity* " of the Notes to Consolidated Financial Statements in this Annual Report on Form 10-K. Changes to these estimates will cause the fair values of our stock options and employee stock purchase rights under the ESPP, and related stock-based compensation expense that we record to vary.

In addition, we apply an estimated forfeiture rate to awards granted and record stock-based compensation expense only for those awards that are expected to vest. Forfeiture rates are estimated at the time of grant based on our historical experience. Further, to the extent our actual forfeiture rates are different from our estimates, stock-based compensation is adjusted accordingly.

Inventory Valuation

Inventory, which primarily consists of finished goods purchased from contract manufacturers, is stated at the lower of cost, determined by the first-in, first-out method, or market value. Inbound shipping costs are included in cost of inventory. In addition, the Company, from time to time, procures component inventory primarily as a result of manufacturing discontinuation of critical components by suppliers. We regularly monitor inventory quantities on-hand and record write-downs for excess and obsolete inventories based on our estimate of demand for our products, potential obsolescence of technology, product life cycle and whether pricing trends or forecasts indicate that the carrying value of inventory exceeds our estimated selling price. These factors are impacted by market and economic conditions, technology changes and new product introductions and require estimates that may include elements that are uncertain. Actual demand may differ from forecasted demand and may have a material effect on gross margins. If inventory is written down, a new cost basis is established that cannot be increased in future periods. The sale of previously reserved inventory has not had a material impact on our gross margins.

Allowance for Doubtful Accounts

We maintain an allowance for doubtful accounts for estimated losses resulting from the inability of our customers to make required payments. We record a specific allowance based on an analysis of individual past-due balances. Additionally, based on historical write-offs and our collection experience, we record an additional allowance based on a percentage of outstanding receivables. We perform credit evaluations of our customers' financial condition. These evaluations require significant judgment and are based on a variety of factors including, but not limited to, current economic trends, payment history and a financial review of the customer. Actual collection losses may differ from management's estimates, and such differences could be material to our financial position and results of operations.

Valuation of Goodwill and Intangible Assets

Goodwill is not amortized but instead is subject to an annual impairment test or more frequently if events or changes in circumstances indicate that it may be impaired. We evaluate goodwill on an annual basis as of the end of the second quarter of each year. Management has determined that we operate as a single reporting unit and, therefore, evaluates goodwill impairment at the enterprise level. Intangible assets are reviewed for impairment whenever events or changes in circumstances indicate an asset's carrying value may not be recoverable.

In an annual impairment test, we first assess qualitative factors to determine whether it is necessary to perform the two-step quantitative goodwill impairment test. In assessing the qualitative factors, management considers the impact of these key factors: macro-economic conditions, industry and market environment, overall financial performance of the Company, cash flow from operating activities, market capitalization and stock price. If management determines as a result of the qualitative assessment that it is more likely than not (that is, a likelihood of more than 50 percent) that the fair value of a reporting unit is less than its carrying amount, then the quantitative test is required. Otherwise, no further testing is required.

In a quantitative test, we compare the Company's fair value to its carrying value including goodwill. We determine the Company's fair value using both an income approach and a market approach. Under the income approach, we determine fair value based on estimated future cash flows, discounted by an estimated weighted-average cost of capital, which reflects the overall level of inherent risk of the Company and the rate of return an outside investor would expect to earn. Under the market-based approach, we utilize information regarding the Company as well as publicly available industry information to determine earnings multiples that are used to value the Company. If the carrying value of the Company exceeds its fair value, we will determine the amount of impairment loss by comparing the implied fair value of goodwill with the carrying value of goodwill. An impairment charge is recognized for the excess of the carrying value of goodwill over its implied fair value.

As of the end of the second quarter of 2016, we completed our annual goodwill impairment test. Based on our assessment of the above qualitative factors, we concluded that the estimated fair value of the Company was more likely than not greater than its carrying amount as of June 25, 2016. As such, it was not necessary to perform the two-step quantitative goodwill impairment test at the time. There have been no significant events or changes in circumstances subsequent to the 2016 annual impairment test that would more likely than not indicate that the carrying value of goodwill may have been impaired as of December 31, 2016. Therefore, there was no impairment to the carrying value of the Company's goodwill as of December 31, 2016. There were no impairment losses for goodwill in the years ended December 31, 2015 or 2014.

Intangible assets with finite useful lives are amortized over their estimated useful life. We periodically evaluate intangible assets for impairment whenever events or changes in circumstances indicate that a potential impairment may have occurred. If such events or changes in circumstances arise, we compare the carrying amount of the intangible assets to the estimated future undiscounted cash flows expected to be generated by the assets. If the estimated aggregate undiscounted cash flows are less than the carrying amount of the intangible assets, an impairment charge, calculated as the amount by which the carrying amount of the assets exceeds the fair value of the assets, is recorded. The fair value of intangible assets is determined based on the estimated discounted cash flows expected to be generated from the assets. We have reviewed events and changes to our business during the year and have determined that there was no impairment to our intangible assets during 2016. We did not incur any impairment losses for intangible assets in the years ended December 31, 2015 and 2014.

Income Taxes

We evaluate our tax positions and estimate our current tax exposure in each jurisdiction in which we operate. This includes assessing the temporary differences resulting from differing treatment of items not currently deductible for tax purposes. These differences result in deferred tax assets and liabilities on our consolidated balance sheets, which are calculated based upon the difference between the financial statement and tax bases of assets and liabilities using the enacted tax rates that will be in effect when these differences reverse. In general, deferred tax assets represent future tax benefits to be received when certain expenses previously recognized in our statements of operations become deductible expenses under applicable income tax laws or loss or credit carry-forwards are utilized. Since realization of our deferred tax assets is dependent on future taxable income against which these deductions, losses and credits can be utilized, we must assess the likelihood that our deferred tax assets will be recovered from future taxable income. To the extent we believe that recovery is below the more likely than not threshold, we must establish a valuation allowance against the net deferred tax asset. Significant judgment is required in determining our provision for income taxes, our deferred tax assets and liabilities and any valuation allowance recorded against net deferred tax assets.

Since inception, we have incurred operating losses and accordingly have federal and state net operating loss carry-forwards of \$520.6 million and \$132.2 million, respectively, as of December 31, 2016. The U.S. federal net operating loss carryforwards will expire at various dates beginning in 2019 and through 2036, if not utilized. The state net operating loss carryforwards will expire at various dates beginning in 2017 and through 2036, if not utilized. Additionally, we had U.S. federal and state research and development credits of \$27.9 million and \$33.3 million as of December 31, 2016. The credits have varying expiration dates between 2017 and 2036 with California credits having no expiration. These two items account for the bulk of our net deferred tax asset of \$239.8 million as of December 31, 2016. Excluding our foreign operations, we have recorded a full valuation allowance against the net deferred assets at each balance sheet date presented. We believe that based on the available evidence and history of operation losses, it is more likely than not that we will not be able to utilize all of our deferred assets, with the exception of certain foreign deferred tax assets, before expiration. We intend to maintain the full valuation allowances until sufficient evidence exists to support the reversal of the valuation allowances.

Loss Contingencies

We accrue loss contingencies when the loss is probable and reasonably estimable. In addition, disclosure of a loss contingency is required if there is at least a reasonable possibility that a loss (or an additional loss above the amount accrued) has been incurred.

From time to time, we are involved in legal proceedings arising from the normal course of business activities. We evaluate the likelihood of an unfavorable outcome of legal proceedings to which we are a party and accrue a loss contingency when the loss is probable and reasonably estimable. Assessing legal contingencies involves significant judgment and estimates and the outcome of litigation is inherently uncertain and subject to numerous factors outside our control. Significant judgment is required when we assess the likelihood of any adverse judgments or outcomes, including the potential range of possible losses, and whether losses are probable and reasonably estimable.

We offer initial limited warranties for our hardware products for a period of one, three or five years, depending on the product type. Under certain circumstances, we also provide fixes on specifically identified performance failures for products that are outside of the standard warranty period and recognize estimated costs related to retrofit activities upon identification of such product failures. We estimate costs related to warranty and retrofit activities based upon historical and projected product failure and claim rates, historical costs incurred in correcting product failures along with other relevant information available related to any specifically identified product failures. We recognize estimated warranty and retrofit costs when it is probable that a liability has been incurred and the amount of loss is reasonably estimable. Significant judgment is required in estimating costs associated with warranty and retrofit activities and our estimates are limited to information available to us at the time of such estimates. In some cases, such as when a specific product failure is first identified or a new product is introduced, we may initially have limited information and limited historical failure and claim rates upon which to base our estimates, and such estimates may require revision in future periods.

Because of uncertainties related to these matters, our estimates of whether a loss contingency is probable or reasonably possible, as well as the reasonable range of possible losses associated with each loss contingency, is based only on the information available at the time. As additional information becomes available, and at least quarterly, we reassess the potential liability on each significant matter and may revise our estimates. These revisions could have a material impact on our business, operating results or financial condition. The actual outcome of these legal proceedings may materially differ from our estimates of potential liability, which could have a material adverse effect on our business, operating results or financial condition.

Results of Operations for Years Ended December 31, 2016, 2015 and 2014

Revenue

The following table sets forth our revenue (in thousands, except for percentages):

	Years Ended December 31,			2016 vs 2015 Change		2015 vs 2014 Change	
	2016	2015	2014	\$	%	\$	%
Revenue	\$ 458,787	\$ 407,463	\$ 401,227	\$ 51,324	13%	\$ 6,236	2%

Our revenue is principally derived in the United States. During 2016, 2015 and 2014, revenue generated in the United States represented approximately 91%, 88% and 88% of our total revenue, respectively.

2016 compared to 2015: The increase in revenue during 2016 compared with 2015 resulted from stronger bookings and shipments as customer demand increased. This was led by higher demand from our larger domestic customers for both products and services with the increase in services associated with our turnkey network improvement projects. The increase in revenue was partially offset by lower demand from our international markets and lower revenue derived from contracts funded by the Broadband Stimulus Programs under the ARRA as we completed and closed our existing contracts. The extended date for completion of projects funded under the Broadband Initiatives Program, which is administered by the RUS, ended on July 31, 2015. During the year ended 2016, revenue generated in the United States represented approximately \$415.6 million or 91% of our total revenue. International revenue represented approximately \$43.2 million or 9% of total revenue. We expect overall revenue to grow as we increase our focus on key customer accounts, new customer opportunities and seek to expand our international markets.

We had two customers that each accounted for more than 10% of our total revenue in 2016 and one of these customers accounted for more than 10% of our total revenue in 2015 and 2014. See Note 1 to the consolidated financial statements set forth in Part II, Item 8 of this report for more details on concentration of revenue for the periods presented.

2015 compared to 2014: The increase in revenue during 2015 compared with 2014 resulted from stronger bookings and shipments in certain territories due to increased customer demand. This was partially offset by lower revenue derived from contracts funded by the Broadband Stimulus Programs under the ARRA as we completed and closed our existing contracts. The extended date for completion of projects funded under the Broadband Initiatives Program, which is administered by the RUS, ended on July 31, 2015. This was also impacted by the decrease in services revenue due to lower professional services projects performed during the period. Our revenue is principally derived in the United States. During the year ended 2015, revenue generated in the United States represented approximately \$360.1 million or 88% of our total revenue. International revenue represented approximately \$47.4 million or 12% of total revenue.

Cost of Revenue and Gross Profit

The following table sets forth our cost of revenue (in thousands, except for percentages):

	Years Ended December 31,			2016 vs 2015 Change		2015 vs 2014 Change	
	2016	2015	2014	\$	%	\$	%
Cost of revenue:							
Products and services	\$ 253,465	\$ 208,681	\$ 215,085	\$ 44,784	21 %	\$ (6,404)	(3)%
Amortization of intangible assets	4,104	8,353	8,353	(4,249)	(51)%	—	— %
Total cost of revenue	\$ 257,569	\$ 217,034	\$ 223,438	\$ 40,535	19 %	\$ (6,404)	(3)%
Gross profit	\$ 201,218	\$ 190,429	\$ 177,789	\$ 10,789	6 %	\$ 12,640	7 %
Gross margin	44%	47%	44%				

2016 compared to 2015 : The increase in cost of product and services revenue by \$44.8 million during 2016 compared with 2015 was primarily attributed to an increase in product cost of revenue of \$23.1 million mainly due to higher shipments. Our services cost of revenue increased by \$16.3 million as we continued to ramp up our professional services business to meet demand for turnkey professional services solutions and incurred higher costs as we accelerated activity at the end of the year to meet project schedules. Our warranty and retrofit costs also increased by approximately \$5.2 million primarily driven by certain retrofit charges for two specific product families. This was partially offset by a decrease in inventory write-downs attributed to slow moving inventories by approximately \$3.5 million.

Amortization of intangible assets decreased by \$4.2 million in 2016 as compared to 2015 as one intangible asset reached completion of its amortization period before the end of the first quarter of fiscal 2016. Hence, we have a shorter amortization period for that particular intangible asset during 2016 as compared with full amortization in 2015.

Including amortization of intangible assets, gross margin decreased from 47% in 2015 to 44% in 2016 primarily due to an increase in revenue mix toward services revenue as we continued to ramp our services business in 2016. Services revenue typically has higher associated costs and lower margins. The decrease in gross margin was partially offset by the impact of lower amortization of intangible assets during 2016 as compared to 2015.

2015 compared to 2014 : The decrease in cost of revenue by \$6.4 million during 2015 compared with 2014 was due mainly to a decrease in hardware cost of sales attributed to a favorable product and customer mix. Services cost of revenue also decreased due to lower professional services projects performed during the period. This was partially offset by an increase in other cost of revenue primarily driven by certain retrofit charges for a specific product. The amortization of intangible assets remained at the same level.

Gross margin increased to 47% in 2015 from 44% in 2014 primarily due to a favorable product and customer mix with higher margins.

Operating Expenses

Research and Development Expenses

Research and development expenses represent the largest component of our operating expenses and include personnel costs, outside contractor and consulting services, depreciation on lab equipment, costs of prototypes and overhead allocations, which are generally expensed as incurred. The following table sets forth our research and development expenses (in thousands, except for percentages):

	Years Ended December 31,			2016 vs 2015 Change		2015 vs 2014 Change	
	2016	2015	2014	\$	%	\$	%
Research and development	\$ 106,869	\$ 89,714	\$ 80,311	\$ 17,155	19%	\$ 9,403	12%
Percent of total revenue	23%	22%	20%				

2016 compared to 2015 : The increase in research and development expenses during 2016 compared with 2015 was primarily due to an increase in personnel for research and development, resulting in higher compensation and employee benefits of \$7.3 million, to support our growing product portfolio, strategic investments in new solutions, including next generation solutions and new customer segments, and international market expansion. Expenses for outside contractors increased by \$6.8 million and expenditures relating to prototype and expendable equipment used for research and development activities increased by approximately \$3.8 million, primarily for development services including investments in next generation technologies to pursue broader growth opportunities.

The percentage of research and development expenses over total revenue remained relatively flat from year to year.

We are continuing our strategic investments in our portfolio. We intend to continue to invest in research and development to support our systems and software platforms in anticipation of expected growth opportunities.

2015 compared to 2014 : The increase in research and development expenses during 2015 compared with 2014 was primarily driven by an increase in compensation and employee benefits of \$7.0 million due to increase in workforce. Additionally, computer software licenses mainly relating to licenses used in new product development also increased by \$0.8 million. Expenditures for services, mainly relating to outside consulting and contracted services also increased by \$0.7 million. Other expenses such as prototype and expendable equipment, as well as depreciation and amortization, also increased by an aggregate of \$0.8 million, which is in line with our planned increase in research and development efforts.

Sales and Marketing Expenses

Sales and marketing expenses consist of personnel costs, employee sales commissions and marketing programs. The following table sets forth our sales and marketing expenses (in thousands, except for percentages):

	Years Ended December 31,			2016 vs 2015 Change		2015 vs 2014 Change	
	2016	2015	2014	\$	%	\$	%
Sales and marketing	\$ 83,675	\$ 78,563	\$ 76,283	\$ 5,112	7%	\$ 2,280	3%
Percent of total revenue	18%	19%	19%				

2016 compared to 2015 : The increase in sales and marketing expenses during 2016 compared with 2015 was primarily due to an increase in compensation and employee benefits of \$3.3 million mainly attributed to higher commissions due to increased shipments. Additionally, expenses relating to marketing events, trade shows and promotional items related to marketing programs also increased by \$1.0 million.

The percentage of total sales and marketing expenses over total revenue remained relatively flat from year to year.

We expect to continue our investments in sales and marketing in order to extend our market reach and grow our business in support of our key strategic initiatives.

2015 compared to 2014 : The increase in sales and marketing expenses during 2015 compared with 2014 was primarily due to an increase in compensation and employee benefits of \$2.9 million mainly due to hiring of additional employees to support our expansion, and due to higher commissions attributed to higher shipments. This was partially offset by a \$0.9 million decrease in stock-based compensation mainly due to equity awards that completed vesting in 2014 .

General and Administrative Expenses

General and administrative expenses consist primarily of personnel costs and costs for facilities related to our executive, finance, human resources, information technology and legal organizations and fees for professional services. Professional services consist of outside legal, tax, accounting and audit services. The following table sets forth our general and administrative expenses (in thousands, except for percentages):

	Years Ended December 31,			2016 vs 2015 Change		2015 vs 2014 Change	
	2016	2015	2014	\$	%	\$	%
General and administrative	\$ 41,592	\$ 38,454	\$ 31,371	\$ 3,138	8%	\$ 7,083	23%
Percent of total revenue	9%	9%	8%				

2016 compared to 2015 : The increase in general and administrative expenses during 2016 compared with 2015 was primarily due to an increase in our compensation and employee benefits by \$2.0 million mainly due to an increase in headcount for our support organizations. Additionally, legal fees and expenses related to defense costs in the Occam litigation that were not reimbursable under our Directors & Officers liability insurance or were otherwise in excess of the insurance coverage increased by \$2.8 million. See " *Litigation Settlement Gain* " section below and Note 6, " *Commitments and Contingencies - Litigation* " of the Notes to Consolidated Financial Statements for related discussions regarding \$4.5 million partial recovery of the Company's out-of-pocket expenses incurred in relation to the Occam litigation. The increase was partially offset by a \$1.3 million decrease in consulting and contracted labor services.

Our general and administrative expenses as a percentage of total revenue remained relatively flat from year to year.

2015 compared to 2014 : The increase in general and administrative expenses during 2015 compared with 2014 was primarily due to an increase in personnel-related expenses by \$3.9 million mainly due to an increase in headcount and recruiting fees. Additionally, professional services also increased by \$3.2 million. This was mainly attributed to a \$2.7 million increase in legal fees and expenses related to defense costs in the Occam litigation and which were not reimbursable under our Directors & Officers liability insurance coverage, and higher contracted labor services which increased by \$0.6 million in line with our additional resource needs. Depreciation and amortization also increased by \$0.7 million. The increase was partially offset by a \$0.7 million decrease in stock-based compensation mainly due to equity awards that completed vesting in 2014 .

Amortization of Intangible Assets

In connection with our acquisition of Occam in 2011, we recorded an amortizable intangible asset related to customer relationships of \$51.0 million. This amount is amortized to operating expenses over its estimated useful life. The following table sets forth our amortization of intangible assets expenses included in operating expenses (in thousands, except for percentages):

	Years Ended December 31,			2016 vs 2015 Change		2015 vs 2014 Change	
	2016	2015	2014	\$	%	\$	%
Amortization of intangible assets	\$ 1,701	\$ 10,208	\$ 10,208	\$ (8,507)	(83)%	\$ —	—%
Percent of total revenue	—%	3%	3%				

Amortization of intangible assets decreased by \$8.5 million in 2016 as compared to 2015 due to an intangible asset that had reached completion of its amortization period before the end of the first quarter of fiscal 2016. Hence, we have a shorter amortization period for that particular intangible asset in 2016 as compared with full amortization during 2015.

Amortization of intangible assets was the same for 2015 and 2014 as there were no movements or changes in our intangible assets during those periods.

See Note 4, " *Goodwill and Intangible Assets* " of the Notes to Consolidated Financial Statements included in this Annual Report on Form 10-K for details of our intangible assets.

Litigation Settlement Gain

The following table sets forth our litigation settlement gain (in thousands, except percentages):

	Years Ended December 31,			2016 vs 2015 Change		2015 vs 2014 Change	
	2016	2015	2014	\$	%	\$	%
Litigation settlement gain	\$ (4,500)	\$ —	\$ —	\$ (4,500)	100%	\$ —	—%
Percent of total revenue	(1)%	—%	—%				

In 2016, we recognized a litigation settlement gain of \$4.5 million as a reduction to operating expense as a result of \$4.5 million in cash proceeds from our settlement of the Occam litigation as disclosed and described in further detail in Note 6, " *Commitments and Contingencies – Litigation* " of the Notes to Consolidated Financial Statements.

Interest and Other Income (Expense), net

The following table sets forth our interest and other income (expense), net (in thousands, except for percentages):

	Years Ended December 31,			2016 vs 2015 Change		2015 vs 2014 Change	
	2016	2015	2014	\$	%	\$	%
Interest and other income (expense), net							
Interest income	\$ 737	\$ 1,285	\$ 729	\$ (548)	(43)%	\$ 556	76%
Interest expense	(585)	(1,144)	(806)	559	(49)%	(338)	42%
Other income (expense), net	912	571	228	341	60 %	343	150%
Total interest and other income (expense), net	\$ 1,064	\$ 712	\$ 151	\$ 352	49 %	\$ 561	372%

The fluctuations in interest income were primarily due to the level of cash and investment balances during the periods presented, partially offset by the fluctuations in interest expense during those respective periods primarily attributed to amortization of premiums relating to available-for-sale securities.

There were no significant changes in other income (expense) components during the periods presented.

Provision for Income Taxes

The following table sets forth our provision for income taxes (in thousands, except percentages):

	Years Ended December 31,			2016 vs 2015 Change		2015 vs 2014 Change	
	2016	2015	2014	\$	%	\$	%
Provision for income taxes	\$ 347	\$ 535	\$ 581	\$ (188)	(35)%	\$ (46)	(8)%
Effective tax rate	(1.3)%	(2.1)%	(2.9)%				

2016 compared to 2015 : Income tax expense decreased by \$0.2 million from \$0.5 million in 2015 to \$0.3 million in 2016 . The decrease was primarily due to the reversal of a foreign entity's deferred tax assets valuation allowance.

The income tax provisions for 2016 and 2015 primarily consisted of state and foreign income taxes.

As of December 31, 2016 , we had unrecognized tax benefits of \$18.3 million , none of which would affect our effective tax rate if recognized.

2015 compared to 2014 : Income tax expense decreased by \$46.0 thousand from \$0.6 million in 2014 to \$0.5 million in 2015 . The decrease was primarily due to lower unfavorable permanent adjustments to taxable income in taxable foreign jurisdictions, partially offset by higher state tax expense in Texas.

The income tax provisions for 2015 and 2014 primarily consisted of state and foreign income taxes.

As of December 31, 2015 , we had unrecognized tax benefits of \$16.6 million , none of which would affect our effective tax rate if recognized.

Liquidity and Capital Resources

We have funded our operations primarily through cash generated from operations. At December 31, 2016, we had cash, cash equivalents and marketable securities of \$78.1 million, which consisted of deposits held at banks, money market mutual funds held at major financial institutions, and highly liquid marketable securities such as corporate debt instruments, commercial paper and U.S. government agency securities. This includes \$5.9 million of cash held by our foreign subsidiaries primarily in China. Our current intent is to permanently reinvest our earnings from foreign operations outside the United States, and our current plans do not demonstrate a need to repatriate the earnings from foreign operations to fund our U.S. operations.

The following table presents the cash inflows and outflows by activity during 2016, 2015 and 2014 (in thousands):

	Years Ended December 31,		
	2016	2015	2014
Net cash provided by (used in) operating activities	\$ 24,419	\$ (5,341)	\$ 38,075
Net cash provided by (used in) investing activities	12,083	4,665	(75,444)
Net cash provided by (used in) financing activities	(9,243)	(24,141)	3,575

Operating Activities

Our operating activities provided cash of \$24.4 million in 2016, and used cash of \$5.3 million in 2015 and provided cash of \$38.1 million in 2014. The increase in net cash provided by (used in) operating activities during 2016 as compared to 2015 was due primarily to a \$45.6 million increase in net cash inflow resulting from changes in operating assets and liabilities, partially offset by unfavorable change of \$15.8 million in our operating results after adjustment of non-cash charges.

In 2016, cash inflows from changes in operating assets and liabilities included primarily a \$34.9 million increase in accrued liabilities primarily due to customer advance payments for certain turnkey projects, and due to the timing of our payroll, sales commissions and other expenses accruals and payout, a \$4.2 million increase in accounts payable due to the timing of inventory receipts and payments to our contract manufacturers, and a \$3.1 million decrease in inventory due to higher inventory turnover. Cash outflows from changes in operating assets and liabilities primarily resulted from a \$13.4 million net decrease in deferred revenue and deferred cost of revenue as a result of revenue and cost recognition for previous shipments related to certain turnkey projects and RUS-funded contracts, a \$4.2 million increase in net accounts receivable due to higher revenue in 2016, a \$1.2 million increase in prepaid expenses and other assets, and a \$0.4 million decrease in other long-term liabilities. Non-cash charges were \$28.8 million (the majority of which consist of stock-based compensation expense, amortization expenses and depreciation).

The decrease in net cash provided by (used in) operating activities during 2015 as compared to 2014 was due primarily to a \$37.0 million decrease in net cash inflow resulting from changes in operating assets and liabilities and unfavorable change of \$6.4 million in our operating results after adjustment of non-cash charges. In 2015, cash inflows from changes in operating assets and liabilities included primarily a \$2.9 million decrease in prepaid expenses and other assets and a release of \$0.3 million restricted cash previously used to collateralize outstanding letters of credit with Silicon Valley Bank. Cash outflows from changes in operating assets and liabilities primarily resulted from a \$16.4 million increase in net accounts receivable due to timing of collections at year-end, a \$4.0 million decrease in accounts payable due to the timing of inventory receipts and payments, a \$3.8 million decrease in accrued expenses due to the timing of our sales commissions and other expenses accruals and payout, a \$0.9 million increase in inventory due to timing of inventory receipts, a \$0.4 million decrease in deferred revenue as a result of revenue recognition for previous shipments related to certain RUS-funded contracts, and a \$0.4 million decrease in other long-term liabilities. Non-cash charges were \$43.6 million (the majority of which consist of stock-based compensation expense, amortization expenses and depreciation).

The decrease in cash provided by operating activities during 2014 as compared to 2013 was due primarily to an unfavorable change of \$6.7 million in our operating results after adjustment of non-cash charges, offset partially by a \$3.9 million increase in net cash inflow resulting from changes in operating assets and liabilities. In 2014, non-cash charges were \$44.5 million (the majority of which consist of stock-based compensation expense, amortization expenses and depreciation). Cash inflows from changes in operating assets and liabilities primarily resulted from a \$16.0 million decrease in cost of deferred revenue due to recognition of certain RUS-funded contracts, a \$12.8 million decrease in net accounts receivable due to strong collections in 2014, a \$4.3 million decrease in inventory due to timing of inventory receipts, a \$0.5 million increase in accounts payable due to the timing of inventory receipts and payments, a \$7.4 million increase in accrued expenses and a \$0.5 million increase in other long-term liabilities due to the timing of our sales commissions and other expenses accruals and payout. Cash outflows from changes in operating assets and liabilities included primarily a \$5.9 million increase in prepaid expenses and other assets, and a \$21.2 million decrease in deferred revenue as a result of revenue recognition for previous shipments related to certain RUS-funded contracts.

Investing Activities

In 2016, our cash provided by investing activities consisted of \$21.9 million in net maturities of marketable securities, partially offset by \$9.8 million in capital expenditures for purchases of test equipment, computer equipment and software.

In 2015, our cash provided by investing activities consisted of \$11.9 million in net maturities of marketable securities, which provide higher income yields than money market funds, partially offset by \$7.3 million in capital expenditures for purchases of test equipment, computer equipment and software.

In 2014, our cash used in investing activities consisted of \$63.5 million in net purchases of marketable securities, which provide higher income yields than money market funds, and \$12.0 million in capital expenditures primarily as a result of leasehold improvements, purchases of test equipment, computer equipment and software.

Financing Activities

In 2016, our financing activities used cash of \$9.2 million, which consisted of \$12.8 million in repurchases of common stock and \$2.1 million in payment of payroll taxes for the vesting of awards under equity incentive plans, partially offset by \$5.7 million of proceeds from the issuance of common stock under the employee stock purchase plan ("ESPP") and \$17.0 thousand of proceeds from the exercises of stock options.

In 2015, our financing activities used cash of \$24.1 million, which consisted of \$27.2 million in repurchases of common stock, \$2.4 million in payment of payroll taxes for the vesting of awards under equity incentive plans, and \$0.1 million in payment for debt issuance costs associated with the extension of credit agreement that we entered into with Bank of America, partially offset by \$4.9 million of proceeds from the issuance of common stock under the ESPP and \$0.6 million of proceeds from the exercises of stock options.

In 2014, our financing activities provided cash of \$3.6 million, which consisted of \$4.6 million of proceeds from the issuance of common stock under the ESPP and \$1.7 million of proceeds from the exercises of stock options, offset by \$2.7 million in payment of payroll taxes for the vesting of awards under equity incentive plans.

Stock Repurchase Program

On April 26, 2015, our board of directors approved a program to repurchase up to \$40 million of our common stock from time to time. This stock repurchase program commenced in May 2015 and was completed in March 2016.

Under this program, stock was purchasable in open market or private transactions, through block trades, and/or pursuant to any trading plan adopted in accordance with Rule 10b5-1 of the Exchange Act and any open market purchases were to be made in accordance with the limitations set out in Rule 10b-18 of the Exchange Act. Further, decisions to consummate repurchases (including any decision to adopt a 10b5-1 plan for this purpose) were to be made at management's discretion at prices management considers to be attractive and in the best interests of the Company and its stockholders.

During the year ended December 31, 2016, we repurchased 1,789,287 shares of common stock for \$12.8 million at an average price of \$7.16 per share. During the year ended December 31, 2015, we repurchased 3,540,530 shares of common stock for \$27.2 million at an average price of \$7.68 per share. In March 2016, we completed purchases under the \$40 million stock repurchase program and have repurchased a total of 5,329,817 shares of common stock from May 2015 to March 2016 at an average price of \$7.50 per share.

Working Capital and Capital Expenditure Needs

We currently have no material cash commitments, except for normal recurring trade payables, expense accruals, operating leases and non-cancelable firm purchase commitments. We expect our working capital needs to increase related to turnkey arrangements where we may purchase substantial equipment, components and materials and pay our subcontractors at the outset of a project, but we generally do not expect payment from our customers until completion and acceptance of the associated services, which may be one or more quarters later. We believe that our outsourced approach to manufacturing provides us significant flexibility in both managing inventory levels and financing our inventory. In the event that our revenue plan does not meet our expectations, we may eliminate or curtail expenditures to mitigate the impact on our working capital.

We also have a credit facility with an aggregate principal amount of up to \$50.0 million, with any borrowings limited to a maximum consolidated leverage ratio of consolidated funded indebtedness to consolidated EBITDA (as defined in the Credit Agreement). The credit facility matures in September 2018, as amended. Proceeds of the credit facility may be used for general corporate purposes and permitted acquisitions. As of December 31, 2016, no revolving loans were drawn under this credit facility and our available borrowings under the terms of the Credit Agreement were approximately \$4.8 million. For a detailed discussion of our credit facility, please refer to Note 11, "Credit Facility" of the Notes to Consolidated Financial Statements included in this Annual Report on Form 10-K.

We believe based on our current operating plan and operating cash flows, our existing cash, cash equivalents and marketable securities, along with available borrowings under our existing Credit Agreement, will be sufficient to meet our anticipated cash needs for at least the next twelve months. Our future capital requirements will depend on many factors including our rate of revenue growth, the timing, extent and size of turnkey professional services projects, the timing and extent of spending to support development efforts, particularly research and development related to growth initiatives such as our software defined access portfolio, the expansion of sales and marketing activities, the timing of introductions of new products and enhancements to existing products, the acquisition of new capabilities or technologies and the continued market acceptance of our products. In the event that additional financing is required from outside sources, we may not be able to raise it on terms acceptable to us or at all. If we are unable to raise additional capital when desired, our business, operating results and financial condition would be harmed.

Contractual Obligations and Commitments

Our principal commitments consist of obligations under operating leases for office space and non-cancelable outstanding purchase obligations. The following table summarizes our contractual obligations at December 31, 2016 (in thousands):

	Payments Due by Period				
	Total	Less Than 1 Year	1-3 Years	3-5 Years	More Than 5 Years
Operating lease obligations	\$ 7,957	\$ 3,103	\$ 3,835	\$ 1,000	\$ 19
Non-cancelable purchase commitments ⁽¹⁾	18,981	18,981	—	—	—
Total	\$ 26,938	\$ 22,084	\$ 3,835	\$ 1,000	\$ 19

(1) Represents outstanding non-cancelable purchase orders for inventories to be delivered by our suppliers, including contract manufacturers.

Future minimum operating lease obligations in the table above include primarily payments for our office space in Petaluma, California, and for our facilities in Minneapolis, Minnesota; Acton, Massachusetts; Nanjing, China; Richardson, Texas; and San Jose and Santa Barbara, California, which expire at various dates through 2022. We are actively seeking to sublease our former Richardson, Texas facility that was vacated in September 2014.

See Note 6, "Commitments and Contingencies" of the Notes to Consolidated Financial Statements included in this Annual Report on Form 10-K for more discussions on our operating leases and purchase commitments.

Off-Balance Sheet Arrangements

As of December 31, 2016 and December 31, 2015, we did not have any off-balance sheet arrangements.

ITEM 7A. Quantitative and Qualitative Disclosures About Market Risk**Interest Rate Risk**

The primary objectives of our investment activity are to preserve principal, provide liquidity and maximize income without significantly increasing risk. By policy, we do not enter into investments for trading or speculative purposes. At December 31, 2016, we had cash, cash equivalents and marketable securities of \$78.1 million, which were held primarily in cash, money market funds and highly liquid marketable securities such as corporate debt instruments and U.S. government agency securities. Due to the nature of these money market funds and highly liquid marketable securities, we believe that we do not have any material exposure to changes in the fair value of our cash equivalents and marketable securities as a result of changes in interest rates.

Our exposure to interest rate risk also relates to the amount of interest we must pay on our borrowings under our credit facility. Borrowings under our credit facility will accrue interest at a variable rate based upon the applicable base rate or LIBOR plus a margin depending on the Company's consolidated leverage ratio of consolidated funded indebtedness to consolidated EBITDA (as defined in the Credit Agreement). As of December 31, 2016, we had no borrowings under the credit facility.

Foreign Currency Exchange Risk

Our primary foreign currency exposures are described below.

Economic Exposure

The direct effect of foreign currency fluctuations on our sales and expenses has not been material because our sales and expenses are primarily denominated in U.S. dollars ("USD"). However, we are indirectly exposed to changes in foreign currency exchange rates to the extent of our use of foreign contract manufacturers whom we pay in U.S. dollars. Increases in the local currency rates of these vendors in relation to the U.S. dollar could cause an increase in the price of products that we purchase. Additionally, if the U.S. dollar strengthens relative to other currencies, such strengthening could have an indirect effect on our sales to the extent it raises the cost of our products to non-U.S. customers and thereby reduces demand. A weaker U.S. dollar could have the opposite effect. The precise indirect effect of currency fluctuations is difficult to measure or predict because our sales are influenced by many factors in addition to the impact of such currency fluctuations.

Translation Exposure

Our sales contracts are primarily denominated in USD and, therefore, the majority of our revenues are not subject to foreign currency risk. We are directly exposed to changes in foreign exchange rates to the extent such changes affect our expenses related to our foreign assets and liabilities with our subsidiary in Brazil, China and the United Kingdom, whose functional currencies are the Brazilian Real ("BRL"), Chinese Renminbi ("RMB") and British Pounds Sterling ("GBP"), respectively.

Our operating expenses are incurred primarily in the United States, with a small portion of expenses incurred in Brazil associated with sales and marketing expenses, in China associated with our research and development operations that are maintained there, and in the United Kingdom for our sales and services office there. Our operating expenses are generally denominated in the functional currencies of our subsidiaries in which the operations are located. The percentages of our operating expenses denominated in the following currencies for the indicated fiscal years were as follows:

	Years Ended December 31,		
	2016	2015	2014
USD	88%	89%	90%
RMB	7%	5%	5%
GBP	4%	5%	5%
BRL	1%	1%	—%
	100%	100%	100%

If the currency exchange rates in 2016 had been the same as in 2015, our 2016 operating results would have decreased by approximately \$2.4 million. If the U.S. dollar had appreciated or depreciated by 10% relative to RMB, GBP and BRL, our operating expenses for 2016 would have decreased or increased by \$2.7 million, or approximately 1%. We do not currently enter into forward exchange contracts to hedge exposure denominated in foreign currencies or any derivative financial instruments. In the future, we may consider entering into hedging transactions to help mitigate our foreign currency exchange risk.

Foreign exchange rate fluctuations may also adversely impact our financial position as the assets and liabilities of our foreign operations are translated into U.S. dollars in preparing our Consolidated Balance Sheets. The effect of foreign exchange rate fluctuations on our consolidated financial position for the year ended December 31, 2016 was a net translation loss of approximately \$0.5 million. This loss is recognized as an adjustment to stockholders' equity through accumulated other comprehensive income (loss).

Transaction Exposure

We have certain assets and liabilities, primarily receivables and accounts payable (including inter-company transactions) that are denominated in currencies other than the relevant entity's functional currency. In certain circumstances, changes in the functional currency value of these assets and liabilities create fluctuations in our reported consolidated financial position, cash flows and results of operations. Transaction gains and losses on these foreign currency denominated assets and liabilities are recognized each period within other income (expense), net in our Consolidated Statements of Comprehensive Loss. During the year ended December 31, 2016, net gain we recognized related to these foreign exchange assets and liabilities was approximately \$0.3 million.

ITEM 8. Financial Statements and Supplementary Data

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Report of Independent Registered Public Accounting Firm

The Board of Directors and Stockholders
Calix, Inc.:

We have audited the accompanying consolidated balance sheet of Calix, Inc. and subsidiaries ("the Company") as of December 31, 2016, and the related consolidated statements of comprehensive loss, stockholders' equity, and cash flows for the year ended December 31, 2016. We also have audited Calix, Inc.'s internal control over financial reporting as of December 31, 2016, based on criteria established in *Internal Control - Integrated Framework (2013)* issued by the Committee of Sponsoring Organizations of the Treadway Commission (COSO). Calix, Inc.'s management is responsible for these consolidated financial statements, for maintaining effective internal control over financial reporting, and for its assessment of the effectiveness of internal control over financial reporting, included in the accompanying Management's Annual Report on Internal Controls over Financial Reporting at Item 9A. Our responsibility is to express an opinion on these consolidated financial statements and an opinion on the Company's internal control over financial reporting based on our audit.

We conducted our audit in accordance with the standards of the Public Company Accounting Oversight Board (United States). Those standards require that we plan and perform the audit to obtain reasonable assurance about whether the financial statements are free of material misstatement and whether effective internal control over financial reporting was maintained in all material respects. Our audit of the consolidated financial statements included examining, on a test basis, evidence supporting the amounts and disclosures in the financial statements, assessing the accounting principles used and significant estimates made by management, and evaluating the overall financial statement presentation. Our audit of internal control over financial reporting included obtaining an understanding of internal control over financial reporting, assessing the risk that a material weakness exists, and testing and evaluating the design and operating effectiveness of internal control based on the assessed risk. Our audit also included performing such other procedures as we considered necessary in the circumstances. We believe that our audit provides a reasonable basis for our opinion.

A company's internal control over financial reporting is a process designed to provide reasonable assurance regarding the reliability of financial reporting and the preparation of financial statements for external purposes in accordance with generally accepted accounting principles. A company's internal control over financial reporting includes those policies and procedures that (1) pertain to the maintenance of records that, in reasonable detail, accurately and fairly reflect the transactions and dispositions of the assets of the company; (2) provide reasonable assurance that transactions are recorded as necessary to permit preparation of financial statements in accordance with generally accepted accounting principles, and that receipts and expenditures of the company are being made only in accordance with authorizations of management and directors of the company; and (3) provide reasonable assurance regarding prevention or timely detection of unauthorized acquisition, use, or disposition of the company's assets that could have a material effect on the financial statements.

Because of its inherent limitations, internal control over financial reporting may not prevent or detect misstatements. Also, projections of any evaluation of effectiveness to future periods are subject to the risk that controls may become inadequate because of changes in conditions, or that the degree of compliance with the policies or procedures may deteriorate.

In our opinion, the consolidated financial statements referred to above present fairly, in all material respects, the financial position of Calix, Inc. and subsidiaries as of December 31, 2016, and the consolidated results of their operations and their cash flows for the year ended December 31, 2016, in conformity with U.S. generally accepted accounting principles. Also in our opinion, Calix, Inc. maintained, in all material respects, effective internal control over financial reporting as of December 31, 2016, based on criteria established in *Internal Control - Integrated Framework* issued by the COSO.

/s/ KPMG LLP

San Francisco, California
February 28, 2017

Report of Independent Registered Public Accounting Firm

The Board of Directors and Stockholders of Calix, Inc.

We have audited the accompanying consolidated balance sheet of Calix, Inc. as of December 31, 2015, and the related consolidated statements of comprehensive loss, stockholders' equity and cash flows for each of the two years in the period ended December 31, 2015. These financial statements are the responsibility of the Company's management. Our responsibility is to express an opinion on these financial statements based on our audits.

We conducted our audits in accordance with the standards of the Public Company Accounting Oversight Board (United States). Those standards require that we plan and perform the audit to obtain reasonable assurance about whether the financial statements are free of material misstatement. An audit includes examining, on a test basis, evidence supporting the amounts and disclosures in the financial statements. An audit also includes assessing the accounting principles used and significant estimates made by management, as well as evaluating the overall financial statement presentation. We believe that our audits provide a reasonable basis for our opinion.

In our opinion, the financial statements referred to above present fairly, in all material respects, the consolidated financial position of Calix, Inc. at December 31, 2015, and the consolidated results of its operations and its cash flows for each of the two years in the period ended December 31, 2015, in conformity with U.S. generally accepted accounting principles.

/s/ Ernst & Young LLP

San Francisco, California
February 25, 2016

CALIX, INC.
CONSOLIDATED BALANCE SHEETS
(In thousands, except par value and share data)

	December 31, 2016	December 31, 2015
ASSETS		
Current assets:		
Cash and cash equivalents	\$ 50,359	\$ 23,626
Marketable securities	27,748	49,964
Accounts receivable, net	51,336	47,155
Inventory	44,545	47,667
Deferred cost of revenue	34,763	4,918
Prepaid expenses and other current assets	10,571	9,470
Total current assets	219,322	182,800
Property and equipment, net	17,984	17,149
Goodwill	116,175	116,175
Intangible assets, net	813	6,618
Other assets	1,181	1,144
Total assets	\$ 355,475	\$ 323,886
LIABILITIES AND STOCKHOLDERS' EQUITY		
Current liabilities:		
Accounts payable	\$ 23,827	\$ 19,603
Accrued liabilities	69,715	35,512
Deferred revenue	27,854	12,124
Total current liabilities	121,396	67,239
Long-term portion of deferred revenue	20,237	19,569
Other long-term liabilities	878	1,293
Total liabilities	142,511	88,101
Commitments and contingencies (See Note 6)		
Stockholders' equity:		
Preferred stock, \$0.025 par value; 5,000,000 shares authorized; no shares issued and outstanding as of December 31, 2016 and December 31, 2015	—	—
Common stock, \$0.025 par value; 100,000,000 shares authorized; 54,722,135 shares issued and 49,392,318 shares outstanding as of December 31, 2016, and 53,049,781 shares issued and 49,509,251 shares outstanding as of December 31, 2015	1,368	1,326
Additional paid-in capital	836,563	818,754
Accumulated other comprehensive loss	(656)	(195)
Accumulated deficit	(584,325)	(556,923)
Treasury stock, 5,329,817 shares as of December 31, 2016 and 3,540,530 shares as of December 31, 2015	(39,986)	(27,177)
Total stockholders' equity	212,964	235,785
Total liabilities and stockholders' equity	\$ 355,475	\$ 323,886

See accompanying notes to consolidated financial statements.

CALIX, INC.

CONSOLIDATED STATEMENTS OF COMPREHENSIVE LOSS
(In thousands, except per share data)

	Years Ended December 31,		
	2016	2015	2014
Revenue	\$ 458,787	\$ 407,463	\$ 401,227
Cost of revenue:			
Products and services ⁽¹⁾	253,465	208,681	215,085
Amortization of intangible assets	4,104	8,353	8,353
Total cost of revenue	<u>257,569</u>	<u>217,034</u>	<u>223,438</u>
Gross profit	201,218	190,429	177,789
Operating expenses:			
Research and development ⁽¹⁾	106,869	89,714	80,311
Sales and marketing ⁽¹⁾	83,675	78,563	76,283
General and administrative ⁽¹⁾	41,592	38,454	31,371
Amortization of intangible assets	1,701	10,208	10,208
Litigation settlement gain	(4,500)	—	—
Total operating expenses	<u>229,337</u>	<u>216,939</u>	<u>198,173</u>
Loss from operations	(28,119)	(26,510)	(20,384)
Interest and other income (expense), net:			
Interest income	737	1,285	729
Interest expense	(585)	(1,144)	(806)
Other income (expense), net	912	571	228
Total interest and other income (expense), net	<u>1,064</u>	<u>712</u>	<u>151</u>
Loss before provision for income taxes	(27,055)	(25,798)	(20,233)
Provision for income taxes	347	535	581
Net loss	<u>\$ (27,402)</u>	<u>\$ (26,333)</u>	<u>\$ (20,814)</u>
Net loss per common share:			
Basic and diluted	<u>\$ (0.56)</u>	<u>\$ (0.51)</u>	<u>\$ (0.41)</u>
Weighted-average number of shares used to compute net loss per common share:			
Basic and diluted	<u>48,730</u>	<u>51,489</u>	<u>50,808</u>
Net loss	\$ (27,402)	\$ (26,333)	\$ (20,814)
Other comprehensive income (loss), net of tax:			
Unrealized gains (losses) on available-for-sale marketable securities, net	\$ 88	\$ (36)	\$ (58)
Foreign currency translation adjustments, net	(549)	(239)	(52)
Total other comprehensive income (loss), net of tax	<u>(461)</u>	<u>(275)</u>	<u>(110)</u>
Comprehensive loss	<u>\$ (27,863)</u>	<u>\$ (26,608)</u>	<u>\$ (20,924)</u>
(1) Includes stock-based compensation as follows:			
Cost of revenue	\$ 672	\$ 709	\$ 1,120
Research and development	5,125	4,797	5,056
Sales and marketing	4,586	4,712	5,601
General and administrative	3,902	3,587	4,240

See accompanying notes to consolidated financial statements.

CALIX, INC.

CONSOLIDATED STATEMENTS OF STOCKHOLDERS' EQUITY
(In thousands)

	Common Stock		Additional Paid-in Capital	Accumulated Other Comprehensive Income (Loss)	Accumulated Deficit	Treasury Stock	Total Stockholders' Equity
	Shares	Amount					
Balance at December 31, 2013	50,225	\$ 1,256	\$ 782,253	\$ 190	\$ (509,776)	\$ —	\$ 273,923
Stock-based compensation	—	—	16,017	—	—	—	16,017
Exercise of stock options	224	6	1,662	—	—	—	1,668
Issuance of vested performance restricted stock units, net of taxes withheld	99	2	(535)	—	—	—	(533)
Issuance of vested restricted stock units, net of taxes withheld	449	11	(1,851)	—	—	—	(1,840)
Stock issued under employee stock purchase plan	683	17	4,610	—	—	—	4,627
Shares withheld for taxes for vested restricted stock awards	(42)	(1)	(346)	—	—	—	(347)
Restricted stock awards forfeited	(10)	—	—	—	—	—	—
Net loss	—	—	—	—	(20,814)	—	(20,814)
Other comprehensive loss	—	—	—	(110)	—	—	(110)
Balance at December 31, 2014	51,628	1,291	801,810	80	(530,590)	—	272,591
Stock-based compensation	—	—	13,805	—	—	—	13,805
Exercise of stock options	97	2	636	—	—	—	638
Issuance of vested performance restricted stock units, net of taxes withheld	92	2	(473)	—	—	—	(471)
Issuance of vested restricted stock units, net of taxes withheld	491	12	(1,733)	—	—	—	(1,721)
Stock issued under employee stock purchase plan	762	19	4,869	—	—	—	4,888
Shares withheld for taxes for vested restricted stock awards	(20)	—	(160)	—	—	—	(160)
Net loss	—	—	—	—	(26,333)	—	(26,333)
Other comprehensive loss	—	—	—	(275)	—	—	(275)
Repurchases of common stock	(3,541)	—	—	—	—	(27,177)	(27,177)
Balance at December 31, 2015	49,509	1,326	818,754	(195)	(556,923)	(27,177)	235,785
Stock-based compensation	—	—	14,285	—	—	—	14,285
Exercise of stock options	3	—	17	—	—	—	17
Issuance of vested performance restricted stock units, net of taxes withheld	26	1	(115)	—	—	—	(114)
Issuance of vested restricted stock units, net of taxes withheld	633	16	(2,003)	—	—	—	(1,987)
Stock issued under employee stock purchase plan	1,010	25	5,625	—	—	—	5,650
Net loss	—	—	—	—	(27,402)	—	(27,402)
Other comprehensive loss	—	—	—	(461)	—	—	(461)
Repurchases of common stock	(1,789)	—	—	—	—	(12,809)	(12,809)
Balance at December 31, 2016	49,392	\$ 1,368	\$ 836,563	\$ (656)	\$ (584,325)	\$ (39,986)	\$ 212,964

See accompanying notes to consolidated financial statements.

CALIX, INC.

CONSOLIDATED STATEMENTS OF CASH FLOWS
(In thousands)

	Years Ended December 31,		
	2016	2015	2014
Operating activities:			
Net loss	\$ (27,402)	\$ (26,333)	\$ (20,814)
Adjustments to reconcile net loss to net cash provided by (used in) operating activities:			
Depreciation and amortization	8,319	10,262	9,263
Loss on retirement of property and equipment	—	24	50
Amortization of intangible assets	5,805	18,561	18,561
Amortization of premiums relating to available-for-sale securities	382	907	574
Gain on sale of available-for-sale securities	—	—	(1)
Stock-based compensation	14,285	13,805	16,017
Changes in operating assets and liabilities:			
Restricted cash	—	295	—
Accounts receivable, net	(4,185)	(16,411)	12,776
Inventory	3,122	(915)	4,319
Deferred cost of revenue	(29,845)	162	15,996
Prepaid expenses and other assets	(1,197)	2,889	(5,908)
Accounts payable	4,236	(4,021)	467
Accrued liabilities	34,913	(3,781)	7,440
Deferred revenue	16,398	(422)	(21,178)
Other long-term liabilities	(412)	(363)	513
Net cash provided by (used in) operating activities	<u>24,419</u>	<u>(5,341)</u>	<u>38,075</u>
Investing activities:			
Purchases of property and equipment	(9,839)	(7,278)	(11,961)
Purchases of marketable securities	(16,478)	(60,002)	(67,698)
Sales of marketable securities	—	—	615
Maturities of marketable securities	38,400	71,945	3,600
Net cash provided by (used in) investing activities	<u>12,083</u>	<u>4,665</u>	<u>(75,444)</u>
Financing activities:			
Proceeds from exercise of stock options	17	638	1,668
Proceeds from employee stock purchase plan	5,650	4,888	4,627
Payments for repurchases of common stock	(12,809)	(27,177)	—
Taxes paid for awards vested under equity incentive plans	(2,101)	(2,352)	(2,720)
Payments for debt issuance costs	—	(138)	—
Net cash provided by (used in) financing activities	<u>(9,243)</u>	<u>(24,141)</u>	<u>3,575</u>
Effect of exchange rate changes on cash and cash equivalents	(526)	(386)	(124)
Net increase (decrease) in cash and cash equivalents	26,733	(25,203)	(33,918)
Cash and cash equivalents at beginning of period	23,626	48,829	82,747
Cash and cash equivalents at end of period	<u>\$ 50,359</u>	<u>\$ 23,626</u>	<u>\$ 48,829</u>
Supplemental disclosures of cash flow information			
Interest paid	\$ 127	\$ 127	\$ 159
Income taxes paid	965	483	72
Non-cash investing activities			
Changes in accounts payable and accrued liabilities related to purchases of property and equipment	\$ (478)	\$ —	\$ —

See accompanying notes to consolidated financial statements.

CALIX, INC.

NOTES TO CONSOLIDATED FINANCIAL STATEMENTS

1. Description of Business and Significant Accounting Policies

Company

Calix, Inc. (together with its subsidiaries, "Calix," the "Company," "our," "we," or "us") was incorporated in August 1999, and is a Delaware corporation. The Company is a leading global provider of broadband communications access platforms, systems and software for fiber- and copper-based network architectures and a pioneer in software defined access that enables communications service providers ("CSPs") to transform their networks and enhance how they connect to their residential and business subscribers. The Company develops and sells carrier-class hardware and software products, referred to as the Calix portfolio that are designed to enhance and transform CSP access networks to meet the changing demands of subscribers rapidly and cost-effectively. The Company enables CSPs to provide a wide range of revenue-generating services, from basic voice and data to advanced broadband services, over legacy and next-generation access networks. The Company focuses solely on CSP access networks, the portion of the network that governs available bandwidth and determines the range and quality of services that can be offered to subscribers.

Basis of Presentation

The Company's fiscal year begins on January 1st and ends on December 31st. Quarterly periods are based on a 4-4-5 fiscal calendar with the first, second and third fiscal quarters ending on the 13th Saturday of each fiscal period.

The accompanying consolidated financial statements, including the accounts of Calix, Inc. and its wholly owned subsidiaries, have been prepared in accordance with the requirements of the U.S. Securities and Exchange Commission ("SEC"). In the opinion of management, the consolidated financial statements include all normal and recurring adjustments that are considered necessary for the fair presentation of the Company's financial position and operating results. All significant intercompany balances and transactions have been eliminated in consolidation.

Applicable Accounting Guidance

Any reference in these notes to applicable accounting guidance ("guidance") is meant to refer to the authoritative U.S. generally accepted accounting principles ("GAAP") as found in the Financial Accounting Standards Board ("FASB") Accounting Standards Codification ("ASC").

Use of Estimates

The preparation of financial statements is in conformity with U.S. GAAP, which requires management to make estimates and assumptions that affect the amounts reported in the consolidated financial statements and accompanying notes. For the Company, these estimates include, but are not limited to: allowances for doubtful accounts and sales returns, excess and obsolete inventory, allowances for obligations to its contract manufacturers, valuation of stock-based compensation, useful lives assigned to long-lived assets and acquired intangible assets, standard and extended warranty costs, and contingencies. Actual results could differ from those estimates, and such differences could be material to the Company's financial position and results of operations.

Revenue Recognition

The Company derives revenue primarily from the sale of hardware products and related software. Revenue is recognized when all of the following criteria have been met:

- Persuasive evidence of an arrangement exists. The Company generally relies upon sales agreements and customer purchase orders as evidence of an arrangement.
- Delivery has occurred. The Company uses the shipping terms of the arrangement or evidence of customer acceptance to verify delivery or performance.
- Sales price is fixed or determinable. The Company assesses whether the sales price is fixed or determinable based on the payment terms and whether the sales price is subject to refund or adjustment. Payment terms to customers can range from net 30 to net 120 days.
- Collectability is reasonably assured. The Company assesses collectability based primarily on creditworthiness of customers and their payment histories.

Revenue from installation and training services is recognized as the services are completed. Post-sales software support revenue and extended warranty services revenue are deferred and recognized ratably over the period during which the services are to be performed. In instances where substantive acceptance provisions are specified in the customer agreement, revenue is deferred until all acceptance criteria have been met. From time to time, the Company offers customers sales incentives, which include volume rebates and discounts. These amounts are estimated on a quarterly basis and recorded as a reduction of revenue.

The Company enters into arrangements with certain of its customers who receive government supported loans and grants from the U.S. Department of Agriculture's Rural Utility Service ("RUS") to finance capital spending. Under the terms of an RUS equipment contract that includes installation services, the customer does not take possession and control and title does not pass until formal acceptance is obtained from the customer. Under this type of arrangement, the Company does not recognize revenue until it has received formal acceptance from the

customer. For RUS arrangements that do not involve installation services, the Company recognizes revenue when all of the revenue recognition criteria as described above have been met.

The Company's products contain both software and non-software components that function together to deliver the products' essential functionality. When the Company enters into sales arrangements that consist of multiple deliverables of its product and service offerings, the Company allocates the total consideration of the arrangement to each separable deliverable based on its relative selling price. The Company limits the amount allocable to delivered elements to the amount that is not contingent upon the delivery of additional items or meeting specified performance conditions, and recognizes revenue on each deliverable in accordance with its revenue recognition policy. The determination of selling price for each deliverable is based on a selling price hierarchy, which is vendor-specific objective evidence ("VSOE") if available, third-party evidence ("TPE") if VSOE is not available, or estimated selling price ("ESP") if neither VSOE nor TPE is available. VSOE of selling price is based on the price charged when the element is sold separately. In determining VSOE, the Company requires that a substantial majority of the selling prices of an element fall within a narrow range when each element is sold separately. The Company has established VSOE for its training and post-sales software support services based on the normal pricing practices of these services when sold separately. TPE of selling price is established by evaluating whether there are similar competitor products or services that are sold in stand-alone sales transaction to similarly situated customers. Generally, the Company's marketing strategy differs from that of its peers and its offerings contain a significant level of customization and differentiation such that the comparable pricing of products with similar functionality cannot be obtained. Additionally, as the Company is unable to reliably determine what similar competitor products' selling prices are on a stand-alone basis, it is not typically able to determine TPE. ESP is established considering multiple factors including, but not limited to, geographies market conditions, competitive landscape, internal costs, gross margin objectives, characteristics of targeted customers and pricing practices. The determination of ESP is made through consultation with and formal approval by management, taking into consideration the go-to-market strategy.

Cost of Revenue

Cost of revenue consists primarily of finished goods inventory purchased from the Company's contract manufacturers, payroll and related expenses associated with managing the relationships with contract manufacturers, depreciation of manufacturing test equipment, warranty and retrofit costs, excess and obsolete inventory costs, shipping charges, and amortization of certain intangible assets. It also includes contractor and other costs of services incurred directly related to the delivery of services to customers.

Warranty and Retrofit

The Company offers limited warranties for its hardware products for a period of one, three or five years, depending on the product type. The Company recognizes estimated costs related to warranty activities as a component of cost of revenue upon product shipment or upon identification of a specific product failure. Under certain circumstances, the Company also provides fixes on specifically identified performance failures for products that are outside of the standard warranty period and recognizes estimated costs related to retrofit activities as a component of cost of revenue upon identification of such product failures. The Company recognizes estimated warranty and retrofit costs when it is probable that a liability has been incurred and the amount of loss is reasonably estimable. The estimates are based upon historical and projected product failure and claim rates, historical costs incurred in correcting product failures and information available related to any specifically identified product failures. Significant judgment is required in estimating costs associated with warranty and retrofit activities and the Company estimates are limited to information available to the Company at the time of such estimates. In some cases, such as when a specific product failure is first identified or a new product is introduced, the Company may initially have limited information and limited historical failure and claim rates upon which to base its estimates, and such estimates may require revision in future periods. The recorded amount is adjusted from time to time for specifically identified warranty and retrofit exposure. Actual warranty and retrofit expenses are charged against the Company's estimated warranty and retrofit liability when incurred. Factors that affect the Company's warranty and retrofit liability include the number of active installed units and historical and anticipated rates of warranty and retrofit claims and cost per claim.

Stock-Based Compensation

Stock-based awards are measured at fair value as of the grant date and recognized to expense over the employee's requisite service period (generally the vesting period), which the Company has elected to amortize on a straight-line basis. Stock-based compensation expense is reduced by the Company's estimated forfeitures on all unvested awards.

The fair value of stock option and employee stock purchase right under the Employee Stock Purchase Plan ("ESPP") is estimated at the grant date using the Black-Scholes option valuation model. The fair value of restricted stock units and restricted stock awards is based on the closing market price of the Company's common stock on the date of grant. The fair value of performance restricted stock units ("PRSUs") with a market condition is estimated on the date of grant, using a Monte Carlo simulation model to estimate the total return ranking of the Company's stock in relation to the peer group over each performance period. Compensation cost on PRSUs with a market condition is not adjusted for subsequent changes in the Company's stock performance or the level of ultimate vesting.

Research and Development

Research and development costs include costs of developing new products and processes, as well as design and engineering costs. Such costs are charged to research and development expense as incurred.

Development costs related to software incorporated in the Company's products incurred subsequent to the establishment of technological feasibility are capitalized and amortized over the estimated useful lives of the related products. Technological feasibility is established upon completion of a working model.

Loss Contingencies

From time to time, the Company is involved in legal proceedings arising from the normal course of business activities. The Company evaluates the likelihood of an unfavorable outcome of legal proceedings to which it is a party and accrues a loss contingency when the loss is probable and reasonably estimable. Assessing legal contingencies involves significant judgment and estimates and the outcome of litigation is inherently uncertain and subject to numerous factors outside the Company's control. Significant judgment is required when the Company assesses the likelihood of any adverse judgments or outcomes, including the potential range of possible losses, and whether losses are probable and reasonably estimable.

Because of uncertainties related to these matters, the Company bases its estimates of whether a loss contingency is probable or reasonably possible, as well as the reasonable range of possible losses associated with each loss contingency, only on the information available at the time. As additional information becomes available, and at least quarterly, the Company reassesses the potential liability on each significant matter and may revise its estimates. These revisions could have a material impact on the Company's business, operating results or financial condition. The actual outcome of these legal proceedings may materially differ from the Company's estimates of potential liability, which could have a material adverse effect on the Company's business, operating results or financial condition.

Legal Fees

The Company incurs legal expenses related to disputes, litigation and other legal actions in the ordinary course of business. Legal fees, including those legal defense costs expected to be incurred in connection with a loss contingency, are expensed as incurred in the period that the related services are received. In the event the Company has insurance coverage for legal defense costs incurred and the likelihood of reimbursement is assured, legal defense costs recognized in a period are reduced by the amount recoverable from the insurance. A receivable is recognized for the portion of legal costs recoverable under the insurance at the time such legal costs are incurred and accrued.

Credit Risk and Inventory Supplier Concentrations

Financial instruments that potentially subject the Company to significant concentrations of credit risk consist primarily of cash and cash equivalents and accounts receivable. Cash equivalents consist of money market funds, which are invested through financial institutions in the United States. Deposits in these financial institutions may, at times, exceed federally insured limits. The Company has not experienced any losses in such accounts. The Company also has approximately \$5.9 million of cash held by its foreign subsidiaries in Brazil, China and the United Kingdom. Management believes that the financial institutions that hold the Company's cash and cash equivalents are financially sound and, accordingly, minimal credit risk exists with respect to these cash and cash equivalents.

Concentrations of credit risk in relation to customer with an accounts receivable balance of 10% or greater of total accounts receivable and customer with net revenues of 10% or greater of total revenues are presented below for the periods indicated.

	Percentage of Accounts Receivable		Percentage of Revenue		
	At December 31,		Years Ended December 31,		
	2016	2015	2016	2015	2014
CenturyLink	28%	27%	21%	22%	23%
Windstream	13%	*	15%	*	*

* Less than 10% of total accounts receivable or revenue.

The Company maintains an allowance for doubtful accounts for estimated losses resulting from the inability of its customers to make required payments. The Company records a specific allowance based on an analysis of individual past-due balances. Additionally, based on its historical write-offs and collections experience, the Company records an additional allowance based on a percentage of outstanding receivables. The Company performs credit evaluations of its customers' financial condition. These evaluations require significant judgment and are based on a variety of factors including, but not limited to, current economic trends, payment history and financial review of the customer. Actual collection losses may differ from management's estimates, and such differences could be material to the Company's financial position and results of operations.

The Company depends primarily on a small number of outside contract manufacturers for the bulk of its finished goods inventory. In particular, the Company relies on Flex Ltd., formerly Flextronics for the manufacture of a large percentage of its products. The Company generally purchases its products through purchase orders with its suppliers or contract manufacturers. While the Company seeks to maintain a sufficient reserve of its products, the Company's business and results of operations could be adversely affected by a stoppage or delay in receiving such products, the receipt of defective parts, an increase in price of such products or the Company's inability to obtain lower prices from its contract manufacturers and suppliers in response to competitive pressures.

Fair Value of Financial Instruments

The carrying amounts of cash and cash equivalents, marketable securities, trade receivables, accounts payable, and other accrued liabilities approximate their fair value due to their relatively short-term nature.

Cash, Cash Equivalents, and Marketable Securities

The Company has invested its excess cash primarily in money market funds and highly liquid marketable securities such as corporate debt instruments, commercial paper and U.S. government agency securities. The Company considers all investments with maturities of three months or less when purchased to be cash equivalents. Marketable securities represent highly liquid corporate debt instruments, commercial paper and U.S. government agency securities with maturities greater than 90 days at date of purchase. Marketable securities with maturities greater than one year are classified as current because management considers all marketable securities to be available for current operations.

Cash equivalents and marketable securities are stated at amounts that approximate fair value based on quoted market prices.

The Company's investments have been classified and accounted for as available-for-sale. Such investments are recorded at fair value and unrealized holding gains and losses are reported as a separate component of comprehensive loss in the stockholders' equity until realized. Realized gains and losses on sales of marketable securities, if any, are determined on the specific identification method and are reclassified from accumulated other comprehensive income to results of operations as other income (expense).

The Company, to date, has not determined that any of the unrealized losses on its investments are considered to be other-than-temporary. The Company reviews its investment portfolio to determine if any security is other-than-temporarily impaired, which would require the Company to record an impairment charge in the period any such determination is made. In making this judgment, the Company evaluates, among other things: the duration and extent to which the fair value of a security is less than its cost; the financial condition of the issuer and any changes thereto; and the Company's intent and ability to hold its investment for a period of time sufficient to allow for any anticipated recovery in market value, or whether the Company will more likely than not be required to sell the security before recovery of its amortized cost basis. The Company has evaluated its investments as of December 31, 2016 and has determined that no investments with unrealized losses are other-than-temporarily impaired. No investments have been in a continuous loss position greater than one year.

Allowance for Doubtful Accounts

The Company maintains an allowance for doubtful accounts for estimated losses resulting from the inability of its customers to make required payments. The Company records a specific allowance based on an analysis of individual past-due balances. Additionally, based on historical write-offs and the Company's collection experience, the Company records an additional allowance based on a percentage of outstanding receivables. The Company performs credit evaluations of its customers' financial condition. These evaluations require significant judgment and are based on a variety of factors including, but not limited to, current economic trends, payment history and a financial review of the customer. Actual collection losses may differ from management's estimates, and such differences could be material to our financial position and results of operations.

Inventory Valuation

Inventory, which primarily consists of finished goods purchased from contract manufacturers, is stated at the lower of cost, determined by the first-in, first-out method, or market value. Inbound shipping costs are included in cost of inventory. In addition, the Company, from time to time, procures component inventory primarily as a result of manufacturing discontinuation of critical components by suppliers. The Company regularly monitors inventory quantities on hand and records write-downs for excess and obsolete inventories based on the Company's estimate of demand for its products, potential obsolescence of technology, product life cycles, and whether pricing trends or forecasts indicate that the carrying value of inventory exceeds its estimated selling price. These factors are impacted by market and economic conditions, technology changes, and new product introductions and require estimates that may include elements that are uncertain. Actual demand may differ from forecasted demand and may have a material effect on gross margins. If inventory is written down, a new cost basis is established that cannot be increased in future periods. Shipments from suppliers or contract manufacturers before the Company receives them are recorded as in-transit inventory when title and the significant risks and rewards of ownership have passed to the Company.

Deferred Revenue and Deferred Cost of Revenue

Deferred revenue results from transactions where the Company billed the customer for product shipped or services performed but not all revenue recognition criteria have been met.

When the Company's products have been shipped, but the product revenue associated with the arrangement has been deferred as a result of not meeting the criteria for immediate revenue recognition, the Company also defers the related inventory costs for the delivered items until all criteria are met for revenue recognition. The Company defers tangible direct costs associated with hardware products delivered based on the inventory cost at the time of shipment.

Certain costs directly related to the delivery of professional services that cannot be accounted for separately from the undelivered items included in a multiple element arrangement or have not been earned yet are also capitalized and deferred, if deemed recoverable, until all revenue recognition criteria are met. Accordingly, all cost of services incurred directly related to the delivery of an inseparable professional service item in which revenue has not yet been recognized are deferred and recorded within "Deferred cost of revenue" in the Company's Consolidated Balance Sheets.

The Company evaluates deferred cost of revenue for recoverability based on multiple factors, including whether net revenues will exceed the amount of deferred cost of revenue applicable to each deliverable specified in the arrangement. To the extent that deferred cost of revenue is determined to be unrecoverable, the Company adjusts deferred cost of revenue with a charge to cost of revenue in the current period. In connection with the Company's recoverability assessments, it has incurred \$2.2 million of impairment charges through December 31, 2016. The Company did not incur significant impairment charges as of December 31, 2015.

The Company recognizes deferred revenue and associated deferred cost of revenue, as revenue and cost of revenue respectively, in the Consolidated Statements of Comprehensive Loss once all revenue recognition criteria have been met.

Property and Equipment

Property and equipment are stated at cost, less accumulated depreciation, and are depreciated using the straight-line method over the estimated useful life of each asset. Computer equipment is depreciated over two years; purchased software is depreciated over three years; test equipment is depreciated over three years; furniture and fixtures are depreciated over seven years; and leasehold improvements are depreciated over the shorter of the respective lease term or the estimated useful life of the asset. Maintenance and repairs are charged to expense as incurred.

Goodwill

The Company records goodwill when consideration paid in a business acquisition exceeds the fair value of the net tangible assets and the identified intangible assets acquired. Goodwill is not amortized but instead is subject to an annual impairment test or more frequently if events or changes in circumstances indicate that it may be impaired. The Company evaluates goodwill on an annual basis as of the end of the second quarter of each fiscal year. Management has determined that it operates as a single reporting unit and, therefore, evaluates goodwill impairment at the enterprise level.

In an annual impairment test, the Company first assesses qualitative factors to determine whether it is necessary to perform the two-step quantitative goodwill impairment test. In assessing the qualitative factors, management considers the impact of these key factors: macro-economic conditions, industry and market environment, overall financial performance of the Company, cash flow from operating activities, market capitalization and stock price. If the Company determines as a result of the qualitative assessment that it is more likely than not (that is, a likelihood of more than 50 percent) that the fair value of a reporting unit is less than its carrying amount, then the quantitative test is required. Otherwise, no further testing is required.

In a quantitative test, the Company compares its fair value to its carrying value including goodwill. The Company determines its fair value using both an income approach and a market approach. Under the income approach, the Company determines fair value based on estimated future cash flows, discounted by an estimated weighted-average cost of capital, which reflects the overall level of inherent risk of the Company and the rate of return an outside investor would expect to earn. Under the market-based approach, the Company utilizes information regarding the Company as well as publicly available industry information to determine earnings multiples that are used to value the Company. If the carrying value of the Company exceeds its fair value, the Company will determine the amount of impairment loss by comparing the implied fair value of goodwill with the carrying value of goodwill. An impairment charge is recognized for the excess of the carrying value of goodwill over its implied fair value.

At the end of the second quarter of 2016, the Company completed its annual goodwill impairment test. Based on its assessment of the above qualitative factors, management concluded that the fair value of the Company was more likely than not greater than its carrying amount as of June 25, 2016. As such, it was not necessary to perform the two-step quantitative goodwill impairment test at the time.

There have been no significant events or changes in circumstances subsequent to the 2016 annual impairment test that would more likely than not indicate that the carrying value of goodwill may have been impaired as of December 31, 2016. Therefore, there was no impairment to the carrying value of the Company's goodwill as of December 31, 2016. There were no impairment losses for goodwill in the years ended December 31, 2015 or 2014.

Intangible Assets and Other Long-Lived Assets

Intangible assets with finite useful lives are amortized over their estimated useful life. The Company periodically evaluates long-lived assets, including intangible assets, for impairment whenever events or changes in circumstances indicate that a potential impairment may have occurred. If such events or changes in circumstances arise, the Company compares the carrying amount of the long-lived assets to the estimated future undiscounted cash flows expected to be generated by the long-lived assets. If the estimated aggregate undiscounted cash flows are less than the carrying amount of the long-lived assets, an impairment charge, calculated as the amount by which the carrying amount of the assets exceeds the fair value of the assets, is recorded. The fair value of long-lived assets is determined based on the estimated discounted cash flows expected to be generated from the assets. The Company has reviewed events and changes to its business during the year and has determined that there was no impairment to its intangible assets and other long-lived assets during 2016. The Company did not incur any impairment losses for intangible assets and other long-lived assets in the years ended December 31, 2015 and 2014.

Income Taxes

The Company evaluates its tax positions and estimates its current tax exposure along with assessing temporary differences that result from different book to tax treatment of items not currently deductible for tax purposes. These differences result in deferred tax assets and liabilities on the Company's balance sheets, which are estimated based upon the difference between the financial statement and tax bases of assets and liabilities using the enacted tax rates that will be in effect when these differences reverse. In general, deferred tax assets represent future tax benefits to be received when certain expenses previously recognized in the Company's statements of operations become deductible expenses under applicable income tax laws or loss or credit carryforwards are utilized. Accordingly, realization of the Company's deferred tax assets is dependent on future taxable income against which these deductions, losses and credits can be utilized.

The Company must assess the likelihood that the Company's deferred tax assets will be recovered from future taxable income, and to the extent the Company believes that recovery is not more likely than not, the Company must establish a valuation allowance. Management judgment is required in determining the Company's provision for income taxes, the Company's deferred tax assets and liabilities and any valuation allowance recorded against the Company's net deferred tax assets. Excluding foreign operations, the Company recorded a full valuation allowance at each balance sheet date presented because, based on the available evidence, the Company believes it is more likely than not that it will not be able to utilize all of its deferred tax assets in the future. The Company intends to maintain the full valuation allowances until sufficient evidence exists to support the reversal of the valuation allowances.

Foreign Currency Translation

Assets and liabilities of the Company's wholly owned foreign subsidiaries are translated from their respective functional currencies at exchange rates in effect at the balance sheet date, and revenues and expenses are translated at the monthly average exchange rates. Translation adjustments are reflected as a separate component of stockholders' equity. Realized foreign currency transaction gains and losses were not significant during the years ended December 31, 2016, 2015, and 2014.

Recent Accounting Pronouncements

Stock-Based Compensation

In March 2016, the Financial Accounting Standards Board ("FASB") issued Accounting Standards Update No. 2016-09, Compensation - Stock Compensation (Topic 718): Improvements to Employee Share-Based Payment Accounting ("ASU 2016-09"), which simplifies several aspects of the accounting for employee share-based payment transactions for both public and nonpublic entities, including the accounting for income taxes, forfeitures, and statutory tax withholding requirements, as well as classification in the statement of cash flows. The Company adopted ASU 2016-09 in the first quarter of fiscal 2017 and will have the following impact:

- a. Accounting for Income Taxes — The primary impact of the adoption was the recognition of excess tax benefits and tax deficiencies through the statement of operations when the awards vest or are settled rather than through paid-in capital. The new guidance eliminates the requirement to delay the recognition of excess tax benefits until it reduces current taxes payable and requires the recognition of excess tax benefits and tax deficiencies in the period they arise. The Company adopted this guidance on a modified retrospective basis beginning on January 1, 2017 and the adoption will have a cumulative-effect adjustment to the beginning balance of deferred tax asset and corresponding valuation allowance as of January 1, 2017. The adoption will have no cumulative-effect adjustment on January 1, 2017 accumulated deficit balance as the Company's net operating loss carryforwards are offset by a full valuation allowance.
- b. Classification of Excess Tax Benefits on the Statement of Cash Flows — ASU 2016-09 requires all tax-related cash flows resulting from share-based payments to be reported as operating activities on the statement of cash flows, a change from the current requirement to present windfall tax benefits as an inflow from financing activities and an outflow from operating activities. The Company adopted this guidance prospectively beginning on January 1, 2017.
- c. Forfeitures — The Company has historically recognized stock-based compensation expense net of estimated forfeitures on all unvested awards and elected to continuously do so with the adoption of this new guidance. Hence, the adoption of ASU 2016-09 as it relates to this matter will have no impact to the Company's consolidated financial statements.
- d. Minimum Statutory Tax Withholding Requirements — ASU 2016-09 allows companies to withhold an amount up to the employees' maximum individual tax rate in the relevant jurisdiction without resulting in liability classification of the award. The Company adopted this guidance using a modified retrospective approach. The adoption will have no impact on the January 1, 2017 accumulated deficit as the Company had no outstanding liability awards that would otherwise qualify for equity classification under this new guidance.
- e. Classification of Employee Taxes Paid on the Statement of Cash Flows When an Employer Withholds Shares for Tax-Withholding Purposes — ASU 2016-09 clarifies that all cash payments made to taxing authorities on the employees' behalf for withheld shares should be presented as financing activities on the statement of cash flows. The Company has historically presented the taxes paid related to net share settlement of equity awards as a financing activity on the statements of cash flows. Hence, the adoption of ASU 2016-09 as it relates to this matter will have no impact to the Company's consolidated financial statements.

Leases

In February 2016, the FASB issued Accounting Standards Update No. 2016-02, Leases (Topic 842) ("ASU 2016-02"), which requires recognition of an asset and liability for lease arrangements longer than twelve months. ASU 2016-02 will be effective for the Company beginning in the first quarter of fiscal 2019. Early application is permitted, and it is required to recognize and measure leases at the beginning of the earliest period presented using a modified retrospective approach. The Company expects its assets and liabilities to increase as a result of the adoption of this standard. The Company is currently assessing the potential impact of adopting this new guidance on its consolidated financial statements.

Inventory

In July 2015, the FASB issued Accounting Standards Update No. 2015-11, Inventory (Topic 330): Simplifying the Measurement of Inventory ("ASU 2015-11"), which requires measurement of inventory at lower of cost and net realizable value, versus lower of cost or market. Net realizable value is the estimated selling price in the ordinary course of business, less reasonably predictable costs of completion, disposal, and transportation. The Company adopted ASU 2015-11 prospectively beginning on January 1, 2017. The adoption of this standard will have no material impact on the Company's consolidated financial statements.

Revenue from Contracts with Customers

In May 2014, the FASB issued Accounting Standards Update No. 2014-09, Revenue from Contracts with Customers (Topic 606) ("ASU 2014-09"), which provides guidance for revenue recognition. ASU 2014-09 supersedes the revenue recognition requirements in Topic 605, Revenue Recognition, and most industry-specific guidance. Additionally, it supersedes some cost guidance included in Subtopic 605-35, Revenue Recognition-Construction-Type and Production-Type Contracts, and creates new Subtopic 340-40, Other Assets and Deferred Costs-

Contracts with Customers. The standard's core principle is that a company will recognize revenue when it transfers promised goods or services to customers in an amount that reflects the consideration to which the company expects to be entitled in exchange for those goods or services. In doing so, companies will need to use more judgment and make more estimates than under the previous guidance. These may include identifying performance obligations in the contract, estimating the amount of variable consideration to include in the transaction price and allocating the transaction price to each separate performance obligation. On August 12, 2015, the FASB issued Accounting Standards Update No. 2015-14, Revenue from Contracts with Customers (Topic 606), Deferral of the Effective Date ("ASU 2015-14") to defer the effective date of ASU 2014-09 by one year. ASU 2015-14 permits early adoption of the new revenue standard, but not before its original effective date. In April 2016, the FASB issued Accounting Standards Update No. 2016-10, Revenue from Contracts with Customers (Topic 606): Identifying Performance Obligations and Licensing ("ASU 2016-10") which further clarifies guidance related to identifying performance obligations and licensing implementation guidance contained in ASU 2014-09. In May 2016, the FASB issued Accounting Standards Update No. 2016-12, Revenue from Contracts with Customers (Topic 606): Narrow-Scope Improvements and Practical Expedients ("ASU 2016-12") which addresses narrow-scope improvements to the guidance on collectibility, non-cash consideration, and completed contracts at transition and provides a practical expedient for contract modifications at transition and an accounting policy election related to the presentation of sales taxes and other similar taxes collected from customers.

The new standard permits adoption either by using (i) a full retrospective approach for all periods presented in the period of adoption or (ii) a modified retrospective approach with the cumulative effect of initially applying the new standard recognized at the date of initial application and providing certain additional disclosures. The Company has not yet determined which transition method it will adopt. Its determination will depend on a number of factors, such as the significance of the impact of the new standard on its financial results, system readiness and its ability to accumulate and analyze the information necessary to assess the impact on prior period financial statements, as necessary. The standard will be effective for the Company in the first quarter of fiscal 2018, with early adoption permitted for annual reporting period beginning in the first quarter of fiscal 2017. The Company is not planning to early adopt, and accordingly, it will adopt the new standard effective January 1, 2018.

The Company is in the initial stages of its evaluation of the impact of the new standard on its accounting policies, processes, and system requirements. The Company has assigned internal resources in addition to the engagement of third party service providers to assist in its evaluation. Additionally, the Company expects to make investments in new systems or enhancement of existing systems to enable timely and accurate reporting under the new standard. While the Company continues to perform further assessment of all potential impacts under the new standard, the Company expects the timing of revenue recognition to be accelerated for certain performance obligations related to certain revenue arrangements which are currently deferred until customer acceptance. Depending on the outcome of the Company's final evaluation, the timing of when revenue is recognized could change significantly for those revenue arrangements under the new standard.

As part of its preliminary evaluation, the Company also considered the impact of the guidance in ASC 340-40, Other Assets and Deferred Costs - Contracts with Customers with respect to capitalization and amortization of incremental costs of obtaining a contract. As a result of this new guidance, the Company may need to capitalize additional costs of obtaining the contract, including sales commissions, as the new cost guidance requires the capitalization of all incremental costs incurred to obtain a contract with a customer that it would not have incurred if the contract had not been obtained, provided it expects to recover the costs. Accordingly, the Company may need to defer certain sales commissions and amortize them over the period that the related revenue is recognized.

While the Company continues to assess all the potential impacts of the new standard, including the areas described above, and anticipates this standard could have a material impact on its consolidated financial statements, the Company is not able to quantify or cannot reasonably estimate quantitative information related to the impact of the new standard on its consolidated financial statements at this time.

2. Cash, Cash Equivalents and Marketable Securities

Cash, cash equivalents and marketable securities consisted of the following (in thousands):

	December 31, 2016	December 31, 2015
Cash and cash equivalents:		
Cash	\$ 34,340	\$ 13,378
Money market funds	15,020	10,248
Commercial paper	999	—
Total cash and cash equivalents	<u>50,359</u>	<u>23,626</u>
Marketable securities:		
Corporate debt securities	17,272	35,799
Commercial paper	6,275	3,645
U.S. government agency securities	4,201	10,520
Total marketable securities	<u>27,748</u>	<u>49,964</u>
Total cash, cash equivalents and marketable securities	<u>\$ 78,107</u>	<u>\$ 73,590</u>

The carrying amounts of our money market funds approximate their fair values due to their nature, duration and short maturities.

The amortized cost and fair value of marketable securities as of December 31, 2016 were as follows (in thousands):

	Amortized Cost	Gross Unrealized Gains	Gross Unrealized Losses	Fair Value
Corporate debt securities	\$ 17,279	\$ 1	\$ (8)	\$ 17,272
Commercial paper	6,275	—	—	6,275
U.S. government agency securities	4,200	1	—	4,201
Total marketable securities	<u>\$ 27,754</u>	<u>\$ 2</u>	<u>\$ (8)</u>	<u>\$ 27,748</u>

The amortized cost and fair value of marketable securities as of December 31, 2015 were as follows (in thousands):

	Amortized Cost	Gross Unrealized Gains	Gross Unrealized Losses	Fair Value
Corporate debt securities	\$ 35,869	\$ 2	\$ (72)	\$ 35,799
Commercial paper	3,645	—	—	3,645
U.S. government agency securities	10,544	—	(24)	10,520
Total marketable securities	<u>\$ 50,058</u>	<u>\$ 2</u>	<u>\$ (96)</u>	<u>\$ 49,964</u>

As of December 31, 2016 and December 31, 2015, there were no marketable securities, classified and accounted for as available-for-sale securities that have been in a continuous unrealized loss position in excess of twelve months.

As of December 31, 2016, the amortized cost and fair value of marketable securities by contractual maturity were as follows (in thousands):

	Amortized Cost	Fair Value
Due in 1 year or less	\$ 27,754	\$ 27,748

3. Fair Value Measurements

The Company measures its cash equivalents and marketable securities at fair value on a recurring basis. Fair value is an exit price, representing the amount that would be received to sell an asset or paid to transfer a liability in an orderly transaction between market participants. As such, fair value is a market-based measurement that should be determined based on assumptions that market participants would use in pricing an asset or liability. The Company utilizes the following three-tier value hierarchy which prioritizes the inputs used in measuring fair value:

Level 1 – Observable inputs that reflect quoted prices (unadjusted) for identical assets or liabilities in active markets.

Level 2 – Observable inputs other than quoted prices included in Level 1 for similar instruments in active markets, quoted prices for identical or similar instruments in markets that are not active, and model-driven valuations in which all significant inputs and significant value drivers are observable in active markets.

Level 3 – Unobservable inputs to the valuation derived from fair valuation techniques in which one or more significant inputs or significant value drivers are unobservable. The fair value hierarchy also requires the Company to maximize the use of observable inputs, when available, and to minimize the use of unobservable inputs when determining inputs and determining fair value.

The following table sets forth the Company's financial assets measured at fair value as of December 31, 2016 and 2015, based on the three-tier fair value hierarchy (in thousands):

As of December 31, 2016	Level 1	Level 2	Total
Money market funds	\$ 15,020	\$ —	\$ 15,020
Corporate debt securities	—	17,272	17,272
Commercial paper	—	7,274	7,274
U.S. government agency securities	—	4,201	4,201
Total	<u>\$ 15,020</u>	<u>\$ 28,747</u>	<u>\$ 43,767</u>

As of December 31, 2015	Level 1	Level 2	Total
Money market funds	\$ 10,248	\$ —	\$ 10,248
Corporate debt securities	—	35,799	35,799
Commercial paper	—	3,645	3,645
U.S. government agency securities	—	10,520	10,520
Total	\$ 10,248	\$ 49,964	\$ 60,212

The fair values of money market funds classified as Level 1 were derived from quoted market prices as active markets for these instruments exist. The fair values of corporate debt securities, commercial paper and U.S. government agency securities classified as Level 2 were derived from quoted market prices for similar instruments indexed to prevailing market yield rates. The Company has no level 3 financial assets. The Company did not have any transfers between Level 1 and Level 2 of the fair value hierarchy during the twelve months ended December 31, 2016 and 2015.

4. Goodwill and Intangible Assets

Goodwill

Goodwill was recorded as a result of the Company's acquisitions of Occam Networks, Inc. ("Occam") in February 2011 and Optical Solutions, Inc. ("OSI") in February 2006. This goodwill is not deductible for tax purposes, and there have been no adjustments or impairment to goodwill since the acquisition dates.

Intangible Assets

Intangible assets are carried at cost, less accumulated amortization. The details of intangible assets as of December 31, 2016 and 2015 are disclosed in the following table (in thousands):

	December 31, 2016			December 31, 2015		
	Gross Carrying Amount	Accumulated Amortization	Net	Gross Carrying Amount	Accumulated Amortization	Net
Core developed technology	\$ 68,964	\$ (68,151)	\$ 813	\$ 68,964	\$ (64,047)	\$ 4,917
Customer relationships	54,740	(54,740)	—	54,740	(53,039)	1,701
Total intangible assets, excluding goodwill	\$ 123,704	\$ (122,891)	\$ 813	\$ 123,704	\$ (117,086)	\$ 6,618

Amortization expense for intangible assets was \$5.8 million, \$18.6 million, and \$18.6 million for the years ended December 31, 2016, 2015, and 2014, respectively. Expected future amortization expense for the fiscal year indicated is as follows (in thousands):

Period	Expected Amortization Expense
2017	\$ 813

5. Balance Sheet Details

Accounts receivable, net consisted of the following (in thousands):

	December 31, 2016	December 31, 2015
Accounts receivable	\$ 52,792	\$ 48,319
Allowance for doubtful accounts	(518)	(501)
Product return reserve	(938)	(663)
Accounts receivable, net	\$ 51,336	\$ 47,155

The table below summarizes the changes in allowance for doubtful accounts and product return reserve for the periods indicated (in thousands):

	<u>Balance at Beginning of Year</u>	<u>Additions Charged to Costs or Expenses or Revenue</u>	<u>Deductions and Write Offs</u>	<u>Balance at End of Year</u>
Year Ended December 31, 2016				
Allowance for doubtful accounts	\$ 501	\$ 232	\$ (215)	\$ 518
Product return reserve	663	3,679	(3,404)	938
Year Ended December 31, 2015				
Allowance for doubtful accounts	\$ 241	\$ 405	\$ (145)	\$ 501
Product return reserve	508	4,224	(4,069)	663
Year Ended December 31, 2014				
Allowance for doubtful accounts	\$ 358	\$ 154	\$ (271)	\$ 241
Product return reserve	764	4,805	(5,061)	508

Inventory consisted of the following (in thousands):

	<u>December 31, 2016</u>	<u>December 31, 2015</u>
Raw materials	\$ 1,827	\$ 2,209
Finished goods	42,718	45,458
Total inventory	<u>\$ 44,545</u>	<u>\$ 47,667</u>

Property and equipment, net consisted of the following (in thousands):

	<u>December 31, 2016</u>	<u>December 31, 2015</u>
Test equipment	\$ 43,580	\$ 39,035
Computer equipment and purchased software	30,306	27,736
Furniture and fixtures	2,831	1,833
Leasehold improvements	6,898	6,554
Total	83,615	75,158
Accumulated depreciation and amortization	(65,631)	(58,009)
Property and equipment, net	<u>\$ 17,984</u>	<u>\$ 17,149</u>

Depreciation and amortization expense was \$8.3 million, \$10.3 million, \$9.3 million for the years ended December 31, 2016, 2015, and 2014, respectively.

Accrued liabilities consisted of the following (in thousands):

	<u>December 31, 2016</u>	<u>December 31, 2015</u>
Advance customer payments	\$ 20,726	\$ 1,094
Accrued compensation and related benefits	19,541	13,809
Accrued warranty and retrofit	12,214	9,564
Accrued professional and consulting fees	8,205	2,813
Accrued customer rebates	1,931	784
Accrued excess and obsolete inventory at contract manufacturers	1,327	1,011
Accrued freight	1,198	486
Accrued insurance	804	—
Accrued non-income related taxes	699	905
Accrued business travel expenses	463	580
Accrued rent	421	381
Accrued hosting services	240	466
Income taxes payable	231	322
Accrued other	1,715	3,297
Total accrued liabilities	<u>\$ 69,715</u>	<u>\$ 35,512</u>

As of December 31, 2016, in conjunction with a revenue contract, the Company received \$20 million as payments in advance of providing products and services to a customer.

Deferred revenue consisted of the following (in thousands):

	December 31, 2016	December 31, 2015
Current:		
Product and services	\$ 24,472	\$ 8,937
Extended warranty	3,382	3,187
	<u>27,854</u>	<u>12,124</u>
Non-current:		
Product and services	22	58
Extended warranty	20,215	19,511
	<u>20,237</u>	<u>19,569</u>
Total deferred revenue	<u>\$ 48,091</u>	<u>\$ 31,693</u>

Deferred cost of revenue consisted of costs incurred for products and services for which revenues have been deferred or not yet earned.

6. Commitments and Contingencies

Lease Commitments

The Company leases office space under non-cancelable operating leases. Certain of the Company's operating leases contain renewal options and rent acceleration clauses. Future minimum payments under the non-cancelable operating leases consisted of the following as of December 31, 2016 (in thousands):

Period	Minimum Future Lease Payments
2017	\$ 3,103
2018	2,774
2019	1,061
2020	717
2021	283
Thereafter	19
Total	<u>\$ 7,957</u>

The Company leases its primary office space in Petaluma, California under a lease agreement ("Petaluma Lease") that extended through February 2014. On January 28, 2013, the Company entered into an amendment to its Petaluma Lease ("Amendment") to extend the lease term to February 2019. In connection with the Petaluma Lease and the Amendment, the Company received lease incentives of \$1.2 million and \$0.4 million, respectively, which can be used for leasehold improvements or be applied as credits to rent payments. The Company capitalized the full amount of the lease incentives upon inception of the respective agreement and these incentives are being amortized to reduce rent expense over the extended lease term. As of December 31, 2016, total unamortized lease incentive was \$0.2 million of which \$0.1 million and \$0.1 million were included in "Accrued liabilities" and "Other long-term liabilities," respectively, in the Consolidated Balance Sheet as of December 31, 2016. Payments under the Company's operating leases that escalate over the term of the lease are recognized as rent expense on a straight-line basis.

The above table also includes future minimum lease payments primarily for our facilities in Minneapolis, Minnesota; Acton, Massachusetts; Nanjing, China; Richardson, Texas; and San Jose, and Santa Barbara, California, which expire at various dates through 2022.

For the years ended December 31, 2016, 2015, and 2014, total rent expense of the Company, net of sublease income, was \$3.7 million, \$3.5 million, and \$4.1 million, respectively.

Purchase Commitments

The Company's primary contract manufacturers place orders for component inventory in advance based upon the Company's build forecasts in order to reduce manufacturing lead times and ensure adequate component supply. The components are used by the contract manufacturers to build the products included in the build forecasts. The Company does not take ownership of the components and any outstanding orders do not represent firm purchase commitments pursuant to the Company's agreement with the contract manufacturer. The Company will provide purchase orders to its contract manufacturers in order to fulfill its monthly finished product inventory requirements. The Company incurs a liability when the contract manufacturer has converted the component inventory to a finished product and takes ownership of the inventory when transferred to the designated shipping warehouse. However, historically, the Company has reimbursed its primary contract manufacturer for component inventory purchases when this inventory has been rendered excess or obsolete, for example

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due to manufacturing and engineering change orders resulting from design changes, manufacturing discontinuation of parts by its suppliers, or in cases where inventory levels greatly exceed projected demand. The estimated excess and obsolete inventory liabilities related to such manufacturing and engineering change orders and other factors, which are included in accrued liabilities in the accompanying balance sheets, were \$1.3 million and \$1.0 million as of December 31, 2016 and 2015, respectively. The Company records these amounts in cost of products and services in its Consolidated Statements of Comprehensive Loss.

As of December 31, 2016, the Company had non-cancelable outstanding purchase orders of \$19.0 million for inventories to be delivered by its suppliers, including contract manufacturers, within one year.

Contingencies

The Company evaluates the circumstances regarding outstanding and potential litigation and other contingencies on a quarterly basis to determine whether there is at least a reasonable possibility that a loss exists requiring accrual or disclosure, and if so, whether an estimate of the possible loss or range of loss can be made, or whether such an estimate cannot be made. When a loss is probable and reasonably estimable, the Company accrues for such amount based on its estimate of the probable loss considering information available at the time. When a loss is reasonably possible, the Company discloses the estimated possible loss or range of loss in excess of amounts accrued if material. Except as otherwise disclosed below, the Company does not believe that there was a reasonable possibility that a material loss may have been incurred during the period presented with respect to the matters disclosed.

Accrued Warranty and Retrofit

The Company provides a standard warranty for its hardware products. Hardware generally has a one -, three -, or five -year standard warranty from the date of shipment. Under certain circumstances, the Company also provides fixes on specifically identified performance failures for products that are outside of the standard warranty period and recognizes estimated costs related to retrofit activities upon identification of such product failures. The Company accrues for potential warranty and retrofit claims based on the Company's historical product failure rates and historical costs incurred in correcting product failures along with other relevant information related to any specifically identified product failures. The Company's warranty and retrofit accruals are based on estimates of losses that are probable based on information available. The adequacy of the accrual is reviewed on a periodic basis and adjusted, if necessary, based on additional information as it becomes available.

Changes in the Company's warranty and retrofit reserves in the periods as indicated were as follows (in thousands):

	Years Ended December 31,		
	2016	2015	2014
Balance at beginning of period	\$ 9,564	\$ 9,553	\$ 10,856
Provision for warranty and retrofit charged to cost of revenue	9,898	4,661	3,394
Utilization of reserve	(6,816)	(4,115)	(3,328)
Adjustments to pre-existing reserve	(432)	(535)	(1,369)
Balance at end of period	\$ 12,214	\$ 9,564	\$ 9,553

Litigation

From time to time, the Company is involved in various legal proceedings arising from the normal course of business activities.

Steinhardt v. Howard-Anderson, et al.

As previously disclosed, in connection with the Company's February 22, 2011 merger transaction with Occam Networks, Inc. ("Occam") a complaint was filed on October 6, 2010 by stockholders of Occam in the Delaware Court of Chancery styled as *Steinhardt v. Howard-Anderson, et al.* (Case No. 5878-VCL). The complaint, as initially amended, sought injunctive relief rescinding the merger transaction and an award of damages in an unspecified amount, as well as plaintiffs' costs, attorneys' fees, and other relief, and also alleged that Occam (which has since merged into Calix), each Occam director and the Occam CFO breached their fiduciary duties by failing to attempt to obtain the best purchase price for Occam and failing to disclose certain allegedly material facts about the merger transaction in the preliminary proxy statement and prospectus included in the Registration Statement on Form S-4 for the transaction. In July 2015, the complaint was amended to add Wilson Sonsini Goodrich & Rosati, P.C. ("Wilson Sonsini"), Occam's counsel and former defense counsel in this lawsuit. Trial on the matter commenced on April 11, 2016 before the Delaware Court of Chancery.

On April 14, 2016, the parties entered into a memorandum of understanding of a settlement in principle ("Settlement") to resolve all of the claims pending before the Delaware Court of Chancery and related claims for a total settlement consideration of \$35.0 million. The Settlement was made without any admission of any wrongdoing on the part of the Company or its officers and directors. Further, the Settlement terms provide that neither the Company nor any of its officers or directors would be required to make any contribution to the settlement consideration of \$35 million to be paid for the benefit of the plaintiff class. On May 31, 2016, the parties signed a global settlement agreement reflecting the terms of the Settlement and filed the agreement for court approval. The court approved the global settlement at a hearing held on August 26, 2016 and, on September 7, 2016, issued its Order and Final Judgment, terminating the case before the Delaware Court of Chancery.

Under the terms of the Settlement (and separate from the settlement consideration), the Company was to receive a cash payment of \$4.5 million in partial recovery of its out-of-pocket expenses incurred in the litigation, payable to the Company within 45 days of the court's order entering judgment in the litigation unless an appeal is timely filed. No appeals were filed and, in November 2016, the Company received the \$4.5 million cash payment. Accordingly, the Company recognized \$4.5 million as "Litigation settlement gain" in the

year ended December 31, 2016, presented as a reduction to operating expenses in the accompanying Consolidated Statements of Comprehensive Loss.

The Company did not previously accrue any estimated loss in connection with this action and, as a result of the Settlement, will not recognize any loss related to this action. The Company incurred defense costs related to this litigation in connection with its obligations, under certain circumstances, to hold harmless and indemnify each of the former Occam directors and officers named as defendants in this action against judgments, fines, settlements and expenses related to claims against such directors and officers to the fullest extent permitted under Delaware law and Occam's bylaws and certificate of incorporation. In addition, the Company has paid fees and expenses incurred by Jefferies in connection with this matter pursuant to Jefferies indemnity demand under the engagement letter between Occam and Jefferies. Defense costs that were in excess of available insurance coverage or for which the Company's insurance carriers denied coverage were recorded as operating expense in the Company's Consolidated Statement of Comprehensive Loss in the periods incurred. Until the Settlement was reached, the Company continued to incur significant litigation expenses, including expenses that were not covered by insurance, to defend and litigate this matter. The Company recorded litigation defense costs and expenses in excess of its insurance coverage of \$6.4 million, \$3.7 million, and \$1.0 million for the years ended December 31, 2016, 2015, and 2014, respectively, as operating expense in the accompanying Consolidated Statements of Comprehensive Loss.

The Company is not currently a party to any other legal proceedings that, if determined adversely to the Company, in management's opinion, are currently expected to individually or in the aggregate have a material adverse effect on the Company's business, operating results or financial condition taken as a whole.

Guarantees

The Company from time to time enters into contracts that require it to indemnify various parties against claims from third parties. These contracts primarily relate to (i) certain real estate leases, under which the Company may be required to indemnify property owners for environmental and other liabilities, and other claims arising from the Company's use of the applicable premises, (ii) agreements with the Company's officers, directors, and certain employees, under which the Company may be required to indemnify such persons for liabilities arising out of their relationship with the Company, (iii) contracts under which the Company may be required to indemnify customers against third-party claims that a Company product infringes a patent, copyright, or other intellectual property right and (iv) procurement or license agreements, under which the Company may be required to indemnify licensors or vendors for certain claims that may be brought against them arising from the Company's acts or omissions with respect to the supplied products or technology.

Because any potential obligation associated with these types of contractual provisions are not quantified or stated, the overall maximum amount of the obligation cannot be reasonably estimated. Historically, the Company has not been required to make payments under these obligations, and no liabilities have been recorded for these obligations in the accompanying Consolidated Balance Sheets.

7. Net Loss per Share

The following table sets forth the computation of basic and diluted net loss per share for the periods indicated (in thousands, except per share data):

	Years Ended December 31,		
	2016	2015	2014
Numerator:			
Net loss	\$ (27,402)	\$ (26,333)	\$ (20,814)
Denominator:			
Weighted-average common shares outstanding	48,730	51,489	50,808
Basic and diluted net loss per common share	<u>\$ (0.56)</u>	<u>\$ (0.51)</u>	<u>\$ (0.41)</u>
Potentially dilutive shares, weighted-average	5,890	6,120	5,020

For the years ended December 31, 2015 and 2014, unvested restricted stock awards are included in the calculation of basic weighted-average shares because such shares are participating securities; however, the impact was immaterial. All restricted stock awards completed their vesting on July 20, 2015.

Potentially dilutive shares have been excluded from the computation of diluted net loss per common share when their effect is antidilutive. These antidilutive shares were primarily from stock options, restricted stock units and performance restricted stock awards. For each of the periods presented where the Company reported a net loss, the effect of all potentially dilutive securities would be antidilutive, and as a result diluted net loss per common share is the same as basic net loss per common share.

8. Stockholders' Equity

Common Stock

Holders of our common stock are entitled to receive dividends, if any, as may be declared from time to time by our board of directors out of legally available funds. No dividends have been declared or paid as of December 31, 2016. In the event of our liquidation, dissolution or winding up, holders of our common stock will be entitled to share ratably in the net assets legally available for distribution to stockholders after the payment of all of our debts and other liabilities and the satisfaction of any liquidation preference granted to the holders of any then outstanding shares of preferred stock.

Preferred Stock

The board of directors has the authority, without action by stockholders with the exception of stockholders who hold board positions, to designate and issue up to 5.0 million shares of preferred stock in one or more series and to fix the rights, preferences, privileges and restrictions thereof. These rights, preferences and privileges could include dividend rights, conversion rights, voting rights, terms of redemption, liquidation preferences, sinking fund terms and the number of shares constituting any series or the designation of such series, any or all of which may be greater than the rights of common stock. The issuance of the Company's preferred stock could adversely affect the voting power of holders of common stock and the likelihood that such holders will receive dividend payments and payments upon liquidation. In addition, the issuance of preferred stock could have the effect of delaying, deferring or preventing a change in control of the Company or other corporate action. Subsequent to the Company's initial public offering and the conversion of all preferred stock outstanding at that date, the board of directors has not designated any rights, preference or powers of any preferred stock and no shares of preferred stock have been issued.

Equity Incentive Plans

The Company currently maintains two equity incentive plans, the 2002 Stock Plan ("2002 Plan") and the 2010 Equity Incentive Award Plan ("2010 Plan"). These plans were approved by the stockholders. Under the 2002 Plan, the Company may grant incentive stock options at a price not less than 100% of the fair market value of the common stock on the date of grant and non-statutory stock options at a price not less than 100% of the fair market value of the common stock on the date of grant. Before April 2004, certain options could be granted with the right to exercise those options before vesting. The majority of the stock options granted under the 2002 Plan vest over 4 years and expire in 10 years .

The 2010 Plan allows the Company to grant stock options, restricted stock awards ("RSA"), restricted stock units ("RSU"), performance restricted stock units ("PRSU"), stock appreciation rights, dividend equivalents, deferred stock, and stock payments to employees, directors and consultants of the Company. A total of 4,666,666 shares of common stock were reserved for future issuance under the 2010 Plan, which became effective upon the completion of the Company's initial public offering of common stock. In addition, on the first day of each year beginning in 2011 and ending in 2020, the 2010 Plan provides for an annual automatic increase to the shares reserved for issuance and no more than 17,150,494 shares of Common Stock may be issued upon the exercise of Incentive Stock Options. Pursuant to the automatic annual increase, a total of 3,999,996 additional shares had been reserved under the 2010 Plan since 2011.

Upon the effectiveness of the 2010 Plan, equity awards were granted only under the 2010 Plan and shares of common stock previously reserved for issuance under the prior plans became available for issuance under the 2010 Plan. To date, awards granted under the 2010 Plan consist of stock options, RSAs, RSUs and PRSUs.

Stock options granted under the 2010 Plan are granted in general at a price not less than 100% of the fair market value of the common stock on the date of grant. Prior to 2016, stock options issued under the 2010 Plan generally vest 25% on the first anniversary of the vesting commencement date and on a monthly basis thereafter for a period of an additional three years . Stock options granted during fiscal 2016 vest 25% on the first anniversary of the vesting commencement date and on a quarterly basis thereafter for a period of an additional three years. The options have a maximum term of ten years .

Each RSU granted under the 2010 Plan represents a right to receive one share of the Company's common stock (subject to adjustment for certain specified changes in the capital structure of the Company) upon the completion of a specific period of continued service. The majority of RSUs granted vest over four years .

In July 2011, the Company granted 423,000 RSAs to executives under the 2010 Plan, which vest 25% per year for 4 years from the grant date . Upon issuance of RSA, the holder is entitled to have all the rights of a stockholder, subject to the restrictions in his or her Award Agreement, including the right to receive all dividends and other distributions paid or made with respect to the shares. All RSAs completed their vesting on July 20, 2015.

In 2012, the Company commenced granting PRSUs to its executives with two -year and three -year performance periods. The performance criterion is based on the relative total shareholder return ("TSR") of Calix common stock as compared to the TSR of the Company's peer group. The TSR is calculated by dividing (a) the average closing trading price for the 90 -day period ending on the last day of the applicable performance period by (b) the average closing trading price for the 90 -day period immediately preceding the first day of the applicable performance period. This TSR is then used to derive the achievement ratio, which is then multiplied by the number of units in the grant to derive the common stock to be issued for each performance period, which may equal from zero percent (0%) to two hundred percent (200%) of the target award.

In 2016, the Company granted 550,000 PRSUs to its executives. These particular performance-based awards contain a one -year performance period and a subsequent two -year service period. The performance target is based on the Company's revenue during the performance period and accounted for as a performance condition. After the one -year performance period, if the performance target is met and subject to certification by the Compensation Committee, each PRSU award shall vest in respect to 50% of the PRSUs subject to the award in February 2017, 25% in February 2018 and 25% in February 2019, subject to the executive's continuous service with the Company from the grant date through the respective vesting dates. If the performance target is not met, all PRSUs granted under this award shall be immediately forfeited and canceled without vesting of any shares.

Stock Options

The following table summarizes the activity of stock options under the Company's equity incentive plans (in thousands, except per share data):

Stock Options	Number of Shares	Weighted- Average Exercise Price Per Share	Weighted- Average Remaining Contractual Life (in years)	Aggregate Intrinsic Value ⁽¹⁾
Outstanding as of December 31, 2015	2,655	\$ 11.81		
Granted	680	6.96		
Exercised	(3)	5.77		
Forfeited	(3)	7.97		
Expired	(120)	29.31		
Outstanding as of December 31, 2016	3,209	\$ 10.14	6.3	\$ 703
Vested and expected to vest as of December 31, 2016	3,113	\$ 10.23	6.1	\$ 652
Options exercisable as of December 31, 2016	2,125	\$ 11.47	4.9	\$ 201

(1) Amounts represent the difference between the exercise price and the fair market value of common stock at December 31, 2016 for all in the money options outstanding.

During the years ended December 31, 2016, 2015, and 2014, total intrinsic value of stock options exercised was \$5.0 thousand, \$0.3 million, and \$0.6 million, respectively. Total cash received from employees as a result of stock option exercises in 2016, 2015, and 2014 was \$17.0 thousand, \$0.6 million, and \$1.7 million, respectively. Total fair values of stock options vested during 2016, 2015, and 2014 were \$1.9 million, \$2.8 million, and \$3.7 million, respectively.

Restricted Stock Units and Performance Restricted Stock Units

The following table summarizes the activities of the Company's RSUs and PRSUs under the Company's equity incentive plans (in thousands, except per share data):

	RSUs		PRSUs	
	Number of Shares	Weighted- Average Grant Date Fair Value Per Share	Number of Shares	Weighted- Average Grant Date Fair Value Per Share
Outstanding at December 31, 2015	2,469	\$ 8.64	184	\$ 9.21
Granted	1,287	6.91	550	7.42
Vested	(919)	8.46	(45)	11.71
Canceled	(239)	8.45	(124)	8.09
Outstanding at December 31, 2016	2,598	\$ 7.86	565	\$ 7.51

Upon vesting of certain RSUs and PRSUs, the Company withheld shares with value equivalent to the employees' minimum statutory obligation for the applicable income and other employment taxes, and remitted the cash to the appropriate taxing authorities. The number of shares withheld was based on the value of the RSUs or PRSUs on their vesting date as determined by the Company's closing stock price. The withheld shares are reserved for future grant and issuance under the 2010 Plan.

Employee Stock Purchase Plan

The Company's 2010 Employee Stock Purchase Plan, as amended ("2010 ESPP") allows employees to purchase shares of the Company's common stock through payroll deductions of up to 15 percent of their annual compensation subject to certain Internal Revenue Code limitations. In addition, no participant may purchase more than 2,000 shares of common stock in each offering period.

Prior to 2015, the offering periods under the 2010 ESPP are six-month periods commencing on June 1 and December 1 of each year. In January 2015, the Compensation Committee of the Company's board of directors approved the change in those six-month period commencement dates to November 2 and May 2 of each year, effective November 2, 2015. In July 2016, the Compensation Committee of the Company's board of directors approved a change in those six-month period commencement dates to May 15 and November 15 of each year, effective May 15, 2017. The ending date of the ESPP offering period commencing on November 2, 2016 will be extended until May 14, 2017 as a result of this change. The price of common stock purchased under the plan is 85 percent of the lower of the fair market value of the common stock on the commencement date and exercise date of each six-month offering period.

The 2010 ESPP, as amended in 2012, provides for the issuance of a maximum of 4.3 million shares of common stock. During the twelve months ended December 31, 2016, 1,009,911 shares were purchased and issued. As of December 31, 2016, there were 0.1 million shares available for issuance.

Stock Based Compensation

Stock-based compensation expense associated with stock options, RSUs, PRSUs, RSAs, and purchase rights under the ESPP is measured at the grant date based on the fair value of the award, and is recognized, net of forfeitures, as expense over the remaining requisite service period on a straight-line basis. During the years ended December 31, 2016, 2015, and 2014, the Company recorded stock-based compensation expense of \$14.3 million, \$13.8 million, and \$16.0 million, respectively.

The following table summarizes the weighted-average grant date fair values of the Company's stock-based awards granted in the periods indicated:

	Years Ended December 31,		
	2016	2015	2014
Stock options	\$ 3.58	\$ 4.56	\$ 4.79
RSUs	\$ 6.91	\$ 8.59	\$ 8.72
PRSUs	\$ 7.42	N/A	\$ 9.16
ESPP	\$ 1.92	\$ 2.03	\$ 2.46

The Company values the RSUs at the closing market price of the Company's common stock on the date of grant.

Stock-based compensation expense associated with PRSUs with graded vesting features and which contain both a performance and a service condition is measured based on the closing market price of the Company's common stock on the date of grant, and is recognized, net of forfeitures, as expense over the requisite service period using the graded vesting attribution method. Compensation expense is only recognized if the Company has determined that it is probable that the performance condition will be met. The Company reassesses the probability of vesting at each reporting period and adjusts compensation expense based on its probability assessment. Based on the Company's actual revenue recognized during fiscal 2016, the performance condition related to PRSUs granted to executives in 2016 was determined to be met as of December 31, 2016. Accordingly, the corresponding stock-based compensation expense from the grant date to December 31, 2016 of \$2.4 million was recorded in fiscal 2016.

The fair value of the PRSU with a market condition is estimated on the date of award, using a Monte Carlo simulation model to estimate the TSR of the Company's stock in relation to the peer group over each performance period. Compensation cost on PRSUs with a market condition is not adjusted for subsequent changes in the Company's stock performance or the level of ultimate vesting.

The Company estimates the fair value of stock options and purchase rights under the ESPP at the grant date using the Black-Scholes option-pricing model. This model requires the use of the following assumptions:

- (i) Expected volatility of the Company's common stock - The Company computes its expected volatility assumption based on a blended volatility (50% historical volatility and 50% implied volatility from traded options on the Company's common stock). The selection of a blended volatility assumption was based upon the Company's assessment that a blended volatility is more representative of the Company's future stock price trend as it weighs the historical volatility with the future implied volatility.
- (ii) Expected life of the option award - Represents the weighted-average period that the stock options are expected to remain outstanding. The Company's computation of expected life utilizes the simplified method in accordance with Staff Accounting Bulletin No. 110 ("SAB 110") due to the lack of sufficient historical exercise data to provide a reasonable basis upon which to estimate expected term. The mid-point between the vesting date and the expiration date is used as the expected term under this method.
- (iii) Expected dividend yield - Assumption is based on the Company's history of not paying dividends and no future expectations of dividend payouts.
- (iv) Risk-free interest rate - Based on the U.S. Treasury yield curve in effect at the time of grant with maturities approximating the grant's expected life.

The following table summarizes the weighted-average assumptions used in estimating the grant-date fair value of stock options and of each employee's purchase right under the ESPP in the periods indicated:

Stock Options	Years Ended December 31,		
	2016	2015	2014
Expected volatility	53%	52%	52%
Expected life (years)	6.25	6.25	6.21
Expected dividend yield	—	—	—
Risk-free interest rate	1.60%	1.56%	1.87%

ESPP	Years Ended December 31,		
	2016	2015	2014
Expected volatility	46%	46%	45%
Expected life (years)	0.52	0.46	0.50
Expected dividend yield	—	—	—
Risk-free interest rate	0.47%	0.18%	0.07%

In addition, the Company applies an estimated forfeiture rate to awards granted and records stock-based compensation expense only for those awards that are expected to vest. Forfeiture rates are estimated at the time of grant based on the Company's historical experience. Further, to the extent the Company's actual forfeiture rate is different from management's estimate, stock-based compensation is adjusted accordingly.

As of December 31, 2016, unrecognized stock-based compensation expenses by award type, net of estimated forfeitures, and their expected weighted-average recognition periods are summarized in the following table (in thousands).

	As of December 31, 2016			
	Stock Option	RSU	PRSU	ESPP
Unrecognized stock-based compensation expense	\$ 3,661	\$ 13,380	\$ 1,328	\$ 721
Weighted-average amortization period (in years)	2.9	2.5	0.9	0.4

Common Stock Warrants

Warrants to purchase convertible preferred stock that did not expire at the close of the Company's initial public offering, in March 2010, converted to warrants to purchase common stock at the applicable conversion rate for the related preferred stock. As of December 31, 2016, the following warrants to purchase common stock were outstanding (in thousands, except per share data):

Expiration Date	Exercise Price Per Share	Number of Warrants Outstanding
September 4, 2017	\$ 19.56	15

Shares Reserved for Future Issuance

The Company had common shares reserved for future issuance as follows (in thousands):

	As of December 31,		
	2016	2015	2014
Stock options outstanding	3,209	2,655	3,701
Restricted stock units outstanding	2,598	2,469	1,734
Performance restricted stock units outstanding	565	184	362
Shares available for future grant under 2010 Plan	1,603	2,749	2,283
Shares available for future issuance under ESPP	119	1,129	1,891
Common stock warrants	15	15	15
Total	8,109	9,201	9,986

Stock Repurchase

On April 26, 2015, the Company's board of directors approved a program to repurchase up to \$40 million of its common stock from time to time. This stock repurchase program commenced in May 2015 and was completed in March 2016.

Under this program, stock was purchasable in open market or private transactions, through block trades, and/or pursuant to any trading plan adopted in accordance with Rule 10b5-1 of the Exchange Act and any open market purchases were to be made in accordance with the limitations set out in Rule 10b-18 of the Exchange Act. Further, decisions to consummate repurchases (including any decision to adopt a 10b5-1 plan for this purpose) were to be made at management's discretion at prices management considers to be attractive and in the best interests of the Company and its stockholders.

During the year ended December 31, 2016, the Company repurchased 1,789,287 shares of common stock for \$12.8 million at an average price of \$7.16 per share. During the year ended December 31, 2015, the Company repurchased 3,540,530 shares of common stock for \$27.2 million at an average price of \$7.68 per share. In March 2016, the Company completed the \$40 million stock repurchase program and has repurchased a total of 5,329,817 shares of common stock from May 2015 to March 2016 at an average price of \$7.50 per share. The Company uses the cost method to account for common stock repurchases held in treasury. The price paid for the stock is charged to the treasury stock account shown separately within stockholders' equity as a contra-equity account.

9. Employee Benefit Plan

The Company sponsors a 401(k) tax-deferred savings plan for all employees who meet certain eligibility requirements. Participants may contribute, on a pre-tax basis, a percentage of their annual compensation, but not to exceed a maximum contribution amount pursuant to Section 401(k) of the Internal Revenue Code. The Company, at the discretion of the board of directors, may make additional matching contributions on behalf of the participants. The Company made matching contributions totaling \$2.1 million, \$1.8 million, and \$1.5 million in 2016, 2015, and 2014, respectively.

10. Accumulated Other Comprehensive Income (Loss)

The table below summarizes the changes in accumulated other comprehensive income (loss) by component for the periods indicated (in thousands).

	Year Ended December 31, 2016		
	Unrealized Gains and Losses on Available-for-Sale Marketable Securities	Foreign Currency Translation Adjustments	Total
Balance at beginning of period	\$ (94)	\$ (101)	\$ (195)
Other comprehensive income (loss)	88	(549)	(461)
Balance at end of period	\$ (6)	\$ (650)	\$ (656)

	Year Ended December 31, 2015		
	Unrealized Gains and Losses on Available-for-Sale Marketable Securities	Foreign Currency Translation Adjustments	Total
Balance at beginning of period	\$ (58)	\$ 138	\$ 80
Other comprehensive loss	(36)	(239)	(275)
Balance at end of period	\$ (94)	\$ (101)	\$ (195)

	Year Ended December 31, 2014		
	Unrealized Gains and Losses on Available-for-Sale Marketable Securities	Foreign Currency Translation Adjustments	Total
Balance at beginning of period	\$ —	\$ 190	\$ 190
Other comprehensive loss before reclassification adjustment	(57)	(52)	(109)
Reclassification adjustment for realized gains on marketable securities included in net loss	(1)	—	(1)
Other comprehensive loss	(58)	(52)	(110)
Balance at end of period	\$ (58)	\$ 138	\$ 80

Realized gains and losses on sales of available-for-sale marketable securities, if any, are reclassified from accumulated other comprehensive income (loss) to "Other income (expense)" in our Consolidated Statements of Comprehensive Loss.

11. Credit Facility

The Company had a revolving credit facility ("Prior Credit Facility") of \$30.0 million with Silicon Valley Bank based upon a percentage of eligible accounts receivable, which matured on June 30, 2013. After the Prior Credit Facility matured on June 30, 2013, the Company cash collateralized the outstanding letters of credit with Silicon Valley Bank. During the first quarter of 2015, Silicon Valley Bank subsequently released the \$0.3 million cash restricted for collateralizing the outstanding letters of credit reported as "restricted cash" in the Company's Consolidated Balance Sheet as of December 31, 2014.

The Company entered into a credit agreement with Bank of America, N.A. on July 29, 2013 (as amended on December 23, 2015, the "Credit Agreement"). The Credit Agreement is structured such that other financial institutions can at a later time become party to the Credit Agreement through an amendment via a syndication process (collectively, together with Bank of America, N.A., the "Lenders"). The Credit

Agreement provides for a revolving facility in the aggregate principal amount of up to \$50.0 million, with any borrowings limited to a maximum consolidated leverage ratio of consolidated funded indebtedness to consolidated EBITDA (as defined in the Credit Agreement). In addition, the Credit Agreement includes a \$20.0 million sublimit for the issuance of letters of credit and a \$10.0 million sublimit for a swingline facility. Subject to customary conditions, up to \$25.0 million of the revolving facility may be converted to a term loan facility at any time prior to the maturity of the revolving facility. The revolving facility matures on September 30, 2018. The credit facility is secured by substantially all of the assets of the Company, including its intellectual property. Proceeds of the credit facility may be used for general corporate purposes and permitted acquisitions.

Loans under the credit facility bear interest at an annual rate equal to the base rate plus 0.75% to 1.25% or LIBOR plus 2.00% to 2.50% based on a consolidated leverage ratio of consolidated funded indebtedness to consolidated EBITDA (as defined in the Credit Agreement). Interest on the revolving facility is due quarterly, and any outstanding interest and principal is due on the maturity date of the revolving facility. The Company is required to repay principal on a term loan in twenty equal quarterly payments from the date the Company enters into a term loan, and all outstanding principal and accrued interest is due on the revolving facility maturity date. Swingline loans must be repaid on the earlier of (i) ten business days after a loan is made and (ii) the revolving facility maturity date. The Company is also required to pay commitment fees of 0.25% per year on any unused portions of this facility.

The credit facility includes affirmative and negative covenants applicable to the Company that are typical for credit facilities of this type. Furthermore, the Credit Agreement requires us to maintain certain financial covenants, including a maximum consolidated leverage ratio, and a minimum consolidated liquidity ratio of cash, cash equivalents and accounts receivable to consolidated funded indebtedness. As of December 31, 2016, the Company was in compliance with these requirements. The credit facility also includes customary events of default, the occurrence and continuation of which would provide the Lenders with the right to demand immediate repayment of any principal and unpaid interest under the credit facility, and to exercise remedies against us and the collateral securing the loans under the credit facility.

As of December 31, 2016, no revolving loans were drawn under the Credit Agreement, as amended.

The Company incurred debt issuance costs that were directly attributable to the original issuance and extension of this credit facility of \$0.3 million in 2013 and \$0.1 million in 2015, respectively. These costs are amortized over the extended term of the credit facility. As of December 31, 2016, the unamortized balance of debt issuance costs was \$127.0 thousand, of which \$72.6 thousand were included within "Prepaid expenses and other current assets" and \$54.4 thousand were included within "Other assets" in the Company's Consolidated Balance Sheets.

12. Income Taxes

The domestic and foreign components of loss before provision for incomes taxes were as follows (in thousands):

	Years Ended December 31,		
	2016	2015	2014
Domestic	\$ (28,931)	\$ (27,674)	\$ (21,495)
Foreign	1,876	1,876	1,262
Loss before provision for income taxes	<u>\$ (27,055)</u>	<u>\$ (25,798)</u>	<u>\$ (20,233)</u>

The Company recorded a provision for income taxes of \$0.3 million, \$0.5 million, and \$0.6 million, in 2016, 2015, and 2014, respectively. The income tax provision for 2016 primarily consisted of state and foreign income taxes.

Provision for income taxes consisted of the following for the periods indicated (in thousands):

	Years Ended December 31,		
	2016	2015	2014
Current:			
State	\$ 102	\$ 90	\$ 104
Foreign	673	493	469
Current income tax	<u>775</u>	<u>583</u>	<u>573</u>
Deferred:			
Foreign	(428)	(48)	8
Deferred income tax	<u>(428)</u>	<u>(48)</u>	<u>8</u>
Provision for income taxes	<u>\$ 347</u>	<u>\$ 535</u>	<u>\$ 581</u>

The differences between the statutory tax rate and the effective tax rate, expressed as a percentage of loss before income taxes, were as follows:

	Years Ended December 31,		
	2016	2015	2014
Federal statutory rate	34.0 %	34.0 %	34.0 %
State statutory rate	6.1 %	2.6 %	2.5 %
Foreign operations	0.6 %	1.1 %	(0.1)%
R&D tax credits	6.4 %	11.2 %	9.2 %
Foreign income inclusion	(0.7)%	(2.4)%	(0.3)%
Non-deductible stock compensation	(5.1)%	(1.9)%	(0.9)%
Other permanent items	(1.4)%	(2.0)%	(1.5)%
Tax true-up	21.0 %	(1.3)%	(0.2)%
Valuation allowance	(62.2)%	(43.4)%	(45.6)%
Effective tax rate	(1.3)%	(2.1)%	(2.9)%

The significant components of the Company's deferred tax assets and liabilities were as follows (in thousands):

	As of December 31,	
	2016	2015
Deferred tax assets:		
Net operating loss carryforwards	\$ 167,668	\$ 167,387
Tax credit carryforwards	36,026	27,654
Depreciation and amortization	2,538	1,947
Accruals and reserves	13,462	12,427
Deferred revenue	12,954	9,822
Stock-based compensation	6,159	5,198
Other	1,124	528
Gross deferred tax assets	239,931	224,963
Valuation allowance	(239,238)	(222,410)
Net deferred tax assets	693	2,553
Deferred tax liabilities:		
Intangible assets	(157)	(2,229)
Other	—	(130)
Gross deferred tax liabilities	(157)	(2,359)
Net deferred tax assets reflected in balance sheet	\$ 536	\$ 194

The Company elected to early adopt Accounting Standards Update No. 2015-17, Balance Sheet Classification of Deferred Taxes ("ASU 2015-17") prospectively on September 27, 2015, the beginning of its 2015 fourth fiscal quarter. In accordance with ASU 2015-17, all deferred tax assets, along with any related valuation allowance, and net of all deferred tax liabilities are classified in the consolidated balance sheet as long-term. Accordingly, the Company classified the net deferred tax assets of \$0.5 million and \$0.2 million as of December 31, 2016 and 2015, in the consolidated balance sheet as long-term.

Management reviews the recognition of deferred tax assets to determine if realization of such assets is more likely than not. The realization of the Company's deferred tax assets is dependent upon future earnings. The Company has been in a cumulative loss position since inception, which represents a significant piece of negative evidence. Using the more likely than not criteria specified in the applicable accounting guidance, this negative evidence cannot be overcome by positive evidence currently available to the Company and as a result the Company has established a full valuation allowance against its deferred tax assets with the exception of certain foreign deferred tax assets. The Company's valuation allowance increased by \$16.8 million and \$9.7 million for the years ended December 31, 2016 and 2015, respectively. As of December 31, 2016 and 2015, respectively, the valuation allowance included \$0.1 million related to excess tax benefits of stock option deductions prior to the adoption of ASC Topic 718.

As of December 31, 2016, the Company had U.S. federal and state net operating losses of approximately \$520.6 million and \$132.2 million, respectively. The U.S. federal net operating loss carryforwards will expire at various dates beginning in 2019 and through 2036 if not utilized. The state net operating loss carryforwards will expire at various dates beginning in 2017 and through 2036, if not utilized. In addition, as of December 31, 2016 and 2015, the Company had \$37.8 million and \$37.8 million in federal deductions, respectively, and \$34.4 million and \$34.2 million in state deductions, respectively, related to excess tax benefits from stock options which are not included in the net operating loss carryforward amounts in the table above since they have not met the realization criteria of ASC Topic 718. The tax benefits from these deductions will be recognized in the statement of operations as benefit from income taxes when realized as a result of the adoption of ASU 2016-19 beginning on January 1, 2017. Additionally, the Company has U.S. federal, California, and other U.S. states research and development credits of approximately \$27.9 million, \$30.3 million, and \$3.0 million, respectively, as of December 31, 2016. The U.S. federal research and development credits will begin to expire in 2020 and through 2036, and the California research and development credits have no

expiration date. The credits related to other various U.S. states will begin to expire in 2017 and through 2031. Based on current activity during 2016, the Company does not anticipate to have further adjustments or limitations to the Company's net operating loss carryforwards.

In December 2015, President Barack Obama signed into law the Protecting Americans from Tax Hikes (PATH) Act of 2015, which makes the Section 41 research credit, which expired on December 31, 2014, a permanent provision of the Internal Revenue Code. The benefit of the reinstated credit did not impact the income statement in the period of enactment, which was the fourth quarter of 2015, as the research and development credit carryforwards are offset by a full valuation allowance.

The Company recognizes deferred tax liabilities associated with outside basis differences on investments in foreign subsidiaries, unless the difference is considered essentially permanent in duration. Thus, the Company has not recorded deferred taxes on approximately \$4.8 million of undistributed earnings, as they are intended to be permanently reinvested. As of December 31, 2016, the determination of the unrecorded deferred tax liability related to these earnings is not practicable. If circumstances change and it becomes apparent that some or all of the undistributed earnings will not be invested indefinitely, or will be remitted in the foreseeable future, an additional deferred tax liability will be recorded for some or all of the outside basis difference.

Uncertain Tax Positions

ASC Topic 740, "Income Taxes," prescribes a recognition threshold and measurement attribute to the financial statement recognition and measurement of a tax position taken or expected to be taken in a tax return. The guidance also provides guidance on derecognition, classification, accounting in interim periods and disclosure requirements for uncertain tax positions. The standard requires the Company to recognize the financial statement effects of an uncertain tax position when it is more likely than not that such position will be sustained upon audit. The Company recognizes accrued interest and penalties related to unrecognized tax benefits as interest expense and income tax expense, respectively, in statements of comprehensive loss.

The following table reconciles the Company's unrecognized tax benefits for the years ended December 31, 2016 and 2015 (in thousands):

	Years Ended December 31,	
	2016	2015
Balance at beginning of period	\$ 16,597	\$ 15,421
Additions for tax positions related to prior year	420	56
Reductions for tax positions related to prior year	(145)	(59)
Additions for tax positions related to current year	1,477	1,179
Balance at end of period	<u>\$ 18,349</u>	<u>\$ 16,597</u>

As of December 31, 2016 and 2015, the Company had unrecognized tax benefits of \$18.3 million and \$16.6 million, respectively, none of which would affect the Company's effective tax rate if recognized. There were no accrued interest or penalties for uncertain income tax as of December 31, 2016.

The Company files tax returns in the United State and various state jurisdictions, the United Kingdom, China and Brazil. The tax years 1999 through 2016 remain open and subject to examination by the appropriate governmental agencies in the U.S. due to tax attribute carryforwards.

13. Segment Information

The Company develops, markets and sells communications access systems and software, and there are no segment managers who are held accountable for operations, operating results and plans for levels or components below the Company unit level. Accordingly, the Company is considered to be in a single reporting segment and operating unit structure. The Company's chief operating decision maker is the Company's Chief Executive Officer, who reviews financial information presented on a Company-wide basis, for purposes of allocating resources and evaluating financial performance.

Geographic Information:

The following is a summary of revenues by geographic region based upon the location of the customers (in thousands):

	Years Ended December 31,		
	2016	2015	2014
United States	\$ 415,629	\$ 360,077	\$ 352,458
Caribbean	12,934	13,358	18,725
Canada	9,064	10,198	9,995
Europe	6,334	11,090	5,948
Other	14,826	12,740	14,101
Total	<u>\$ 458,787</u>	<u>\$ 407,463</u>	<u>\$ 401,227</u>

The Company's property and equipment, net of accumulated depreciation, are located in the following geographical areas (in thousands):

	As of December 31,		
	2016	2015	2014
United States	\$ 15,321	\$ 15,362	\$ 17,852
China	2,663	1,787	2,292
Total	<u>\$ 17,984</u>	<u>\$ 17,149</u>	<u>\$ 20,144</u>

14. Quarterly Financial Data—Unaudited

The Company's fiscal year begins on January 1st and ends on December 31st. Quarterly periods are based on a 4-4-5 fiscal calendar with the first, second and third fiscal quarters ending on the 13th Saturday of each fiscal period. As a result, the Company had one fewer day in the first quarter of 2016 and two more days in the fourth quarter of 2016 than in the respective 2015 periods.

The following table presents selected unaudited quarterly financial data of the Company (in thousands, except per share data). The Company's quarterly results of operations for these periods are not necessarily indicative of future results of operations.

	Fiscal Year 2016 Quarter Ended			
	March 26	June 25	September 24	December 31
Revenue	\$ 98,375	\$ 107,425	\$ 121,187	\$ 131,800
Gross profit	45,482	50,006	53,544	52,186
Operating income (loss)	(10,738)	(5,881)	735	(12,235)
Net income (loss)	(10,729)	(5,826)	636	(11,483)
Net income (loss) per common share, basic	\$ (0.22)	\$ (0.12)	\$ 0.01	\$ (0.23)
Net income (loss) per common share, diluted	\$ (0.22)	\$ (0.12)	\$ 0.01	\$ (0.23)

	Fiscal Year 2015 Quarter Ended			
	March 28	June 27	September 26	December 31
Revenue	\$ 91,038	\$ 99,129	\$ 112,297	\$ 104,999
Gross profit	42,490	48,289	53,113	46,537
Operating income (loss)	(11,887)	(5,765)	877	(9,735)
Net income (loss)	(11,930)	(5,779)	922	(9,546)
Net income (loss) per common share, basic	\$ (0.23)	\$ (0.11)	\$ 0.02	\$ (0.19)
Net income (loss) per common share, diluted	\$ (0.23)	\$ (0.11)	\$ 0.02	\$ (0.19)

ITEM 9. Changes in and Disagreements with Accountants on Accounting and Financial Disclosure

Effective on February 29, 2016, the Audit Committee (the "Audit Committee") of the Company's board of directors approved the appointment of KPMG LLP to serve as the Company's independent registered public accounting firm, and determined not to re-engage Ernst & Young LLP ("EY"), the Company's former independent registered public accounting firm in that role. Incorporated herein by reference is Item 4.01 from the Current Report on Form 8-K, including the letter of EY filed as Exhibit 16.1 thereto, filed by the Company with the Commission on March 4, 2016. There were no disagreements with accountants on accounting principles or practices, financial statement disclosure, auditing scope or procedures, or other reportable events requiring disclosure pursuant to Item 304(b) of Regulation S-K.

ITEM 9A. Controls and Procedures

Evaluation of Disclosure Controls and Procedures

As of the end of the period covered by this report, which we refer to as the evaluation date, we carried out an evaluation under the supervision and with the participation of management, including our principal executive officer and principal financial officer, of our disclosure controls and procedures (as defined in Rules 13a-15(e) and 15d-15(e) under the Exchange Act).

The purpose of this evaluation was to determine whether as of the evaluation date our disclosure controls and procedures were effective to provide reasonable assurance that the information we are required to disclose in our filings with the Securities and Exchange Commission, (i) is recorded, processed, summarized and reported within the time periods specified in the SEC's rules and forms and (ii) accumulated and communicated to our management, including our principal executive officer and our principal financial officer, as appropriate to allow timely decisions regarding required disclosure. Based upon this evaluation, our principal executive officer and our principal financial officer concluded that our disclosure controls and procedures were effective as of the end of the period covered by this report.

Management's Report on Internal Control Over Financial Reporting

Management is responsible for establishing and maintaining adequate internal control over financial reporting. Our internal control over financial reporting is designed to provide reasonable assurance regarding the reliability of financial reporting and the preparation of financial statements for external purposes in accordance with generally accepted accounting principles. Because of its inherent limitations, internal control over financial reporting may not prevent or detect misstatements. Also, projections of any evaluation of effectiveness to future periods are subject to the risk that controls may become inadequate because of changes in conditions, or that the degree of compliance with the policies or procedures may deteriorate. Management has evaluated the effectiveness of our internal control over financial reporting as of December 31, 2016 using the criteria set forth in the Internal Control—Integrated Framework issued by the Committee of Sponsoring Organizations of the Treadway Commission ("COSO") (2013 framework). Based on our evaluation, management has concluded that we maintained effective control over financial reporting as of December 31, 2016 based on the COSO criteria. The effectiveness of our internal control over financial reporting as of December 31, 2016 has been audited by KPMG LLP, an independent registered public accounting firm, as stated in their report included in this Annual Report on Form 10-K.

Limitations on the Effectiveness of Controls

Our disclosure controls and procedures provide our principal executive officer and our principal financial officer reasonable assurances that our disclosure controls and procedures will achieve their objectives. However, our management, including our principal executive officer and our principal financial officer, does not expect that our disclosure controls and procedures or our internal control over financial reporting can or will prevent all human error. A control system, no matter how well designed and implemented, can provide only reasonable, not absolute, assurance that the objectives of the control system are met. Furthermore, the design of a control system must reflect the fact that there are internal resource constraints, and the benefit of controls must be weighed relative to their corresponding costs. Because of the limitations in all control systems, no evaluation of controls can provide complete assurance that all control issues and instances of error, if any, within our company are detected. These inherent limitations include the realities that judgments in decision-making can be faulty, and that breakdowns can occur due to human error or mistake. Additionally, controls, no matter how well designed, could be circumvented by the individual acts of specific persons within the organization. The design of any system of controls is also based in part upon certain assumptions about the likelihood of future events, and there can be no assurance that any design will succeed in achieving its stated objectives under all potential future conditions.

Changes in Internal Control over Financial Reporting

There was no change in our internal control over financial reporting identified in connection with the evaluation required by Rule 13a-15(d) and 15d-15(d) of the Exchange Act that occurred during the period covered by this report that has materially affected, or is 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

Information required by this Item 10 relating to our directors is incorporated by reference to the information set forth under the captions "Proposal No. 1—Election of Directors" and "Director Compensation" and in other applicable sections of the Proxy Statement for the 2017 Annual Meeting of Stockholders to be filed with the Securities and Exchange Commission pursuant to Regulation 14A of the Exchange Act, or the Proxy Statement, to be filed within 120 days of the end of the fiscal year covered by this Report. Information required by this Item 10 relating to our officers is incorporated by reference to the information set forth under the captions "Executive Officers" and "Executive Compensation" and in other applicable sections of the Proxy Statement. Information regarding our Section 16 reporting compliance is incorporated by reference to the information set forth under the captions "Security Ownership of Certain Beneficial Owners and Management" and "Section 16(a) Beneficial Ownership Reporting Compliance" of the Proxy Statement.

We have adopted a code of ethics, which applies to all employees, officers and directors of Calix. The Code of Business Conduct and Ethics meets the requirements of a "code of ethics" as defined by Item 406 of Regulation S-K, and applies to our Chief Executive Officer, Chief Financial Officer, and all other employees, as indicated above. The Code of Business Conduct and Ethics also meets the requirements of a code of conduct under NYSE listing standards. The Code of Business Conduct and Ethics is posted on our website at www.calix.com under the links "About Calix—Investor Relations—Corporate Governance—Code of Conduct." We intend to disclose any amendments to the Code of Business Conduct and Ethics, as well as any waivers for executive officers or directors, on our website at www.calix.com.

ITEM 11. Executive Compensation

Information required by this Item 11 relating to executive compensation and other matters is incorporated by reference to the information set forth under the caption "Compensation Discussion and Analysis" and in other applicable sections of the Proxy Statement.

ITEM 12. Security Ownership of Certain Beneficial Owners and Management and Related Stockholder Matters

Information required by this Item 12 relating to security ownership of certain beneficial owners and management and related stockholder matters is incorporated by reference to the information set forth under the caption "Security Ownership of Certain Beneficial Owners and Management" and in other applicable sections of the Proxy Statement. Information regarding securities authorized for issuance under our equity compensation plans is incorporated by reference to the information set forth under the caption "Equity Compensation Plan Information" of the Proxy Statement.

ITEM 13. Certain Relationships and Related Transactions, and Director Independence

Information required by this Item 13 relating to certain relationships and related transactions and director independence is incorporated by reference to the information set forth under the caption "Certain Relationships and Related Transactions" and in other applicable sections of the Proxy Statement.

ITEM 14. Principal Accountant Fees and Services

Information required by this Item 14 relating to principal account fees and services is incorporated by reference to the information set forth under the caption "Principal Accountant Fees and Services" of the Proxy Statement.

PART IV

ITEM 15. Exhibits, Financial Statement Schedules

(a) The following documents are filed as part of this Report:

1. Consolidated Financial Statements

The consolidated financial statements of Calix and the reports of independent registered public accounting firms thereon are set forth under Part II, Item 8 of this report.

Reports of Independent Registered Public Accounting Firms	50
Consolidated Balance Sheets, As of December 31, 2016 and 2015	52
Consolidated Statements of Comprehensive Loss, Years Ended December 31, 2016, 2015 and 2014	53
Consolidated Statements of Stockholders' Equity, Years Ended December 31, 2016, 2015 and 2014	54
Consolidated Statements of Cash Flows, Years Ended December 31, 2016, 2015 and 2014	55
Notes to Consolidated Financial Statements	56

2. Consolidated Financial Statement Schedules

All schedules have been omitted because they are not applicable, not required, not presently in amounts sufficient to require submission of the schedule, or the information required to be set forth therein is included in the consolidated financial statements or notes thereto.

3. Exhibits.

See the Exhibit Index immediately following the signature page of this Annual Report on Form 10-K. The documents listed in the Exhibit Index are filed with or incorporated by reference in this report. Where such filing is made by incorporation by reference to a previously filed registration statement or report, such registration statement or report is identified in parentheses. We will furnish any exhibit upon request to: Calix Investor Relations, Thomas J. Dinges at Tom.Dinges@calix.com.

ITEM 16. Form 10-K Summary

None.

POWER OF ATTORNEY

Each person whose individual signature appears below hereby authorizes and appoints Carl Russo , William J. Atkins and Sheila Cheung , and each of them, with full power of substitution and re-substitution and full power to act without the other, as his true and lawful attorney-in-fact and agent to act in his name, place and stead and to execute in the name and on behalf of each person, individually and in each capacity stated below, and to file any and all amendments to this Annual Report on Form 10-K, and to file the same, with all exhibits thereto, and other documents in connection therewith, with the Securities and Exchange Commission, granting unto said attorneys-in-fact and agents, and each of them, full power and authority to do and perform each and every act and thing, ratifying and confirming all that said attorneys-in-fact and agents or any of them or their or his substitute or substitutes may lawfully do or cause to be done by virtue thereof.

Pursuant to the requirements of the Securities Exchange Act of 1934, this report has been signed below by the following persons on behalf of the registrant and in the capacities indicated on February 28, 2017 .

<u>Signature</u>	<u>Title</u>	<u>Date</u>
<u>/s/ Carl Russo</u> Carl Russo	Chief Executive Officer and Director (Principal Executive Officer)	February 28, 2017
<u>/s/ William J. Atkins</u> William J. Atkins	EVP and Chief Financial Officer (Principal Financial Officer)	February 28, 2017
<u>/s/ Sheila Cheung</u> Sheila Cheung	Vice President, Finance and Accounting (Principal Accounting Officer)	February 28, 2017
<u>/s/ Don Listwin</u> Don Listwin	Chairman of the Board of Directors	February 28, 2017
<u>/s/ Christopher Bowick</u> Christopher Bowick	Director	February 28, 2017
<u>/s/ Kevin DeNuccio</u> Kevin DeNuccio	Director	February 28, 2017
<u>/s/ Michael Everett</u> Michael Everett	Director	February 28, 2017
<u>/s/ Michael Flynn</u> Michael Flynn	Director	February 28, 2017
<u>/s/ Michael Matthews</u> Michael Matthews	Director	February 28, 2017
<u>/s/ Thomas Pardun</u> Thomas Pardun	Director	February 28, 2017
<u>/s/ Kevin Peters</u> Kevin Peters	Director	February 28, 2017

EXHIBIT INDEX

<u>Exhibit Number</u>	<u>Description</u>
2.1	Agreement and Plan of Merger and Reorganization, dated as of September 16, 2010, by and among Calix, Inc., Ocean Sub I, Inc., Ocean Sub II, LLC, Occam Networks, Inc. (filed as Exhibit 2.1 to Calix's Registration Statement on Form S-4 originally filed with the Securities and Exchange Commission on November 2, 2010 (File No. 333-170282), as amended by Amendment No. 1 filed December 14, 2010, as amended by Post-Effective Amendment No. 1, filed December 14, 2010 and as amended by Post-Effective Amendment No. 2, filed February 7, 2011 and incorporated by reference).
3.1	Amended and Restated Certificate of Incorporation of Calix, Inc. (filed as Exhibit 3.3 to Amendment No. 7 to Calix's Registration Statement on Form S-1 filed with the Securities and Exchange Commission on March 23, 2010 (File No. 333-163252) and incorporated by reference).
3.2	Amended and Restated Bylaws of Calix, Inc. (filed as Exhibit 3.5 to Amendment No. 7 to Calix's Registration Statement on Form S-1 filed with the Securities and Exchange Commission on March 23, 2010 (File No. 333-163252) and incorporated by reference).
4.1	Form of Calix, Inc.'s Common Stock Certificate (filed as Exhibit 4.1 to Amendment No. 7 to Calix's Registration Statement on Form S-1 filed with the Securities and Exchange Commission on March 23, 2010 (File No. 333-163252) and incorporated by reference).
4.2	Warrant to Purchase Stock, between Calix, Inc. and Greater Bay Venture Banking, a division of Greater Bay Bank N.A., dated September 4, 2007 (filed as Exhibit 4.27 to Calix's Registration Statement on Form S-1 filed with the SEC on November 20, 2009 (File No. 333-163252) and incorporated by reference).
10.1*	Calix Networks, Inc. Amended and Restated 2002 Stock Plan and related documents (filed as Exhibit 10.2 to Amendment No. 6 to Calix's Registration Statement on Form S-1 filed with the SEC on March 8, 2010 (File No. 333-163252) and incorporated by reference).
10.2*	Calix, Inc. 2010 Equity Incentive Award Plan and related documents (filed as Exhibit 10.2 to Amendment No. 6 to Calix's Registration Statement on Form S-1 filed with the SEC on March 8, 2010 (File No. 333-163252) and incorporated by reference).
10.3	Form of Indemnification Agreement made by and between Calix, Inc. and each of its directors, executive officers and some employees (filed as Exhibit 10.5 to Amendment No. 6 to Calix's Registration Statement on Form S-1 filed with the SEC on March 8, 2010 (File No. 333-163252) and incorporated by reference).
10.4	Lease, between RNM Lakeville, LLC and Calix, Inc., dated February 13, 2009 (filed as Exhibit 10.6 to Calix's Registration Statement on Form S-1 filed with the SEC on November 20, 2009 (File No. 333-163252) and incorporated by reference).
10.5	First Amendment to Lease, by and between 1031, 1035, 1039 North McDowell, LLC and Calix, Inc., effective January 28, 2013 (filed as Exhibit 10.25 to Calix's Form 10-K filed with the SEC on February 22, 2013 (File No. 001-34674) and incorporated by reference).
10.6	Credit Agreement, among Calix, Inc., certain of its subsidiaries, Bank of America, N.A. and the other lenders party thereto, dated July 29, 2013 (filed as Exhibit 10.1 to Calix's Form 10-Q filed with the SEC on August 6, 2013 (File No. 001-34674) and incorporated by reference).
10.7	First Amendment to Credit Agreement dated as of December 23, 2015 by and among Calix, Inc. and Bank of America, N.A. as administrative agent and lender (filed as Exhibit 10.1 to Calix's Form 8-K filed with the SEC on December 28, 2015 (File No. 001-34674) and incorporated by reference).
10.8*	Offer Letter, between Calix, Inc. and Carl Russo, dated November 1, 2006 (filed as Exhibit 10.8 to Amendment No. 1 to Calix's Registration Statement on Form S-1 filed with the SEC on December 31, 2009 (File No. 333-163252) and incorporated by reference).
10.9*	Offer Letter, between Calix, Inc. and John Colvin, dated March 3, 2004 (filed as Exhibit 10.11 to Amendment No. 1 to Calix's Registration Statement on Form S-1 filed with the SEC on December 31, 2009 (File No. 333-163252) and incorporated by reference).
10.10*	Employment Agreement, between Calix, Inc. and Andrew Lockhart, dated February 2, 2011 (filed as Exhibit 10.20 to Calix's Form 10-Q filed with the SEC on May 3, 2012 (File No. 001-34674) and incorporated by reference).
10.11*	Offer Letter, between Calix, Inc. and William Atkins, dated December 21, 2013 (filed as Exhibit 10.15 to Calix's Form 10-K filed with the SEC on February 20, 2014 (File No. 001-34674) and incorporated by reference).
10.12*	Calix, Inc. Amended And Restated Employee Stock Purchase Plan (Effective as of May 23, 2012) (filed as Exhibit 10.1 to Calix's Form 10-Q filed with the SEC on August 7, 2012 (File No. 001-34674) and incorporated by reference).
10.13†	Asset Purchase Agreement between Ericsson Inc. and Calix, Inc., dated August 20, 2012 (filed as Exhibit 10.1 to Calix's Form 10-Q/A filed with the SEC on December 18, 2012 (File No. 001-34674) and incorporated by reference).
10.14*	Calix, Inc. Non-Employee Director Restricted Stock Unit Deferred Compensation Plan, effective January 1, 2013 (filed as Exhibit 10.22 to Calix's Form 10-K filed with the SEC on February 22, 2013 (File No. 001-34674) and incorporated by reference).
10.15*	Calix, Inc. Management Bonus Program Under the 2010 Equity Incentive Award Plan (filed as Exhibit 10.1 to Calix's Form 8-K filed with the SEC on February 28, 2012 (File No. 001-34674) and incorporated by reference).
10.16*	Calix, Inc. Long Term Incentive Program Under the 2010 Equity Incentive Award Plan (filed as Exhibit 10.2 to Calix's Form 8-K filed with the SEC on February 28, 2012 (File No. 001-34674) and incorporated by reference).
10.17*	Calix, Inc. Non-Employee Director Cash Compensation Policy, as amended April 22, 2014 (filed as Exhibit 10.1 to Calix's Form 8-K filed with the SEC on July 8, 2014 (File No. 001-34674) and incorporated by reference).

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<u>Exhibit</u> <u>Number</u>	<u>Description</u>
10.18*	Calix, Inc. Non-Employee Director Equity Compensation Policy, as amended October 18, 2011, July 25, 2012, April 22, 2014 and April 26, 2016.
10.19*	Offer Letter by and between Calix, Inc. and Michael Weening dated May 20, 2016 (filed as Exhibit 10.1 to Calix's Form 10-Q filed with the SEC on August 3, 2016 (File No. 001-34674) and incorporated by reference).
10.20*	Letter Agreement dated June 22, 2016 amending Employment Agreement by and between Calix, Inc. and Andrew Lockhart (filed as Exhibit 10.2 to Calix's Form 10-Q filed with the SEC on August 3, 2016 (File No. 001-34674) and incorporated by reference).
10.21*	Consulting Agreement by and between Calix, Inc. and Kevin Peters dated July 29, 2016 (filed as Exhibit 10.3 to Calix's Form 10-Q filed with the SEC on August 3, 2016 (File No. 001-34674) and incorporated by reference).
10.22*	Amendment to Consulting Agreement effective as of September 3, 2016 by and between Calix, Inc. and Kevin Peters (filed as Exhibit 10.1 to Calix's Form 10-Q filed with the SEC on November 2, 2016 (File No. 001-34674) and incorporated by reference).
10.23*	Settlement Agreement by and between Calix, Inc. and Andrew Lockhart dated December 7, 2016.
10.24*	Offer Letter by and between Calix, Inc. and Greg Billings dated December 8, 2016.
10.25*	Separation Agreement and General Release of All Claims by and between Calix, Inc. and John Colvin dated January 9, 2017.
16.1	Letter of Ernst & Young dated March 4, 2016 (filed as Exhibit 16.1 to Calix's Form 8-K filed with the SEC on March 4, 2016 (File No. 001-34674) and incorporated by reference).
21.1	Subsidiaries of the Registrant.
23.1	Consent of KPMG LLP, independent registered public accounting firm.
23.2	Consent of Ernst & Young LLP, independent registered public accounting firm.
24.1	Power of Attorney (included on signature page to this Annual Report on Form 10-K).
31.1	Certification of Principal Executive Officer of Calix, Inc. Pursuant to Rule 13a-14(a) of the Securities Exchange Act of 1934.
31.2	Certification of Principal Financial Officer of Calix, Inc. Pursuant to Rule 13a-14(a) of the Securities Exchange Act of 1934.
32.1	Certification of Principal Executive Officer and Principle Financial Officer of Calix, Inc. Pursuant to 18 U.S.C. Section 1350, as adopted pursuant to Section 906 of the Sarbanes-Oxley Act of 2002.
101.INS	XBRL Instance Document.
101.SCH	XBRL Taxonomy Extension Schema Document.
101.CAL	XBRL Taxonomy Extension Calculation Linkbase Document.
101.DEF	XBRL Taxonomy Extension Definition Linkbase Document.
101.LAB	XBRL Taxonomy Extension Label Linkbase Document.
101.PRE	XBRL Taxonomy Extension Presentation Linkbase Document.

* Indicates management contract or compensatory plan or arrangement.

† Confidential treatment has been granted as to certain portions of this agreement.

CALIX, INC.

Non-Employee Director Equity Compensation Policy, as amended October 18, 2011, July 25, 2012, April 22, 2014 and April 26, 2016

1. **General.** This Non-Employee Director Equity Compensation Policy (the “Policy”) is adopted by the Board of Directors (the “Board”) in accordance with Section 12.1 of the Calix, Inc. 2010 Equity Incentive Award Plan (as amended from time to time, the “Plan”). Capitalized but undefined terms used herein shall have the meanings provided for in the Plan.
 2. **Board Authority.** Pursuant to Section 12.1 of the Plan, the Board is responsible for adopting a written policy for the grant of Awards under the Plan to Non-Employee Directors, which policy is to specify, with respect to any such Awards, the type of Award(s) to be granted Non-Employee Directors, the number of shares of Common Stock to be subject to Non-Employee Director Awards, the conditions on which such Awards shall be granted, become exercisable and/or payable and expire, and such other terms and conditions as the Board determines in its discretion.
 3. **Initial RSU Grant to Non-Employee Directors.** Each person who is initially elected to the Board as a Non-Employee Director shall be granted, automatically and without necessity of any action by the Board or any committee thereof, on the date of such initial election Restricted Stock Units equal to the result of dividing (i) \$200,000 by (ii) the per share closing price of the Company’s common stock on the date such person commences service as a Non-Employee Director, rounded down to the nearest whole share (subject to adjustment as provided in Section 14.2 of the Plan) (“Initial Director RSUs”); provided, however, that the number of Restricted Stock Units shall be pro-rated based on the Non-Employee Director’s appointment date through the vesting date as set forth in Section 5 below. Members of the Board who are employees of the Company and who subsequently terminate employment with the Company and remain members of the Board shall not receive Initial Director RSUs.
 4. **Subsequent RSU Grants to Non-Employee Directors.** Each person who is a Non-Employee Director immediately following an annual meeting of stockholders (*provided* that, on such date, he or she shall have served on the Board for at least six months prior to the date of such annual meeting) shall be granted, automatically and without necessity of any action by the Board or any committee thereof, on the date of such annual meeting Restricted Stock Units equal to the result of dividing (i) \$120,000 by (ii) the per share closing price of the Company’s common stock on the date of such annual meeting of stockholders, rounded down to the nearest whole share (subject to adjustment as provided in Section 14.2 of the Plan) (“Annual Director RSUs”). Members of the Board who are employees of the Company and who subsequently terminate employment with the Company and remain on the Board, to the extent that they are otherwise eligible, shall receive, after termination of employment with the Company, Annual Director RSUs under this Section 4.
-

5. Terms of Restricted Stock Units Granted to Non-Employee Directors. The Initial Director RSUs shall vest with respect to 100% of the Restricted Stock Units on the earlier of (i) the one-year anniversary of the date of grant or (ii) the day immediately preceding the date of the annual meeting of stockholders that occurs in the year following the year of grant. The Annual Director RSUs shall vest with respect to 100% of the Restricted Stock Units on the day immediately preceding the date of the annual meeting of stockholders that occurs in the year following the year of grant. The shares of Common Stock subject to Restricted Stock Units granted to Non-Employee Directors shall be issued to such Non-Employee Directors on the 30th day following the date the Restricted Stock Units vest. The Restricted Stock Unit agreement evidencing each grant of Initial Director RSUs and Annual Director RSUs shall contain such other terms, provisions and conditions not inconsistent with the Plan as may be determined by the Administrator in its sole discretion.

6. Effect of Acquisition. Upon a Change in Control of the Company, all Awards and all other stock options, restricted stock units and other equity awards with respect to the Common Stock that are held by a Non-Employee Director shall become fully vested and/or exercisable.

7. Effect of Other Plan Provisions. The other provisions of the Plan shall apply to the Awards granted automatically pursuant to this Policy, except to the extent such other provisions are inconsistent with this Policy.

8. Incorporation of the Plan. All applicable terms of the Plan apply to this Policy as if fully set forth herein, and all grants of Awards hereby are subject in all respect to the terms of such Plan.

9. Written Grant Agreement. The grant of any Award under this Policy shall be made solely by and subject to the terms set forth in a written agreement in a form to be approved by the Board and duly executed by an executive officer of the Company.

10. Policy Subject to Amendment, Modification and Termination. This Policy may be amended, modified or terminated by the Board in the future at its sole discretion. No Non-Employee Director shall have any rights hereunder unless and until an Award is actually granted. Without limiting the generality of the foregoing, the Board hereby expressly reserves the authority to terminate this Policy during any year up and until the election of directors at a given annual meeting of stockholders.

11. Effectiveness. This Policy, as amended and restated herein, shall become effective as of April 26, 2016.

Dated December 7, 2016

CALIX, INC.

and

ANDREW LOCKHART

SETTLEMENT AGREEMENT

THIS AGREEMENT is dated December 7, 2016

PARTIES

- (1) **Calix, Inc** . a Delaware corporation with the registered address of 1035 N. McDowell Boulevard, Petaluma, California, 94954, United States (the “ **Company** ”); and
- (2) **Andrew Lockhart** whose address is [redacted] (the “ **Employee** ”).

BACKGROUND

- (A) The Employee was employed by the Company on the Employment Contract.
- (B) The Employee’s employment with the Company shall terminate on the Termination Date.
- (C) The parties have entered into this Agreement to record and implement the terms on which they have agreed to settle any claims which the Employee has or may have in connection with his employment or its termination or otherwise against the Company and any Group Company (as defined below) or its officers, employees or agents whether or not those claims are, or could be, in the contemplation of the parties at the time of signing this Agreement, and including, in particular, the statutory complaints which the Employee raises in this Agreement.
- (D) The parties intend this Agreement to be an effective waiver of any such claims and to satisfy the conditions relating to settlement agreements in the relevant legislation.
- (E) The Company enters into this Agreement for itself and as agent and trustee for any Group Company and it is authorised to do so. It is the parties' intention that each Group Company should be able to enforce any rights it has under this Agreement, subject to and in accordance with the Contracts (Rights of Third Parties) Act 1999.

AGREED TERMS

1. Interpretation

- 1.1 The definitions in this clause apply in this Agreement.

Accelerated Stock: those equity awards granted to the Employee under the Calix, Inc. 2010 Equity Incentive Award Plan and outstanding as of September 29, 2016, consisting of stock options and performance-based restricted stock units set out in Schedule 5 of this Agreement, that may or would have vested under the terms

of the grant agreement for each such award if the Employee had continued to be employed up until June 29, 2017.

Adviser : refers to Danielle Kingdon or Emma Ladley of Osborne Clarke LLP.

Board: the board of directors of Calix Networks.

Calix Networks : means Calix Networks UK Limited, incorporated and registered in England and Wales with company number 07524229 whose registered office is at 1 Lyric Square, Hammersmith, London, W6 0ND.

CICSP : means the Calix, Inc. Executive Change in Control and Severance Plan effective as of July 20, 2010.

Confidential Information: information of a confidential or secret nature which includes but is not limited to:

- (a) details of any trade secrets, customer lists, trading details or other information of a confidential nature relating to the goodwill and secrets of the Company and any Group Company, including (without limitation):
 - (i) financial information (including but not limited to business plans, business models, confidential pricing information (specifically including but not limited to commission rates) or any information relating to prospective or actual tenders for contracts with prospective or actual suppliers or investors or customers of the Company and any Group Company) relating to the Company and any Group Company;
 - (ii) any information relating to any portfolio in respect of which the Company and any Group Company provides investment services or advises in relation to investment strategy;
 - (iii) any information about investment strategy employed by the Company and any Group Company, or specific investments made or planned by the Company and any Group Company (and their terms);
 - (iv) any materials or information (including unpublished price sensitive information) not publicly known regarding any investment or potential investment by the Company and any Group Company;
 - (v) any Intellectual Property created or developed by the Company's and any Group Company's employees or consultants;

- (vi) the business and operating plans, sales and marketing plans and strategies, incentive and/or commissions plans, pricing strategies, customer plans, marketing and product go-to-market plans or methods of the Company and any Group Company;
 - (vii) details of any client, prospective client, investor, prospective investor, broker, prospective broker or customer or prospective customer lists and files and the names or details of service suppliers (including the terms of business) which relate to the business of the Company and any Group Company;
 - (viii) the name or details of employees, members and officers of the Company and any Group Company, their performance records, medical records, incentive plan targets, appraisal information, remuneration and other benefits;
- (b) any other information specifically designated by the Company and any Group Company as confidential; and
- (c) any information in relation to which the Company and any Group Company owes a duty of confidentiality to any third party, including without limitation all client and other third party information under non-disclosure arrangements between Company and any Group Company and such third party.

Employment Contract : means the Terms and Conditions of Employment Contract between Employee and the Company dated and effective from February 2, 2011 and as amended on June 22, 2016.

Copies: copies or records of any Confidential Information in whatever form (including, without limitation, in written, oral, visual or electronic form or on any magnetic or optical disk or memory and wherever located) including, without limitation, extracts, analysis, studies, plans, compilations or any other way of representing or recording and recalling information which contains, reflects or is derived or generated from Confidential Information.

Group Company : means the Company's Subsidiaries or Holding Companies from time to time and any Subsidiary of any Holding Company from time to time.

Key Competitors : the following companies including any Subsidiary or Holding Company from time to time: (a) ADTRAN, Inc; (b) ARRIS Group, Inc. (c) FiberHome Technologies Group; (d) Huawei Technologies Co. Ltd; (e) Nokia Corporation; and (f) ZTE Corporation.

Intellectual Property Rights: patents and other rights in inventions, copyright and related rights, trademarks, trade and business names, domain names, design

rights and registered designs, rights in get-up and goodwill, rights in know-how and confidential information, rights in computer software, topography rights and database rights in each case whether registered or unregistered and any other intellectual property rights or similar proprietary rights which may from time to time subsist in any part of the world and all applications for the grant of the foregoing for the full term of protection of such rights (including any renewals and extensions).

Statutory Redundancy Payment: an amount equal to £3,592.50 as calculated in accordance with the statutory formula notified to Employee in a letter dated September 29, 2016.

Subsidiary and Holding Company : in relation to a company mean "subsidiary" and "holding company" as defined in section 1159 of the Companies Act 2006.

Termination Date : December 29, 2016.

Termination Payment : means an amount equal to the aggregate of the items listed as Termination Payment in Schedule 2, subject to the provisions in Section 3.

- 1.2 The headings in this agreement are inserted for convenience only and shall not affect its construction.
- 1.3 A reference to a particular law is a reference to it as it is in force for the time being taking account of any amendment, extension, or re-enactment and includes any subordinate legislation for the time being in force made under it.
- 1.4 A reference to one gender includes a reference to other genders.
- 1.5 Unless the context otherwise requires, words in the singular include the plural and in the plural include the singular.
- 1.6 The schedules to this agreement form part of (and are incorporated into) this agreement.

2. Arrangements on Termination

- 2.1 The Employee's employment with the Company shall terminate on the Termination Date.
- 2.2 The Employee was placed on garden leave on September 29, 2016 and is currently working his three months' notice period. The Employee shall be paid his accrued basic salary, sales commissions and executive bonus payments until the Termination Date in accordance with the usual payroll procedures and as though the Employee was fully employed and not on garden leave up to and including the Termination Date together with all benefits to which he is entitled during his

employment including car allowance, Company pension contributions and Company funded health care scheme (private medical) membership.

- 2.3 The Employee will be paid in respect of any accrued annual leave which he has not used while on garden leave.
- 2.4 The Employee is required to sign and deliver to the Board letters of resignation from directorships, appointments and other authorizations in relation to the Company's Subsidiaries and Holding Companies, representative offices and branches.
- 2.5 The Employee agrees and accepts, without limitation, that, save as set out in this Agreement, all payments due to him (of whatsoever kind) by the Company and/or all any Group Company have been paid to him, and, except as set out in this Agreement, that he neither has nor will have any entitlement to or eligibility for any further payments or benefits or to participate in any benefit schemes whatsoever, including in all and any share/stock purchase, share/stock option, pension, commission, bonus, incentive, LTIP and/or insurance schemes (of whatsoever kind) operated by the Company and/or any Group Company or in which any such company may participate after the Termination Date. In particular, the Employee accepts that other than the Accelerated Stock, any unvested stock options granted to him under the Calix, Inc. 2010 Equity Incentive Award Plan shall lapse with effect from the Termination Date. The Company shall procure that the Accelerated Stock vests and becomes exercisable as of the Termination Date, subject to applicable U.S. federal and state securities and regulatory rules and requirements.
- 2.6 The payments and benefits in this clause 2 shall be subject to the income tax and National Insurance contributions that the Company is obliged by law to pay or deduct.
- 2.7 The Company shall continue to provide the Employee with healthcare insurance (private medical insurance) with Global Benefits Group until June 29, 2017 for the benefit of the Employee and his dependents and paid for by the Company, consistent with the provision of such benefit to the Employee prior to the Termination Date, as stated in the CICSP.
- 2.8 The Company shall pay the Employee a £16,000 tax-free lump sum at the same time as the Termination Payment as an ex-gratia compensation payment for loss of employment and office.

3. Termination Payment

- 3.1 Subject to and conditional on the Employee complying with the terms of this Agreement including clauses 3.2 and 3.3 of the Agreement below, the Company shall within 10 days of the Termination Date or compliance with the conditions

set out in clause 3.3, whichever is later, pay the Termination Payment to the Employee.

3.2 The parties agree that:

- (a) an amount equal to the sums paid to Employee while on garden leave (except in relation to annual leave) shall be deducted from the Termination Payment consistent with the CICSP. This amount to be deducted is £46,818; and
- (b) the Termination Payment shall be inclusive of any statutory entitlements, excluding the Statutory Redundancy Payment.

3.3 Payment of the Termination Payment is conditional on the Company receiving:

- (a) a copy of this Agreement signed by the Employee;
- (b) the completed Adviser's certificate (as set out in Schedule 3); and
- (c) letters of resignation from directorships, appointments and other authorizations in relation to the Company's Subsidiaries and Holding Companies, representative offices and branches signed by the Employee (as set out in Schedule 4).

3.4 The Termination Payment shall be subject to the income tax and National Insurance contributions that the Company is obliged by law to pay or deduct.

4. Legal Fees

The Company shall pay the reasonable legal fees (up to a maximum of £1,500 plus VAT) incurred by the Employee in obtaining advice on the termination of his employment and the terms of this Agreement, such fees to be payable to the Adviser following production of an invoice in his name but marked payable by the Company.

5. Waiver of Claims

5.1 The Employee agrees that the terms of this Agreement are offered by the Company without any admission of liability on the part of the Company and are in full and final settlement of all and any claims or rights of action that the Employee has or may have against the Company and any Group Company or its or their officers or employees whether arising out of his employment with the Company or its termination or from events occurring after this Agreement has been entered into, whether under common law, contract, statute or otherwise, whether such claims are, or could be, known to the parties or in their contemplation at the date of this Agreement in any jurisdiction and including, but not limited to, the claims specified in Schedule 1 (each of which is hereby intimated and waived). In particular, the Employee waives all and any claims of unfair dismissal and breach of contract.

5.2 The waiver in clause 5.1 of this Agreement shall not apply to the following:

- (a) any claims by the Employee to enforce this Agreement;
- (b) claims in respect of personal injury of which the Employee is not aware and could not reasonably be expected to be aware at the date of this Agreement (other than claims under discrimination legislation; and
- (c) any claims in relation to accrued entitlements under any pension scheme.

5.3 The Employee warrants that:

- (a) before entering into this Agreement he received independent advice from the Adviser as to the terms and effect of this Agreement and, in particular, on its effect on his ability to pursue any complaint before an employment tribunal or other court;
- (b) the Adviser has confirmed to the Employee that they are a solicitor holding a current practising certificate and that there is in force a policy of insurance covering the risk of a claim by the Employee in respect of any loss arising in consequence of their advice;
- (c) the Adviser shall sign and deliver to the Company a letter in the form set out at Schedule 3 to this Agreement;
- (d) before receiving the advice the Employee disclosed to the Adviser all facts and circumstances that may give rise to a claim by the Employee against the Company and any Group Company or their officers or employees;
- (e) the only claims that the Employee has or may have against the Company and any Group Company or their officers or employees (whether at the time of entering into this Agreement or in the future) relating to his employment with the Company or its termination are specified in clause 5.1 of the Agreement ; and
- (f) the Employee is not aware of any facts or circumstances that may give rise to any claim against the Company and any Group Company or their officers or employees other than those claims specified in clause 5.1 of the Agreement .

The Employee acknowledges that the Company acted in reliance on these warranties when entering into this Agreement.

5.4 The Employee acknowledges that the conditions relating to compromise agreements and settlement agreements under section 147(3) of the Equality Act 2010, section 77(4A) of the Sex Discrimination Act 1975 (in relation to claims under that Act and the Equal Pay Act 1970), section 72(4A) of the Race Relations Act 1976, paragraph 2 of Schedule 3A to the Disability Discrimination Act 1995, paragraph 2(2) of Schedule 4 to the Employment Equality (Sexual Orientation) Regulations 2003, paragraph 2(2) of Schedule 4 to the Employment Equality (Religion or Belief) Regulations 2003, paragraph 2(2) of Schedule 5 to the Employment Equality (Age) Regulations 2006, section 288(2B) of the Trade

Union and Labour Relations (Consolidation) Act 1992, section 203(3) of the Employment Rights Act 1996, regulation 35(3) of the Working Time Regulations 1998, section 49(4) of the National Minimum Wage Act 1998, regulation 41(4) of the Transnational Information and Consultation etc. Regulations 1999, regulation 9 of the Part-Time Workers (Prevention of Less Favourable Treatment) Regulations 2000, regulation 10 of the Fixed-Term Employees (Prevention of Less Favourable Treatment) Regulations 2002, regulation 40(4) of the Information and Consultation of Employees Regulations 2004, paragraph 13 of the Schedule to the Occupational and Personal Pension Schemes (Consultation by Employers and Miscellaneous Amendment) Regulations 2006, section 58 of the Pensions Act 2008 and Section 23 of the Enterprise and Regulatory Reform Act 2013 have been satisfied.

- 5.5 The Employee agrees that, except for the payments and benefits provided for in this Agreement, and subject to the waiver in clause 5.1 of the Agreement, he shall not be eligible for any further payment from the Company or any Group Company relating to his employment or its termination and without limitation to the generality of the foregoing, he expressly waives any right or claim that he has or may have to payment of bonuses, any benefit or award programme or grant of equity interest, or to any other benefit, payment or award he may have received had his employment not terminated.

6. Employee Indemnities

- 6.1 If the Employee breaches any material provision of this Agreement or pursues a claim against the Company or any Group Company arising out of his employment or its termination other than those excluded under clause 5 of the Agreement, he agrees to indemnify the Company for any losses suffered as a result thereof, including all reasonable legal and professional fees incurred.

7. Return of Company Property

- 7.1 The Employee shall, before the Termination Date, return to the Company:
- (a) all Confidential Information and Copies;
 - (b) all property belonging to the Company in satisfactory condition; and
 - (c) all documents and Copies (whether written, printed, electronic, recorded or otherwise and wherever located) made, compiled or acquired by him during his employment with the Company or relating to the business or affairs of the Company and any Group Company or their business contacts,
- in the Employee's possession or under his control.
- 7.2 The Employee shall, before the Termination Date, delete irretrievably any information relating to the business of the Company and any Group Company that he has stored on any magnetic or optical disk or memory stick and all matter derived from such sources which is in his possession or under his control outside the premises of the Company.

8. Employee Warranties and Acknowledgments

- 8.1 As at the date of this Agreement, the Employee warrants and represents to the Company that there are no circumstances of which the Employee is aware or of which the Employee ought reasonably to be aware which would amount to a repudiatory breach by the Employee of any express or implied term of the Employee's Contract of Employment which would entitle (or would have entitled) the Company to terminate the Employee's employment without notice or payment in lieu of notice and any payment to the Employee pursuant to clause 3 of the Agreement is conditional on this being so.
- 8.2 The Employee agrees to make himself available to, and to cooperate with, the Company or its advisers in any internal investigation or administrative, regulatory, judicial or quasi-judicial proceedings. The Company shall reimburse any reasonable expenses incurred by the Employee as a consequence of complying with his obligations under this clause, provided that such expenses are approved in advance by the Company. The Employee shall up until the Termination Date, complete a full handover of his responsibilities and fully comply with the transition plan as reasonably set out by any person designated by the Company at its absolute discretion from time to time and notified to the Employee in writing.

9. Continuing obligations and Additional Agreed Restrictions

- 9.1 The Employee acknowledges that the obligations specified under clauses 14 (confidentiality), 15 (inventions and other works) and 17 (restrictions) of the Employment Contract shall continue to apply to him after the Termination Date.
- 9.2 In consideration of additional payment of £15,606 (to be paid at the same time as the Termination Payment), and in recognition of the Company's legitimate business interests, the Employee shall not at any time directly or indirectly, either alone or jointly with or on behalf of any third party and whether as principal, manager, employee, contractor, consultant, agent or otherwise howsoever at any time within the period of six (6) months from the Termination Date directly or indirectly engage or be concerned or interested in any of the Key Competitors and the Employee expressly acknowledges that in the twelve months prior to September 29, 2016 he was materially concerned in a business of the Company or any Group Company which competed with the Key Competitors. The payment in this clause 9.2 shall be subject to the income tax and National Insurance contributions that the Company is obliged by law to pay or deduct.

10. Entire Agreement and Previous Contracts

- 10.1 Each party on behalf of itself and, in the case of the Company, as agent for any Group Companies acknowledges and agrees with the other party that:
- (a) this Agreement constitutes the entire agreement and understanding between the Employee and the Company and any Group Company and supersedes any previous arrangement, understanding or agreement (whether in writing or not) between them relating to the Employee's employment by the Company;
 - (b) in entering into this Agreement neither party has relied on any statement, representation, assurance or warranty of any person (whether party to this agreement or not and whether in writing or not) other than as expressly set out in this agreement; and
 - (c) the only rights or remedies available to the parties arising out of any statement, representation, assurance or warranty shall be for breach of contract under the terms of this Agreement.
- 10.2 Nothing in this agreement shall, however, operate to limit or exclude any liability for fraud.

11. Variation

No variation of this Agreement shall be valid unless it is in writing and signed by or on behalf of each of the parties.

12. Governing Law and Jurisdiction

- 12.1 This Agreement shall be governed by and construed in accordance with the law of England and Wales.
- 12.2 Each party irrevocably agrees to submit to the exclusive jurisdiction of the courts of England and Wales over any claim or matter arising under or in connection with this Agreement.

13. Subject to Contract and Without Prejudice

This Agreement shall be deemed to be without prejudice and subject to contract until such time as it is signed by both parties and dated and the Adviser completes the letter as set out in Schedule 3, when it shall be treated as an open document evidencing a binding agreement.

14. Counterparts

This Agreement may be executed in any number of counterparts, each of which, when executed, shall be an original, and all the counterparts together shall constitute one and the same instrument.

This Agreement has been entered into on the date stated at the beginning of it.

Signed by Andrew Lockhart

Signature.../s/ Andy Lockhart.....

Date....December 7, 2016.....

Signed by for and on behalf of the Company

Signature.../s/ Diane Prins Sheldahl.....

Date: December 7, 2016



7 December 2016

Gregory Billings
[Redacted]
[Redacted]

Dear Gregory,

On behalf of Calix, Inc. (the “Company”), I am pleased to present you with this formal offer of employment for the full time position of Senior Vice President (SVP) Services of the Company.

The terms of your position with the Company are as set forth below:

1. **Employment Period.** The period during which you are employed by the Company pursuant to this letter agreement shall constitute the “Employment Period” hereunder. Subject to fulfillment of any conditions imposed by this letter agreement, your commencement of employment hereunder shall be 19 December 2016 (the “Employment Commencement Date”).

2. **Position and Responsibilities.**

(a) You shall serve as the Senior Vice President (SVP) Services of the Company, initially working from North Barrington, Illinois. It is expected that you shall initiate the process to transfer to the Company’s headquarters in Petaluma, California, after the Employment Commencement Date. You shall report to the President and Chief Executive Officer of the Company (the “CEO”). You agree to perform in good faith and to the best of your ability all services that may be required of you hereunder and to be available to render such services at all reasonable times and places in accordance with such directions and requests as may be made from time to time by the CEO.

(b) You are expected and agree to devote your full working time and attention to the business of the Company, and will not render services to any other business without the prior approval of the CEO or, directly or indirectly, engage or participate in any business that is competitive in any manner with the business of the Company. You agree that, prior to the Employment Commencement Date, you will resign, step down, or cease to provide service to any other business, job, charitable and civic activity, or consulting activity, other than incidental activities undertaken on behalf of these entities and activities undertaken on behalf of the Company related to these entities that are disclosed to the Company. Notwithstanding the foregoing, however, you shall be permitted to continue to serve on the boards of directors of the companies set forth on Attachment A hereto; provided, however, that you will devote only such time to those companies as is required to properly discharge your fiduciary duties thereto and you shall, as situations allow, make a good faith effort to resign from such boards as soon as practicable. Nothing in this letter agreement will prevent you from accepting speaking or presentation engagements in exchange for honoraria or from serving on boards of charitable organizations, from owning no more than 1% of the outstanding equity securities of a corporation whose stock is listed on a national stock exchange, or from investing in investments listed on Attachment A1.

(c) You also understand and agree that you must fully comply with the Company's standard operating policies, procedures, and practices that are from time to time in effect during the Employment Period.

3. **Compensation**.

(a) **Base Salary**. Your starting annual gross base salary ("Base Salary") will be \$300,000.00, to be paid in accordance with the Company's normal payroll procedures, less all applicable withholdings and deductions.

(b) **Performance Bonus/Variable Compensation**. You shall be eligible to receive variable compensation for 2017 targeted at 50% of your Base Salary (the "Variable Compensation"). Variable Compensation shall be based on the achievement of the performance objectives and funding requirements as established under the Company's Executive Cash Bonus Plan, attached as **Attachment B**. In addition, six months after your Employment Commencement Date, you shall be eligible for a one-time variable compensation lump-sum bonus payment at a maximum amount of \$50,000.00, less applicable deductions and withholdings. This one-time variable compensation lump-sum bonus will be based on performance targets and objectives established within the first thirty-days after your Employment Commencement Date and will be paid (if at all) within 60 days following the six-month anniversary of your Employment Commencement Date.

(c) **Stock Option Grant**. The Company will recommend that the Compensation Committee of the Company's Board of Directors (the "Committee") grant you an option under the Company's 2010 Equity Incentive Award Plan ("the Plan") to purchase 300,000 Shares of the Company's Common Stock (the "Option"). The Option will have an exercise price per share equal to the fair market value of the Company's Common Stock on the date of the grant. The Option is subject to approval by the Committee and, if approved, the Option will vest over four years from your Employment Commencement Date, with 25% of the Shares vesting on the one-year anniversary of the Employment Commencement Date, and the remainder of the Shares vesting quarterly thereafter in equal installments over the next 36 months. Vesting shall cease upon your last day of active employment with the Company. The remaining terms of the Option will be in accordance with the terms and conditions of the Plan and the written stock option award agreement evidencing the Option.

(d) **Stock Option Individual Performance Grant**. The Company will recommend that the Committee grant you an option under the "Plan to purchase up to 50,000 shares (the "Shares") of the Company's Common Stock (the "Option") in July 2017. The Option will have an exercise price per share equal to the fair market value of the Company's Common Stock on the date of the July 2017 Committee meeting (or the date of grant if no such date). The actual number of Shares will be based on the achievement of your performance targets and objectives established by the CEO within the first thirty-days after your Employment Commencement Date. The Option is subject to approval by the Committee and, if approved, the Option will vest over four years from your Employment Commencement Date, with 25% of the Shares vesting on the one-year anniversary of the Employment Commencement Date, and the remainder of the Shares vesting quarterly thereafter in equal installments over the next 36 months. Vesting shall cease upon your last day of active employment with the Company. The remaining terms of the Option will be in accordance with the terms and conditions of the Plan and the written stock option award agreement evidencing the Option.

(e) **Signing Bonus**. You will be paid a one-time lump sum sign-on bonus of \$50,000.00, less applicable deductions and withholdings, on the first pay period following the Employment Commencement Date. This sign-on bonus is expressly conditioned upon your active continued employment for a period of at least 12 months, and shall be deemed an unearned advance until this condition is met. In the event you elect to terminate your employment with the Company within 12 months after the Employment Commencement Date, you agree to repay the sign-on bonus to the Company and if you do not repay such amount then, to the fullest extent permitted under applicable law,

you agree that the Company may deduct the amount of the sign-on bonus from any monies that the Company may owe to you.

(f) **Withholding**. The Company shall deduct and withhold from any compensation payable to you any and all applicable federal, state, local, and foreign income and employment withholding taxes and any other amounts required to be deducted or withheld by the Company under applicable statutes, regulations, ordinances, or orders governing or requiring the withholding or deduction of amounts otherwise payable as compensation or wages.

4. **Change in Control and Severance Plan**. You will be eligible to participate in the Calix, Inc. Executive Change in Control and Severance Plan ("CIC Plan") as a "Senior Vice President" (as defined in the CIC Plan). A copy of the CIC Plan is attached as **Attachment C**.

5. **Benefits; Reimbursement**.

(a) **Benefit Plans**. During the Employment Period, you shall be eligible to participate in all employee benefits and benefit plans generally made available to the Company's employees from time-to-time, including, but not limited to, medical, dental, vision and long-term disability insurance benefits and arrangements, subject to the terms, conditions, and relevant qualification criteria for such benefits and benefit plans. The Company, in its discretion, may change from time-to-time the employee benefits and benefit plans it generally makes available to its employees.

(b) **Vacation, Sick, and Holiday Pay**. You shall be entitled to vacation, sick, and holiday pay pursuant to the terms of the Company's generally applicable employee policies, as may exist from time to time. You shall be entitled to twenty paid vacation days per year equivalent to that provided to other executive-level employees of the Company.

6. **Proof of Right to Work**. As a condition of employment, you must provide the Company, within three days after your Employment Commencement Date, with proof of employment eligibility. Such proof is required for the completion of the Form I-9 (Employment Eligibility Verification).

7. **Relocation Benefits**. After your first twelve months of employment with the Company, you and the CEO agree to discuss relocation options for you and your dependents as it relates to the Company business strategy. As deemed appropriate, you shall be eligible to receive relocation benefits in accordance with the Company's relocation policy for executives, a copy of which will be provided to you separately at a later time. The relocation benefits shall be deemed an advance payment that is expressly conditioned upon your continued active employment with the Company. In the event you elect to terminate your employment with the Company within twenty-four months after your relocation, you agree to repay all relocation benefits (including all relocation expenses incurred on your behalf) and if you do not repay such amounts then, to the fullest extent permitted under applicable law, you agree that the Company may deduct such amounts from any monies that may the Company may owe to you.

8. **Confidential Information and Invention Assignment Agreement**. As a condition of employment and the benefits provided by this letter agreement, you are required to timely execute and return the Company's Confidential Information and Invention Assignment Agreement in the form attached hereto as **Attachment D** (the "Confidentiality Agreement"). You shall at all times remain subject to the terms and conditions of such Confidentiality Agreement, and nothing in this letter agreement shall supersede, modify, or affect your obligations, duties, and responsibilities thereunder.

9. **Termination of Employment**. Your termination of employment shall be in accordance with the following provisions:

(a) Upon cessation of your employment for any reason, you, or your estate if applicable, shall be paid any unpaid Base Salary earned under Paragraph 3(a) for services rendered through the date of such termination.

(b) You may voluntarily separate from your employment under this letter agreement at any time, but you are requested to give the Company at least 30 days prior written notice of such resignation.

(c) The Company may terminate your employment with or without Cause (as defined in the CIC Plan) under this letter agreement at any time by providing notice of such termination to you. Such termination shall be effective immediately upon your receipt of such notice, unless otherwise indicated by the notice. If the termination is for Cause, you will receive no notice, pay in lieu of notice, and/or severance whether pursuant to the CIC Plan, by statute, or at common law. If the termination is without Cause, you shall be eligible to receive only the amounts set forth in the CIC Plan.

10. **No Conflicts**. You understand and agree that by accepting this offer of employment, you represent to the Company that your performance will not breach any other agreement to which you are a party and that you have not, and will not during the term of your employment with the Company, enter into any oral or written agreement in conflict with any of the provisions of this letter agreement or the Company's policies. You will not use or disclose to any person associated with the Company, any confidential or proprietary information belonging to any former employer or other third party with respect to which you owe an obligation of confidentiality under any agreement or otherwise. The Company does not need and will not use such information and we will assist you in any way possible to preserve and protect the confidentiality of proprietary information belonging to third parties. We also expect you to abide by any obligations to refrain from soliciting any person employed by or otherwise associated with any former employer and suggest that you refrain from having any contact with such persons until such time as any non-solicitation obligation expires.

11. **At-Will Employment**. Your employment with the Company will be on an "at-will" basis, meaning that: (i) either you or the Company may terminate your employment at any time, with or without cause or advance notice, without further obligation or liability other than as expressly set forth in this letter agreement, (ii) the Company reserves the right to modify or amend the terms of your employment at any time at its sole discretion with reasonable advance notice, subject to the provisions of this letter agreement, and (iii) this policy of at-will employment shall reflect the entire agreement and may only be modified in an express written agreement signed by an appropriate officer of the Company.

12. **Equal Opportunity/Affirmative Action**. As an employee, you will be expected to create, collaborate, and communicate in accordance with the Company's principles. The Company is an equal opportunity employer that does not permit, and will not tolerate, the unlawful discrimination or harassment of any employees, consultants, or third parties on the basis of sex, race, color, religion, age, national origin or ancestry, marital status, veteran status, mental or physical disability or medical condition, sexual orientation, gender identity, gender expression, pregnancy, childbirth or related medical condition, or any other status protected by law. Any questions regarding these policies should be directed to the Company's Talent and Culture personnel.

13. **Disability Accommodation**. The Company does not discriminate against disabled applicants who are otherwise qualified and able to perform the essential functions of a particular position. If you are an individual with a disability and require reasonable accommodation in order to perform the essential functions of your position, please contact Diane Prins Sheldahl, Senior Vice President, Talent and Culture. If the accommodation can be accomplished without creating an undue hardship, the Company will be happy to cooperate in making this accommodation.

14. **Section 409A.** This letter agreement is intended to comply with the requirements of Section 409A of the Internal Revenue Code of 1986, as amended (the "Code") and the regulations thereunder ("Section 409A"), and shall in all respects be administered in accordance with Section 409A. Notwithstanding anything in this letter agreement to the contrary, distributions may only be made under this letter agreement upon an event and in a manner permitted by Section 409A or an applicable exemption. Any payments that qualify for the "short-term deferral" exception or another exception under Section 409A shall be paid under the applicable exception. All separation payments to be made upon a termination of employment under this letter agreement may only be made upon a "separation from service" under Section 409A. For purposes of Section 409A, each payment hereunder shall be treated as a separate payment and the right to a series of payments under this letter agreement shall be treated as a right to a series of separate payments. Notwithstanding anything to the contrary in this letter agreement, if you are a "specified employee" (as that term is defined for purposes of Section 409A), any payment that is determined to constitute a payment of "nonqualified deferred compensation" (as defined for purposes of Section 409A) that is payable by reason of your separation from service and would be payable during the first six months following your separation from service shall be deferred until the expiration of such six month period or until your death, if earlier. With respect to payments that are subject to Section 409A, in no event may you, directly or indirectly, designate the calendar year of a payment. If and to the extent that reimbursements or other in-kind benefits under this letter agreement constitute "nonqualified deferred compensation" for purposes of Section 409A, such reimbursements or other in-kind benefits shall be made or provided in accordance with the requirements of Section 409A including, where applicable, the requirement that (i) any reimbursement shall be for expenses incurred during your lifetime (or during a shorter period of time specified in this letter agreement), (ii) the amount of expenses eligible for reimbursement, or in kind benefits provided, during a calendar year may not affect the expenses eligible for reimbursement, or in kind benefits to be provided, in any other calendar year, (iii) the reimbursement of an eligible expense shall be made on or before the last day of the calendar year following the year in which the expense is incurred and (iv) the right to reimbursement or in kind benefits is not subject to liquidation or exchange for another benefit. Notwithstanding the foregoing, although the Company has made every effort to ensure that the payments and benefits provided under this letter agreement comply with Section 409A, in no event shall the Company be liable for all or any portion of any taxes, penalties, interest, or other expenses that may be incurred by you on account of non-compliance with Section 409A.

15. **Cessation of Benefits.** In the event of a breach by you of any of your obligations of this letter agreement or under the Confidentiality Agreement, you shall cease to be entitled to any further benefits under this letter agreement.

16. **Successors and Assigns.** This letter agreement and all rights hereunder are personal to you and may not be transferred or assigned by you at any time. The Company may assign its rights, together with its obligations hereunder, to any parent, subsidiary, affiliate, or successor, or in connection with any sale, transfer, or other disposition of all or substantially all of its business and assets, provided, however, that any such assignee assumes the Company's obligations hereunder.

17. **Notices.**

(a) Any and all notices, demands, or other communications required or desired to be given hereunder by any party shall be in writing and shall be validly given or made to another party if delivered either personally or if deposited in the United States mail, certified or registered, postage prepaid, return receipt requested. If such notice, demand, or other communication shall be delivered personally, then such notice shall be conclusively deemed given at the time of such personal delivery.

(b) If such notice, demand or other communication is given by mail, such notice shall be conclusively deemed given 48 hours after deposit in the United States mail addressed to the party to whom such notice, demand, or other communication is to be given as hereinafter set forth:

To the Company:

Calix, Inc.
1035 N. McDowell Blvd.
Petaluma, CA 94954
Attn: President and Chief Executive Officer

To You:

Greg Billings
[Redacted]
[Redacted]

(c) Any party hereto may change its address for the purpose of receiving notices, demands, and other communications as herein provided by a written notice given in the manner aforesaid to the other party hereto.

18. **Governing Documents**. This letter agreement, together with (i) any equity award agreements, and (ii) all agreements attached hereto or referenced herein, shall constitute the entire agreement and understanding of the Company and you with respect to the terms and conditions of your employment with the Company and the eligibility for any potential severance payments following separation from employment with the Company, and this letter agreement shall supersede all prior and contemporaneous written or verbal agreements and understandings between you and the Company relating to such subject matter. This letter agreement may only be amended by written instrument signed by you and myself, the CEO.

19. **Governing Law**. The provisions of this letter agreement shall be construed and interpreted under the laws of the State of California applicable to agreements executed and wholly performed within the State of California. If any provision of this letter agreement as applied to any party or to any circumstance should be adjudged by an arbitrator or, if applicable, a court of competent jurisdiction to be void or unenforceable for any reason, the invalidity of that provision shall in no way affect (to the maximum extent permissible by law) the application of such provision under circumstances different from those adjudicated by the arbitrator or court, the application of any other provision of this letter agreement, or the enforceability or invalidity of this letter agreement as a whole. Should any provision of this letter agreement become or be deemed invalid, illegal, or unenforceable in any jurisdiction by reason of the scope, extent, or duration of its coverage, then such provision shall be deemed amended to the extent necessary to conform to applicable law so as to be valid and enforceable or, if such provision cannot be so amended without materially altering the intention of the parties, then such provision will be stricken, and the remainder of this letter agreement shall continue in full force and effect.

20. **Arbitration**. You will be subject to the arbitration requirements in this Paragraph 20.

(a) Except as provided herein, each party hereto agrees that any and all disputes which arise out of or relate to your employment, the termination of your employment, or the terms of this letter agreement shall be resolved through final and binding arbitration. **Such arbitration shall be in lieu of any trial before a judge and/or jury, and you and the Company expressly waive all rights to have such disputes resolved via trial before a judge and/or jury.** Such disputes shall include, without limitation, claims for breach of contract or of the covenant of good faith and fair dealing, claims of discrimination, claims under any federal, state or local law or regulation now in existence or hereinafter enacted and as amended from time to time concerning in any way your employment with the Company or its termination. The only claims not covered by this letter agreement to arbitrate disputes, which shall instead be resolved pursuant to applicable law, are: (i) claims for benefits under the unemployment insurance benefits; (ii) claims for workers' compensation benefits under any of the Company's workers' compensation insurance policy or fund; (iii) claims under the National Labor Relations Act; and (iv) claims that may not be arbitrated as a matter of law.

(b) Arbitration will be conducted in San Francisco, California. Arbitration shall be conducted in accordance with the Federal Arbitration Act ("FAA") and the Employment Arbitration Rules and Mediation Procedures of the American Arbitration Association ("AAA Rules" available at www.adr.org/employment), provided, however, that the arbitrator shall allow the discovery authorized by California Code of Civil Procedure section 1282, et seq., or any other discovery required by applicable law in arbitration proceedings, including, but not limited to, discovery available under the applicable state and/or federal arbitration statutes. Also, to the extent that any of the AAA Rules or anything in this arbitration section conflicts with any arbitration procedures required by applicable law, the arbitration procedures required by applicable law shall govern.

(c) During the course of arbitration, the Company will bear the cost of (i) the arbitrator's fee, and (ii) any other expense or cost you would not be required to bear if you were free to bring the dispute or claim in court. Each party shall bear their own attorneys' fees incurred in connection with the arbitration. The arbitrator will not have authority to award attorneys' fees unless a statute or contract at issue in the dispute authorizes the award of attorneys' fees to the prevailing party. In such case, the arbitrator shall have the authority to make an award of attorneys' fees as required or permitted by the applicable statute or contract.

(d) The arbitrator shall issue a written award that sets forth the essential findings of fact and conclusions of law on which the award is based. The arbitrator shall have the authority to award any relief authorized by law in connection with the asserted claims or disputes. The arbitrator's award shall be subject to correction, confirmation, or vacation, as provided by applicable law setting forth the standard of judicial review of arbitration awards. Judgment upon the arbitrator's award may be entered in any court having jurisdiction thereof.

(e) This arbitration provision does not prohibit you from pursuing an administrative claim with a local, state or federal administrative agency such as the Department of Fair Employment and Housing, the Equal Employment Opportunity Commission, or the California Workers' Compensation Board, but this provision does prohibit you from seeking or pursuing court action regarding any such claim.

21. **Counterparts**. This letter agreement may be executed in more than one counterpart, each of which shall be deemed an original, but all of which together shall constitute but one and the same instrument.

22. **Construction**. The language of this letter agreement shall be construed as to its fair meaning, and not strictly for or against either party. Any rule of construction that any ambiguities in a contract shall be construed against the drafter of a contract shall not apply.

23. **Indemnification**. You will be provided indemnification subject to the terms of any separate written Company indemnification policy.

We are all delighted to be able to extend you this offer and look forward to working with you. To indicate your acceptance of the Company's offer, please sign and date this letter agreement in the space provided below and return it to me. This letter agreement may not be modified or amended except by a written agreement, signed by the Company and by you.

Very truly yours,

Calix, Inc.

/s/ Carl Russo

Carl Russo
President and Chief Executive Officer

ACCEPTED AND AGREED:

Signature: /s/ Greg Billings

Date: 12/8/2017

SEPARATION AGREEMENT AND GENERAL RELEASE OF ALL CLAIMS

This Separation Agreement and Release ("Agreement") is entered into by and between John Colvin ("Employee") and Calix, Inc., a Delaware corporation ("the Company"). In consideration of the covenants set forth below the parties agree as follows:

1. **Separation of Employment** .

(a) *Separation Date*. Employee and the Company acknowledge and agree that Employee's employment with the Company is terminated effective January 6, 2017 (the "Separation Date"). Employee's last two weeks of employment will include transitional work. Employee's healthcare benefits will end on January 6, 2017. All other benefits will end on the Separation Date.

(b) *Payment of Final Wages and Receipt of All Benefits* . Employee has received and reviewed his final paycheck and represents, acknowledges and agrees that as of the Separation Date, the Company has paid Employee (1) all salary, wages, bonuses, premiums, leave, housing allowances, relocation costs, commissions, interest, fees, variable compensation and any and all other benefits and compensation owed to the Employee through the Separation Date (subject to applicable tax withholding), (2) all accrued but unused vacation and floating days of Employee at Employee's final rate of pay (subject to applicable tax withholding), and (3) all reimbursable business expenses incurred and submitted by Employee prior to the Separation Date. The Company will reimburse any remaining expenses upon timely submission by Employee according to Company policy. No other amounts or benefits are due to Employee from the Company through the Separation Date. Employee further acknowledges and represents that he has received any leave to which he was entitled or which he requested, if any, under the California Family Rights Act and/or the Family Medical Leave Act.

(c) *Stock*. Attached as Exhibit A is a statement of Employee's Equity Summary as of December 31, 2016, which Employee confirms is accurate.

(d) *Benefits*. Whether or not this Agreement becomes effective, Employee is eligible to elect to continue Employee's existing healthcare coverage under the Company-sponsored group health benefit plans for Employee and Employee's existing dependents, pursuant to the Consolidated Omnibus Budget Reconciliation Act of 1985, as amended ("COBRA ").

2. **Severance Benefits** . The Company agrees to provide the following severance benefits to Employee pursuant to the terms of the Calix Executive Change in Control and Severance Plan in consideration for the release of claims set forth below and other obligations under this Agreement, provided this Agreement is signed by Employee within 30 days following the Separation Date and not revoked under paragraph 4, and subject to Employee's compliance with the obligations under this Agreement:

(a) *Lump Sum Payment*. The Company will pay Employee a lump sum payment in the gross amount of \$280,908.00 , less applicable taxes and withholding, within 20 days following Employee's Separation Date.

(b) *Bonus Payment.* The Company will pay Employee a lump sum payment in the gross amount of \$56,181.60 , less applicable taxes and withholding, representing 6 months of Employee's target cash bonus opportunity, within 20 days following Employee's Separation Date.

(c) *Accelerated Vesting.* Each of the Equity Awards listed in Exhibit A will vest, and if applicable and earned, will become exercisable to the same extent such Equity Award would have vested pursuant to the terms in the agreement evidencing such Equity Award had Employee continued to remain employed by the Company for the full vesting period of the Equity Award. All vested options will remain exercisable for the limited period following the Separation Date set forth in the agreement evidencing the option and will terminate upon the expiration of such limited period unless exercised prior to such expiration.

(d) *Commissions Payments.* The Employee will receive eligible Commissions payments through December 31, 2016. The Company will provide the Employee Quarterly and Yearly Accelerators (as such terms are defined in the Commissions plan) the Employee is eligible to receive under the Commissions plan based on targets achieved by December 31, 2016. Notwithstanding the terms of the Commissions plan, the Company agrees to pay Employee a lump sum payment in the gross amount of \$58,818.40 , less applicable taxes and withholding, representing 6 additional months of Employee's commissions opportunity at target, within 20 days following Employee's Separation Date.

(e) *Reimbursement for Continued Healthcare .* Provided Employee elects to continue health insurance pursuant to COBRA, the Company will reimburse Employee for premiums for health insurance coverage to the same extent it paid Employee's health insurance premiums as of the Separation Date, for Employee and for Employee's dependents, for 6 months commencing February 1, 2017, or until Employee cancels the underlying coverage or such coverage otherwise ends sooner because Employee becomes eligible for and elects health insurance coverage with another employer. In order to receive reimbursement, Employee must submit proof of payment to the Company within 30 days of payment and the Company will remit payment for reimbursement as soon as practicable thereafter but no later than December 31, 2017.

3. **Release of Claims .** Except as described in Section 3.1 below, which identifies claims expressly excluded from this waiver and release, Employee, on behalf of Employee and Employee's heirs, executors, administrators and assigns, hereby fully and forever releases the Company and its past and present officers, directors, shareholders, affiliates, predecessors, successors, assigns, agents, investors, employees, administrators, benefit plans, plan administrators, insurers, divisions, subsidiaries, and representatives (collectively, the "Releasees") from any claim, duty, obligation or cause of action relating to any matters of any kind, whether presently known or unknown, suspected or unsuspected, that Employee may possess against any of the Releasees arising from any omissions, acts or facts that have occurred up until and including the date Employee has signed this Agreement including, without limitation:

(a) any and all claims relating to or arising from Employee's employment relationship with the Company and the termination of that relationship, including but not limited to any claims for wages, salary, bonus, compensation, deferred compensation, or other cash payments;

(b) any and all claims relating to, or arising from, Employee's right to purchase, or actual purchase of shares of the capital stock of the Company;

(c) any and all claims for wrongful discharge of employment; discrimination; harassment; retaliation; failure to provide reasonable accommodation; failure to engage in a good faith interactive process; breach of contract, both express and implied; breach of a covenant of good faith and fair dealing, both express and implied; promissory estoppel; negligent or intentional infliction of emotional distress; fraud; negligent or intentional misrepresentation; negligent or intentional interference with contract or prospective economic advantage; unfair business practices; negligence; defamation; libel; slander; personal injury; assault; battery; invasion of privacy; false imprisonment; conversion; disability benefits, or any claims arising out of any other agreement, incident or relationship between the parties prior to the execution of this Agreement;

(d) any and all claims for violation of any federal, state or local statute, constitution or regulation including, but not limited to, Title VII of the Civil Rights Act of 1964; the Civil Rights Act of 1991; the Americans with Disabilities Act of 1990; the California Fair Employment and Housing Act; the California Labor Code, except as prohibited by law; the California Government Code; the California Industrial Welfare Commission Wage Orders; the California Business & Professions Code; the California Family Rights Act; the Rehabilitation Act of 1973; Executive Order 11126; Title 42 of the United States Code; the Employee Retirement Income Security Act of 1974; the Equal Pay Act; the Fair Labor Standards Act, except as prohibited by law; the Fair Credit Reporting Act; the Older Workers Benefit Protection Act; the Worker Adjustment and Retraining Notification Act; the Family and Medical Leave Act, except as prohibited by law; the Sarbanes-Oxley Act of 2002; and the Uniformed Services Employment and Reemployment Rights Act.

(e) claims of age discrimination under the Age Discrimination in Employment Act of 1967 ("ADEA");

(f) any and all claims arising out of any other laws and regulations relating to employment or employment discrimination;

(g) any claim for any loss, cost, damage, or expense arising out of any dispute over the non-withholding or other tax treatment of any of the proceeds received by Employee as a result of this Agreement;

(h) any and all claims for monetary recovery and personal or individual relief, except as prohibited by law; and

(i) any and all claims for attorneys' fees and costs.

3.1 Excluded Claims. The only claims that are not being waived and released by Employee under this Agreement are those Employee may have for:

- a. Unemployment, state disability, workers compensation and/or paid family leave insurance benefits pursuant to the terms of applicable state law;
- b. Continuation of existing participation in Company-sponsored group health benefit plans, at Employee's full expense, under the federal law known as "COBRA" and/or under an applicable state counterpart law;
- c. Any benefit entitlements vested as of the Separation Date pursuant to the terms of a Company-sponsored benefit plan governed by the federal law known as "ERISA";
- d. Violation of any federal, state or local statutory and/or public policy right or entitlement that, by applicable law, is not waivable; and
- e. Any wrongful act, event or omission occurring after the date Employee signs this Agreement.

3.2 Government Agency Exceptions. Nothing in this Agreement prevents or prohibits Employee from filing claims with any government agency, such as the Equal Employment Opportunity Commission, that is responsible for enforcing a law on behalf of the government. However, Employee understands that Employee is waiving and releasing all claims for monetary damages and any other form of personal relief, and therefore, may only seek and receive non-personal forms of relief through any such claims. Furthermore, nothing in this Agreement affects or interferes with the right of the Employee to participate, cooperate or assist in an investigation or proceeding conducted within the Company or by any government agency, oversight board, commission or other regulatory or investigative body.

3.3 Civil Code Section 1542. Employee represents that Employee is not aware of any claim by Employee other than the claims that are released by this Agreement. Employee acknowledges that Employee has been advised to consult with legal counsel and is familiar with the provisions of California Civil Code Section 1542, a statute that otherwise prohibits the release of unknown claims, which provides as follows:

A GENERAL RELEASE DOES NOT EXTEND TO CLAIMS WHICH THE CREDITOR DOES NOT KNOW OR SUSPECT TO EXIST IN HIS OR HER FAVOR AT THE TIME OF EXECUTING THE RELEASE, WHICH IF KNOWN BY HIM OR HER MUST HAVE MATERIALLY AFFECTED HIS OR HER SETTLEMENT WITH THE DEBTOR.

Employee, being aware of said Code section, agrees to expressly waive any rights Employee may have under it, as well as under any other statute or common law principles of similar effect.

4. Acknowledgment of Waiver of Claims under ADEA. Employee acknowledges that Employee is waiving and releasing any rights Employee may have under the Age Discrimination in Employment Act of 1967 (**ADEA**) and that this waiver and release is knowing and voluntary. Employee fully understands, acknowledges and agrees that Employee has 21 days from receipt of the Agreement

within which to consider this Agreement. Any changes to this Agreement, whether material or immaterial, do not restart the running of the 21-day consideration period. Employee further understands and agrees that Employee:

(a) May sign this Agreement without waiting the full 21 days and that, if Employee has done so, Employee's decision to do so has been knowing and voluntary, and not induced through fraud, misrepresentation, a threat to withdraw or alter the offer prior to the expiration of the 21-day period, or the provision of different terms to employees who sign any release prior to expiration of the 21-day period.

(b) Has a period of seven (7) full days following execution of this Agreement to revoke this Agreement ("the Revocation Period") by providing written notice of such revocation to Diane Prins Sheldahl at Diane.PrinsSheldahl@calix.com .

(c) Has carefully read and fully understands all of the provisions of this Agreement and knowingly and voluntarily agrees to all of the terms of this Agreement;

(d) Is, through this Agreement, releasing the Company from any and all claims that Employee has or may have against the Company under the ADEA . Employee understands that rights or claims under the ADEA that may arise after the date this Agreement is executed by all parties are not waived;

(e) Knowingly and voluntarily agrees to all of the terms set forth in this Agreement , and knowingly and voluntarily intends to be legally bound by all of the terms of this Agreement;

(f) Is advised to consult an attorney of Employee's choice.

(g) Acknowledges that Employee's employment with the Company terminated as of the date set forth in Section 1 above, regardless of whether Employee elects to revoke this Agreement.

5. **Effective Date.** Employee has seven (7) days after Employee signs this Agreement to revoke it. This Agreement will become effective on the eighth (8th) day after Employee signs this Agreement, so long as it has been signed by the Parties and has not been revoked by Employee before that date (the "Effective Date").

6. **No Pending or Future Lawsuits.** Employee represents that he has no lawsuits, claims, or actions pending in his name, or on behalf of any other person or entity, against the Company or any of the other Releasees. Employee also represents that he does not intend to bring any claims on his own behalf or on behalf of any other person or entity against the Company or any of the other Releasees.

7. **Confidentiality.** This Agreement and its terms shall be maintained by Employee in strict confidence and, except as set forth in this paragraph, Employee shall not disclose the Agreement or any of its terms, or of any negotiations that led to this Agreement, to any other person or entity without the express written consent of the Company, unless required to do so by law. However, the terms of this Agreement may be disclosed to Employee's spouse/significant other, accountants and attorneys, the Court in any proceedings to enforce the terms of this Agreement, and the financial terms may be disclosed to the Employment Development Department, the Franchise Tax Board and the Internal

Revenue Service, if required. Nothing in this Section, or elsewhere in this Agreement, is intended to prevent or prohibit Employee from (a) providing information regarding Employee's former employment relationship with the Company, as may be required by law or legal process; or (b) cooperating, participating or assisting in any government entity investigation or proceeding.

8. **No Cooperation.** Employee agrees that he will not knowingly encourage, counsel, or assist any attorneys or their clients in the presentation or prosecution of any disputes, differences, grievances, claims, charges, or complaints by any third party against any of the Releasees, unless under a subpoena or other court order to do so or as related directly to the ADEA waiver in this Agreement. Employee agrees both to immediately notify the Company upon receipt of any such subpoena or court order, and to furnish, within three (3) business days of its receipt, a copy of such subpoena or other court order. If approached by anyone for counsel or assistance in the presentation or prosecution of any disputes, differences, grievances, claims, charges, or complaints against any of the Releasees, Employee shall state no more than that he cannot provide counsel or assistance.

9. **Nondisparagement.** Employee agrees to refrain from any disparagement, either as fact or opinion, criticism, defamation, or slander of the Company or any of the Releasees, and agrees to refrain from tortious interference with the contracts and relationships of the Company or any of the Releasees.

10. **References.** Employee shall direct any inquiries by potential future employers to the Company's human resources department, which shall provide only the Employee's last position and dates of employment.

11. **Nondisclosure.** Employee understands and agrees that Employee's obligations to the Company under Employee's existing At-Will Employment Confidential Information and Invention Assignment Agreement between Employee and the Company (the "Confidentiality Agreement"), a copy of which is attached as Exhibit B, shall survive termination of Employee's relationship with the Company under this Agreement. Employee warrants that at all times in the past Employee has been, and agrees that at all subsequent times Employee shall continue to be, in compliance with Employee's obligations to maintain the confidentiality of all confidential and proprietary information of the Company as provided by the Confidentiality Agreement. Employee expressly agrees that Employee shall not intentionally divulge, furnish or make available to any party any of the trade secrets, patents, patent applications, price decisions or determinations, marketing plans, business plans, product plans, inventions, customers, proprietary information or other intellectual property of the Company, until after such time as such information has become publicly known otherwise than by act of collusion of Employee. Employee agrees to execute the Separation Certification, attached as Exhibit C, and return it to the Company with this Agreement, which certifies that Employee has returned all the Company's property and confidential and proprietary information in Employee's possession to the Company.

12. **Federal Law Protections.** Federal law provides certain protections to individuals who disclose a trade secret to their attorney, a court, or a government official in certain, confidential circumstances. Specifically, federal law provides that an individual shall not be held criminally or civilly liable under any federal or state trade secret law for the disclosure of a trade secret under either of the following conditions

- Where the disclosure is made (i) in confidence to a Federal, State, or local government official, either directly or indirectly, or to an attorney; and (ii) solely for the purpose of reporting or investigating a suspected violation of law; or
- Where the disclosure is made in a complaint or other document filed in a lawsuit or other proceeding, if such filing is made under seal. See 18 U.S.C. § 1833(b)(1)).

Federal law also provides that an individual who files a lawsuit for retaliation by an employer for reporting a suspected violation of law may disclose the trade secret to the attorney of the individual and use the trade secret information in the court proceeding, if the individual (A) files any document containing the trade secret under seal; and (B) does not disclose the trade secret, except pursuant to court order. See 18 U.S.C. § 1833(b)(2).

13. **Severability.** In the event that any provision of this Agreement becomes or is declared by a court or other tribunal of competent jurisdiction or arbitrator to be illegal, unenforceable or void, the remainder of this Agreement shall continue in full force and effect without said provision or portion of provision.

14. **Arbitration.** THE PARTIES AGREE THAT ANY AND ALL DISPUTES ARISING OUT OF THE TERMS OF THIS AGREEMENT, ITS INTERPRETATION, AND ANY OF THE MATTERS HEREIN RELEASED, SHALL BE SUBJECT TO ARBITRATION BEFORE THE AMERICAN ARBITRATION ASSOCIATION (“AAA”), PURSUANT TO ITS EMPLOYMENT ARBITRATION RULES & MEDIATION PROCEDURES (“AAA RULES”). A COPY OF THE RULES CAN BE FOUND AT www.adr.org/employment. THE DECISION OF THE ARBITRATOR SHALL BE FINAL, CONCLUSIVE, AND BINDING ON THE PARTIES TO THE ARBITRATION. NO CLAIMS MAY BE ARBITRATED ON A CLASS, COLLECTIVE OR REPRESENTATIVE ACTION BASIS, AND THE PARTIES EXPRESSLY WAIVE ANY RIGHT TO SUBMIT, INITIATE, OR PARTICIPATE IN A REPRESENTATIVE CAPACITY OR AS A PLAINTIFF, CLAIMANT OR MEMBER IN ANY CLASS ACTION, COLLECTIVE ACTION, OR OTHER REPRESENTATIVE OR JOINT ACTION. CLAIMS MUST BE ARBITRATED ON AN INDIVIDUAL BASIS. **THE PARTIES HEREBY AGREE TO WAIVE THEIR RIGHT TO HAVE ANY DISPUTE BETWEEN THEM RESOLVED IN A COURT OF LAW BY A JUDGE OR JURY.**

15. **Attorneys’ Fees.** Except with regard to a legal action challenging or seeking a determination in good faith of the validity of the waiver herein under the ADEA, in the event that either Party brings an action to enforce or effect its rights under this Agreement, the prevailing Party shall be entitled to recover its costs and expenses, including the costs of mediation, arbitration, litigation, court fees, and reasonable attorneys’ fees incurred in connection with such an action.

16. **Entire Agreement.** This Agreement and its exhibits represent the entire agreement between the Company and Employee concerning Employee’s separation from the Company, and supersede any and all prior agreements concerning Employee’s relationship with the Company and Employee’s compensation by the Company. Employee acknowledges that neither the Employer nor any representative of Employer has made any representation or promise to Employee other than as set forth in this Agreement. No other promises or agreements or modifications to this Agreement shall be binding unless in writing and signed by both parties. Any oral representations regarding this Release shall have no force or effect.

17. **Tax Consequences**. The Company makes no representations or warranties with respect to the tax consequences of the payments and any other consideration provided to Employee or made on his/her behalf under the terms of this Agreement. Employee agrees and understands that he is responsible for payment, if any, of local, state, and/or federal taxes on the payments and any other consideration provided hereunder by the Company and any penalties or assessments thereon.

18. **Governing Law**. This Agreement shall be governed by the laws of the State of California, without regard to its conflicts of law provisions.

19. **Expiration of Offer**. This Agreement is executable until the twenty second (22nd) date after it is received by Employee (the "Expiration Date"). This Agreement is null and void if the Company has not received a copy of the Agreement executed by the Employee on or before the Expiration Date..

20. **Counterparts**. This Agreement may be executed in counterparts, and each counterpart shall have the same force and effect as an original and shall constitute an effective, binding agreement on the part of each party. All executed copies shall constitute duplicate originals and shall be equally admissible in evidence.

21. **Assignment**. This Agreement may not be assigned by Employee or the Company without the prior written consent of the other party. However, this Agreement may be assigned by the Company to a corporation controlling, controlled by or under common control with the Company without the consent of Employee.

22. **Voluntary Execution of Agreement**. Employee understands and agrees that he executed this Agreement voluntarily and without any duress or undue influence on the part or behalf of the Company or any third party, with the full intent of releasing all claims against the Company and any of the other Releasees. Employee acknowledges that: (1) he has read this Agreement; (2) he has been represented in the preparation, negotiation, and execution of this Agreement by legal counsel of his own choice or has voluntarily declined to retain legal counsel; (3) he understands the terms and consequences of this Agreement and of the releases it contains; and (4) he is fully aware of the legal and binding effect of this Agreement.

I HAVE READ THIS AGREEMENT, I UNDERSTAND IT AND KNOW THAT I AM GIVING UP IMPORTANT RIGHTS. I HAVE BEEN ADVISED TO CONSULT WITH AN ATTORNEY OF MY OWN CHOOSING PRIOR TO SIGNING THIS AGREEMENT. I VOLUNTARILY ACCEPT AND AGREE TO THE ABOVE TERMS, KNOWING THAT I WILL BE BARRED FROM PURSUING ANY OF THE RIGHTS I HAVE WAIVED AND RELEASED IN THIS AGREEMENT.

Dated as of January 9, 2016 /s/ John Colvin
John Colvin

CALIX, INC.

Dated as of January 6, 2016 By: /s/ Diane Prins Sheldahl

Title: Senior Vice President, Talent and Culture

SUBSIDIARIES OF THE REGISTRANT

<u>Entity Name</u>	<u>Jurisdiction</u>
Calix Networks Canada, Inc.	Canada
Calix Network Technology Development (Nanjing) Co. Ltd.	China
Calix Networks UK, Ltd	England, UK
Calix Brasil Servicos Ltda	Brazil

Consent of Independent Registered Public Accounting Firm

The Board of Directors
Calix, Inc.:

We consent to the incorporation by reference in the registration statements on Form S-8 (Nos. 333-209732, 333-202496, 333-194054, 333-185025, 333-172379, and 333-166245) of Calix, Inc. of our report dated February 28, 2017, with respect to the consolidated balance sheet of Calix, Inc. and subsidiaries as of December 31, 2016, and the related consolidated statements of comprehensive loss, stockholders' equity, and cash flows for the year ended December 31, 2016, and the effectiveness of internal control over financial reporting as of December 31, 2016, which report appears in the December 31, 2016 annual report on Form 10-K of Calix, Inc.

/s/ KPMG LLP

San Francisco, California
February 28, 2017

Consent of Ernst & Young LLP, Independent Registered Public Accounting Firm

We consent to the incorporation by reference in the Registration Statements (Form S-8 Nos. 333-209732, 333-202496, 333-194054, 333-185025, 333-172379, and 333-166245) of Calix, Inc., of our report dated February 25, 2016, with respect to the consolidated financial statements of Calix, Inc. for the year ended December 31, 2015, included in this Annual Report (Form 10-K) for the year ended December 31, 2016 .

San Francisco, California
February 28, 2017

/s/ Ernst & Young LLP

**CERTIFICATION OF PRINCIPAL EXECUTIVE OFFICER
PURSUANT TO SECTION 302 OF
THE SARBANES-OXLEY ACT OF 2002**

I, Carl Russo , certify that:

1. I have reviewed this annual report on Form 10-K of Calix, Inc. for the year ended December 31, 2016 ;
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 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)) and internal control over financial reporting (as defined in Exchange Act Rules 13a-15(f) and 15d-15(f)) 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) Designed such internal control over financial reporting, or caused such internal control over financial reporting to be designed under our supervision, to provide reasonable assurance regarding the reliability of financial reporting and the preparation of financial statements for external purposes in accordance with generally accepted accounting principles;
 - (c) 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
 - (d) 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;
5. The registrant's other certifying officer 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: February 28, 2017

/s/ Carl Russo

Carl Russo

Chief Executive Officer

(Principal Executive Officer)

**CERTIFICATION OF PRINCIPLE FINANCIAL OFFICER
PURSUANT TO SECTION 302 OF
THE SARBANES-OXLEY ACT OF 2002**

I, William J. Atkins , certify that:

1. I have reviewed this annual report on Form 10-K of Calix, Inc. for the year ended December 31, 2016 ;
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 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)) and internal control over financial reporting (as defined in Exchange Act Rules 13a-15(f) and 15d-15(f)) 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) Designed such internal control over financial reporting, or caused such internal control over financial reporting to be designed under our supervision, to provide reasonable assurance regarding the reliability of financial reporting and the preparation of financial statements for external purposes in accordance with generally accepted accounting principles;
 - (c) 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
 - (d) 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;
5. The registrant's other certifying officer 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: February 28, 2017

/s/ William J. Atkins

William J. Atkins

EVP and Chief Financial Officer
(Principal Financial Officer)

**CERTIFICATION OF PRINCIPAL EXECUTIVE OFFICER AND PRINCIPAL FINANCIAL OFFICER
PURSUANT TO 18 U.S.C. SECTION 1350,
AS ADOPTED PURSUANT TO
SECTION 906 OF THE SARBANES-OXLEY ACT OF 2002**

I, Carl Russo , certify, pursuant to 18 U.S.C. Section 1350, as adopted pursuant to Section 906 of the Sarbanes-Oxley Act of 2002, that the Annual Report of Calix, Inc. (the “Company”) on Form 10-K for the fiscal year ended December 31, 2016 fully complies with the requirements of Section 13(a) or 15(d) of the Securities Exchange Act of 1934 and that information contained in such Annual Report on Form 10-K fairly presents in all material respects the financial condition and results of operations of the Company.

Date: February 28, 2017

/s/ Carl Russo

Carl Russo

Chief Executive Officer

(Principal Executive Officer)

I, William J. Atkins , certify, pursuant to 18 U.S.C. Section 1350, as adopted pursuant to Section 906 of the Sarbanes-Oxley Act of 2002, that the Annual Report of Calix, Inc. (the “Company”) on Form 10-K for the fiscal year ended December 31, 2016 fully complies with the requirements of Section 13(a) or 15(d) of the Securities Exchange Act of 1934 and that information contained in such Annual Report on Form 10-K fairly presents in all material respects the financial condition and results of operations of the Company.

Date: February 28, 2017

/s/ William J. Atkins

William J. Atkins

EVP and Chief Financial Officer

(Principal Financial Officer)

This certification accompanies the Form 10-K to which it relates, is not deemed filed with the Securities and Exchange Commission and is not to be incorporated by reference into any filing of Calix, Inc. under the Securities Act of 1933, as amended, or the Securities Exchange Act of 1934, as amended (whether made before or after the date of the Form 10-K), irrespective of any general incorporation language contained in such filing.