
**UNITED STATES
SECURITIES AND EXCHANGE COMMISSION**
Washington, D.C. 20549

FORM 10-K

**FOR ANNUAL AND TRANSITION REPORTS PURSUANT TO SECTION 13 OR 15(d) OF THE
SECURITIES EXCHANGE ACT OF 1934**

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

For the Fiscal Year Ended December 31, 2016

☐ **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 0-24612

ADTRAN, Inc.

(Exact name of registrant as specified in its charter)

Delaware
(State of Incorporation)

901 Explorer Boulevard
Huntsville, Alabama 35806-2807
(Address of principal executive offices, including zip code)

63-0918200
(I.R.S. Employer Identification Number)

(256) 963-8000
(Registrant's telephone number, including area code)

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

Title of Each Class:
Common Stock, par value \$0.01 per share

Name of Each Exchange on which Registered
NASDAQ Global Select Market

Securities registered pursuant to Section 12(g) of the Act: None

Indicate by check mark whether 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 Securities Exchange 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 Regulations S-T (232.405 of this chapter) during the preceding 12 months (or for 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 is not contained herein, and will not be contained, to the best of the 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. (Check one)

Large Accelerated Filer ☒ Accelerated Filer ☐

Non-accelerated Filer ☐ 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 registrant's outstanding common stock held by non-affiliates of the registrant on June 30, 2016 was \$903,566,094 based on a closing market price of \$18.65 as quoted on the NASDAQ Global Select Market. There were 48,519,654 shares of common stock outstanding as of February 9, 2017.

DOCUMENTS INCORPORATED BY REFERENCE

Portions of the Proxy Statement for the Annual Meeting of Stockholders to be held on May 10, 2017 are incorporated herein by reference in Part III.

ADTRAN, Inc.
Annual Report on Form 10-K
For the Fiscal Year Ended December 31, 2016

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PART I

ITEM 1. BUSINESS

Overview

ADTRAN, Inc. (ADTRAN) is a leading global provider of networking and communications equipment. Our solutions enable voice, data, video and Internet communications across a variety of network infrastructures. These solutions are deployed by many of the United States' and the world's largest communications service providers (CSPs), distributed enterprises and small and medium-sized businesses, public and private enterprises, and millions of individual users worldwide.

We were incorporated under the laws of Delaware in November 1985, and commenced operations in January 1986. We are headquartered in Cummings Research Park in Huntsville, Alabama. The mailing address at our headquarters is 901 Explorer Boulevard, Huntsville, Alabama, 35806. The telephone number at this location is (256) 963-8000.

Functional Organizational Structure

We realigned our organizational structure in 2015 to better match our market opportunities, technological development initiatives and improve efficiencies. As a result, our chief operating decision maker requested changes in the information that he regularly reviews for purposes of allocating resources and assessing the Company's performance. Beginning with the quarter ended March 31, 2016, we now report our financial performance based on two segments – Network Solutions and Services & Support.

Network Solutions

Network Solutions includes software and hardware products that enable CSPs and enterprise customers to realize a fully connected world. CSPs are now being challenged to deliver Gigabit-enabled residential services, widely available high-bandwidth cloud connectivity services for enterprise customers, and scalable Ethernet and optical networking for mobile backhaul and data center connectivity. These needs are driving CSPs to transition their networks to a fiber-rich, cloud-controlled and software defined future state for large-scale converged service delivery.

ADTRAN is focused on being a top global supplier of Access infrastructure and related value-added solutions from the Cloud Edge to the Subscriber Edge. ADTRAN offers a broad portfolio of flexible hardware and software network solutions that enable CSPs to meet today's service demands, while enabling them to transition to the fully converged, scalable, highly automated, cloud-controlled voice, data, Internet and video network of the future.

Our products and services provide solutions supporting fiber- and copper-based infrastructures and a growing number of wireless and coax-based solutions, lowering the overall cost to deploy advanced services across a wide range of applications. We are accelerating the industry's transition to open, programmable, scalable networks. Complementing these solutions is the ADTRAN Mosaic™ Software-Defined Access (SD-Access) architecture, which combines modern Web-scale technologies with open source platforms to facilitate rapid innovation in multi-technology, multi-vendor environments. The Mosaic cloud platform and Mosaic OS, combined with programmable network elements, provide operators with a highly agile, open-services architecture.

Services & Support

To complement our Network Solutions portfolio and to enable our customers to more quickly and cost-effectively expand their networks, we provide a full-range of network implementation, maintenance and managed services. We ensure that we are responsive to customers who deploy our networking and infrastructure solutions by offering a variety of services and support options. Our network implementation service offerings include engineering, site preparation, cabinet placement, installation, configuration, turn-up and test, training and project management services.

We also offer a complete portfolio of professional services within our ProServices® offering. ADTRAN ProServices is a comprehensive and flexible service program designed to offer complete networking lifecycle support. The ProServices portfolio consists of three distinct service offerings: ProStart® (Planning and Implementation), ProCare® (Maintenance and Support), and ProCloud® (Cloud-based Managed Services). Our maintenance services are specifically designed to protect customers' networks from unnecessary downtime through services such as managed spares, extended warranty, and remote or on-site technical support beyond our standard warranty coverage. These programs, which are available to all of our customers, guarantee priority access to technical support engineers and offer five different maintenance programs ranging from five days-a-week, eight hours-a-day and next business day equipment replacement to seven days-a-week, 24 hours-a-day and equipment replacement within four hours of notification.

ProCloud, a full suite of cloud-based managed services, offers a managed, business-class networking infrastructure supporting wireless LAN and other networking needs. We also offer the option for ADTRAN to provide monitoring and management of the Wi-Fi network, enabling customers to augment their in-house IT resources.

These services have enabled us to develop a true managed service offering with a channel of managed service providers (MSPs) that resell our services to their clients. Many of our former value-added reseller (VAR) partners are transitioning to becoming MSPs, using our ProCloud services to build a successful recurring revenue model with exceptional flexibility.

Revenue Categories

In addition to our new reporting segments, we also report revenue across three categories – **Access & Aggregation**, **Customer Devices**, and **Traditional & Other Products**.

Access & Aggregation solutions are used by CSPs to connect their network infrastructure to their subscribers. This category includes software and hardware-based products and services that aggregate and/or originate access technologies. The portfolio of ADTRAN solutions within this category includes a wide array of modular or fixed physical form factors designed to deliver the best technology and economic fit based on the target subscriber density and environmental conditions.

The Access & Aggregation category includes product and service families such as:

- Total Access® 5000 Series Fiber to the Premises (FTTP) and Fiber to the Node (FTTN) Multi-Service Access Nodes (MSAN)
- hiX 5600 Series fiber aggregation and FTTN MSAN
- Fiber to the Distribution Point (FTTdp) Optical Network Units (ONU)
- GPON, EPON and 10G PON Optical Line Terminals (OLT)
- SDX Fiber Access network elements
- Optical Networking Edge (ONE) aggregation
- IP Digital Subscriber Line Access Multiplexers (DSLAMs)
- Cabinet and Outside-Plant (OSP) enclosures and services
- Network Management and Cloud-based software platforms and applications
- Pluggable optical transceivers (i.e., SFP, SFP+, XFP, QSFP), cables and other miscellaneous materials
- Planning, engineering, program management, maintenance, installation and commissioning services to implement customer network solutions
- Other products and services that are generally applicable to Access & Aggregation

Customer Devices includes our products and services that provide end users access to CSP networks. Our Customer Devices portfolio includes a comprehensive array of service provider and enterprise hardware and software products and services.

The Customer Devices category includes products and services such as:

- Broadband customer premise solutions, including Passive Optical Network (PON) and point-to-point Ethernet Optical Network Terminals (ONTs)
- Radio Frequency over Glass (RfOG) MicroNodes
- Residential and business gateways
- Wi-Fi access points and associated powering and switching infrastructure
- Enterprise Session Border Controllers (eSBC)
- Branch office and access routers
- Carrier Ethernet services termination devices
- VoIP media gateways
- ProServices pre-sale and post-sale technical support
- Planning, engineering, program management, maintenance, installation and commissioning services to implement the customer devices solutions into consumer, small business and enterprise locations
- Other products and services that are generally applicable to customer devices

Traditional & Other Products generally includes a mix of prior generation technologies' products and services, as well as other products and services that do not fit within the Access & Aggregation or Customer Devices categories.

The Traditional & Other Products category includes products and services such as:

- Time Division Multiplexed (TDM) and Asynchronous Transfer Mode (ATM) based aggregation systems and customer devices
- High bit-rate Digital Subscriber Line (HDSL), Asymmetric Digital Subscriber Line (ADSL) and other mature technologies used to deliver business and residential services over the CSP access and customer networks
- Other products and services that do not fit within the Access & Aggregation and Customer Devices categories

Access & Aggregation

Simply stated, our Access & Aggregation solutions enable CSPs to connect to their customers. It was not that long ago that just having Internet connection was enough. Now that the Internet has become engrained in all aspects of our everyday lives, customers want high-speed broadband connectivity everywhere, all the time. ADTRAN is enabling CSPs to meet this demand with a unique portfolio of innovative solutions. These products enable CSPs to maximize their current network investment, while transitioning to next-generation virtualized networks.

ADTRAN has more than 30 years of expert domain experience in the access network. Our market leadership is exemplified by the deployment of over 130,000 MSANs, our leading global position in hardened OSPs and our serving as a key provider for the world's largest vectoring deployments. In fact, by year-end 2016, we had shipped almost 10 million VDSL2 vectoring ports. We are leading the introduction of great technology innovations like XGS PON, NGPON2 tunable optics, G.fast and the enablement of Gigabit communities.

XGS-PON, a new standards-based technology ADTRAN is developing, supports 10Gbps symmetric fixed wavelength PON over new or existing fiber infrastructure. This technology enables CSPs to double the useable lifespan of a fiber network regardless of the multi-Gigabit service rate delivered. CSPs can now support the capacity, reliability and flexibility needed for premium business and mobile backhaul services, while also delivering the price points and scale required for mass market residential applications.

G.fast is quickly gaining momentum among CSPs for its ability to enable Gigabit speeds over existing copper infrastructure, such as in multi-dwelling units (MDUs). ADTRAN is a leader in the development of this technology and is participating in more than 108 G.fast trials with CSPs on six continents.

We understand the transformative effects of broadband. We have seen time and time again how this technology transforms communities, rebuilds urban centers, revitalizes schools, stimulates economic growth and delivers innovative residential and business services. ADTRAN has enabled more than 350 Gigabit communities across the United States. These communities are now seeing the true benefits of this technology and its impact on education, health care and economic development.

Software Defined Networking (SDN) and Network Function Virtualization (NFV) are two key network architectural approaches that are enabling service providers and enterprises to create more agile, programmable networks. SDN enables highly scalable network programmability to help facilitate service automation. NFV virtualizes functions typically performed in proprietary hardware and moves them into software functions that run on general purpose hardware. The combination of these two technologies enables user-driven networks where subscribers can self-activate a wide range of sophisticated on-demand services whenever they want and without having to engage the CSP.

ADTRAN Mosaic™, comprised of the Mosaic Cloud Platform and Mosaic OS, is the industry's most open and complete Software Defined Access (SD-Access) solution that natively integrates a complete FTTx portfolio with an open source SDN controller. This breakthrough innovation is the first to market and supports the rapid service creation and delivery of broadband and business services at Web-scale. Our Mosaic Cloud Platform is an open microservices architecture that provides network management and SDN control for the entire access network, from cloud edge to subscriber edge. It unlocks control and management functions from the underlying network elements, enabling a more flexible, agile services delivery framework. This provides a framework to support user-driven service models. Our Mosaic OS enables service providers to rapidly on-board new access technologies and introduce disruptive operational efficiencies while creating revenue-generating on-demand applications across their entire access network.

ADTRAN is focused on building next-generation access components with open, programmable APIs to allow them to be natively integrated into any leading open source SDN control and orchestration system. To facilitate this approach, ADTRAN is co-chairing the Broadband Forum's SDN and NFV Work Area which is in the process of defining a common set of APIs for broadband access equipment.

The cable multiple-service operator (MSO) market represents a significant portion of the fixed broadband access industry. In September 2016, we acquired key fiber access products, technologies and service relationships from a third party. These solutions, combined with our existing product portfolio, present new opportunities in the MSO market. Not only can we meet current needs for RFoG and EPON solutions for cable operators, but this further positions us for new opportunities for FTTH rollouts and future network virtualization.

Customer Devices

The Customer Devices portfolio includes a comprehensive array of CSP and enterprise hardware and software products and services typically found at the end-user premises that are used to terminate services from a CSP. Products in this category include our broadband fiber ONTs, RFoG micronodes, routers, switches, Wi-Fi access points and enterprise session border controllers. This category also includes our ProServices offerings that are discussed in detail under Services & Support.

ADTRAN provides a unique advantage in that we are one of the only companies in the information and communications technology industry that offer products spanning from the CSP demarcation point to the desktop and beyond. ADTRAN offers a broad array of business networking solutions, from appliance-based to virtualized, including optical fiber, copper and coax, which enable service differentiation and network monetization, while reducing operating expenses for our customers.

Our portfolio includes solutions, such as IP business gateways and access routers that provide businesses access to CSP networks, and enterprise communications solutions that enable businesses to construct voice, data and video networks at a single site or among distributed sites. These products are sold through CSPs as part bundled business services or through our network of VARs.

ADTRAN ONTs are designed to address the fiber access market with industry leading voice, data, and video capabilities. These ONTs include both indoor and outdoor models for residential and business applications. With several different series of GPON, EPON and Active Ethernet ONTs, carriers can benefit from high data rates of fiber optic transmission and the flexibility offered by ADTRAN's portfolio of Ethernet-based systems that can be easily configured for new, customized service offerings

Subscriber Edge Tunable (SET) optical transceivers address several key technology and innovation gaps that have hindered market development for multi-wavelength access networks. SET optics will be a key enabling technology for ADTRAN's NG-PON2 solution, facilitating the delivery of highly elastic fiber services right to the customer premises equipment (CPE). This innovation will enable access providers to cost-effectively and efficiently leverage NG-PON2 to deliver even higher speed FTTH services to homes and businesses.

Traditional & Other Products

These products generally utilize legacy technologies such as HDSL, ADSL, TDM, or ATM, and represent a prior generation of a current product or are products that do not fit under either Access & Aggregation or Customer Devices.

Customers

We have a diverse customer base that includes Tier 1, 2 and 3 CSPs, cable MSOs, and distributed enterprises. It should be noted that major CSPs and many smaller providers require product approval prior to adopting a vendor's products for use in their networks. We are involved in a constant process of submitting new and succeeding generations of products for approval.

Three customers, CenturyLink, Inc., Deutsche Telekom, AG, and Windstream Corporation, individually comprised more than 10 percent of our revenue in 2016. The revenues from these customers are reported in both the Network Solutions and Services & Support segments.

For a discussion of risks associated with customers, CSPs and approval processes, see "Risk Factors – The lengthy sales and approval process required by major and other CSPs for new products could result in fluctuations in our revenue", "Risk Factors – We depend heavily on sales to certain customers; the loss of any of these customers would significantly reduce our revenues and net income", and "Risk Factors – Consolidation and deterioration in the Competitive Local Exchange Carrier (CLEC) market could result in a significant decrease in our revenue", in Item 1A of this report.

Distribution, Sales and Marketing

We sell our products globally through our direct sales organization and our distribution network. Our direct sales organization supports major accounts and has offices in a number of domestic and international locations. Sales to most competitive CSPs and independent telephone companies are fulfilled through a combination of direct sales and major technology distribution companies.

Prior to placing any orders, CSPs typically require lengthy product qualification and standardization processes that can extend for several months or years. Once approved, product orders are typically placed under single or multi-year supply agreements that are generally not subject to minimum volume commitments. CSPs generally prefer having two or more suppliers for most products, so individual orders are usually subject to competition based on some combination of total value, service, price, delivery and other terms.

End-user focused products are fulfilled through a combination of direct sales and major technology distribution companies. This is supported by a direct sales organization for major accounts and a channel-based sales organization to facilitate sales to our partners. MSPs, VARs and system integrators may be affiliated with the company as a channel partner, or they may purchase from a distributor in an unaffiliated fashion. Affiliated partners participate with us at various program levels, based on sales volume and other factors, to receive benefits such as product discounts, market development funds, technical support and training. We maintain field offices worldwide to support direct sales, distributors, MSPs, VARs and system integrators.

Outside of the United States, most CSP products are sold through our direct sales organization and end-user products are sold direct or through distribution arrangements customized for each region. Each region is supported by a field office that offers sales and support functions, and in some cases, warehousing and manufacturing support.

Our field sales organizations, distributors, and CSP customers receive support from regional-based marketing, sales, and customer support groups. Under certain circumstances, other headquarters personnel may be involved in sales and other activities.

Our services offerings can be purchased directly from us, or through one of our CSPs, channel partners, or distribution partners.

Research and Development

Rapidly changing technologies, evolving industry standards, changing customer requirements, and continuing developments in communications service offerings characterize the markets for our products. Our on-going ability to adapt to these changes and to develop new and enhanced products that meet or anticipate market demand is a significant factor influencing our competitive position and our prospects for growth.

During 2016, 2015, and 2014, product development expenditures totaled \$124.8 million, \$129.9 million, and \$132.3 million, respectively. Our product development activities are an important part of our strategy. We plan to maintain an emphasis on product development each year to respond to rapidly changing technology and evolving industry standards.

We strive to deliver innovative network access solutions that lower the total cost of deploying services, increase the level of performance achievable with established infrastructures, reduce operating and capital expense for our customers, increase network bandwidth and functionality, and extend network reach. Our development process is conducted in accordance with ISO 9001, TL 9000, and ISO 14001, which are international standards for quality and environmental management systems.

While we develop most of our products internally, in some cases we license intellectual property (IP) or use Original Design Manufacturer (ODM) partners across certain products. Internal development on advanced technology products gives us more control over design and manufacturing issues, while for traditional designs, ODM and/or licensed IP gives us the ability to leverage the economies of scale of our technology partners. This balanced approach in product development ensures we provide a “best in class” approach to our customers.

As we continue to create more software-based IP, such as our SDN/NFV portfolio, our use of “Agile Development Methodologies” ensures we remain responsive and customer-focused. This enables continuous delivery so we can deliver products faster and more economically to our customers and the market.

Our ability to continually reduce product costs is an important part of our overall business strategy. Our product development efforts are often centered on entering a market with improved technology, allowing us to offer products at competitive prices. We then compete for market share. We continually re-engineer successive generations of the product to improve our product costs.

Product development activities focus on products to support both existing and emerging communications industry technologies in segments of our markets that we consider viable revenue opportunities. We are actively engaged in developing and refining technologies to support data, voice, and video transport primarily over IP/Ethernet network architectures. This includes Ethernet aggregation, fiber optic transport and access, DSL access, access routing, Ethernet switching, wireless LANs, integrated access, converged services, VoIP, network management, and professional services.

A centralized research function supports product development efforts throughout the company. This group provides guidance to our various product design and engineering teams in digital signal processing technologies, computer simulation and modeling, CAD/CAM tool sets, custom semiconductor design, optical transceiver design, industry standards, and technological forecasting.

Many communications issues, processes and technologies are governed by Standards Development Organizations (SDOs). These SDOs consist of representatives from various manufacturers, CSPs and testing laboratories working to establish specifications and compliance guidelines for emerging communications technologies. We are an active participant in several SDOs and have assisted with the development of worldwide standards in many technologies.

Our SDO activities are primarily in the area of broadband access. This includes involvement with the ITU-Telecommunications sector (ITU-T), ATIS, ETSI, NICC (UK Interoperability Standards), and the Broadband Forum (BBF). We are involved in the evolution of optical access technologies, participating in activities in the ITU-T, FSN, IEEE and BBF on next-generation PON. We are also involved in standards development efforts related to maximizing the bandwidth potential of the copper pair to enable new applications. We continue to be involved with the industry-wide interoperability, performance testing, and system-level projects related to those standards in the BBF and are leading the work in the BBF to specify the application of SDN and NFV in the access network. We are also members of ATIS, MEF, Open Compute Project, Wi-Fi Alliance (WFA) and the ETSI Network Functions Virtualization Industry Specification Group (NFV-ISG).

For a discussion of risks associated with our research and development activities, see “Risk Factors – We must continue to update and improve our products and develop new products in order to compete and to keep pace with improvements in communications technology” and “Risk Factors – We engage in research and development activities to improve the application of developed technologies, and as a consequence may miss certain market opportunities enjoyed by larger companies with substantially greater research and development efforts who may focus on more leading edge development”, in Item 1A of this report.

Manufacturing and Operations

The principal steps in our manufacturing process include the purchase and management of materials, assembly, testing, final inspection, packing and shipping. We purchase parts and components for the assembly of some products from a large number of suppliers through a worldwide sourcing program. In addition, we manage a process which identifies the components that are best purchased directly by contract manufacturers for use in the assembly of our products to achieve manufacturing efficiency, quality and cost objectives. Certain key components used in our products are currently available from a single source, and other key components are available from only a limited number of sources. In the past, we have experienced delays in the receipt of certain key components, which has resulted in delays in related product deliveries. We attempt to manage these risks through developing alternative sources, by staging inventories at strategic locations, through engineering efforts designed to obviate the necessity of certain components, and by maintaining close contact and building long-term relationships with our suppliers.

We rely on subcontractors for assembly and testing of certain printed circuit board assemblies, sub-assemblies, chassis, enclosures and equipment shelves, and to purchase some of the raw materials used in such assemblies. We typically manufacture our lower-volume, higher-mix product assemblies at our manufacturing site in Huntsville, Alabama. We build and test new product prototypes and many of our initial production units for our products in Huntsville, and we later transfer the production of higher-volume, lower-mix assemblies to our subcontractors. Subcontract assembly operations can lengthen fulfillment cycle times, but we believe we can respond more rapidly to uncertainties in incoming order rates by selecting assembly subcontractors that have significant reserve capacity and flexibility. Our subcontractors have proven to be flexible and able to meet our quality requirements. We conduct the majority of transactions with our foreign suppliers in United States currency.

We ship the majority of products to our U.S. customers from our facilities in Huntsville, Alabama, although we also fulfill customer orders from other locations near our customers' sites. The majority of our products shipped to EMEA customers come from locations in that region. We also ship directly from subcontractors to a number of customers in the U.S. and international locations. Most of our facilities are certified pursuant to the most current releases of ISO 9001, TL 9000, and ISO 14001. Our Huntsville facilities and many of our key suppliers are U.S. Customs-Trade Partnership Against Terrorism (C-TPAT) certified. Our products are also certified to certain other telephone company standards, including those relating to emission of electromagnetic energy and safety specifications.

For a discussion of risks associated with manufacturing activities, see "Risk Factors – Our strategy of outsourcing a portion of our manufacturing requirements to subcontractors located in various international regions may result in us not meeting our cost, quality or performance standards" and "Risk Factors – Our dependence on a limited number of suppliers for certain raw materials and key components may prevent us from delivering our products on a timely basis, which could have a material adverse effect on customer relations and operating results", in Item 1A of this report.

Competition

We compete in markets for networking and communications equipment for CSPs, businesses, government agencies and other organizations worldwide. Our products and services support the transfer of data, voice and video across CSPs' fiber, copper and wireless infrastructures, as well as across wide area networks, local area networks, and the Internet.

The markets for our products are intensely competitive, and numerous competitors exist in each of our product segments. These competitive conditions and recent declines in economic activity have resulted in competitor consolidations, bankruptcies and liquidations. Consumer acceptance of alternative communications technologies such as coaxial cable through MSOs and cellular-based wireless services that compete with our products has grown in recent years. Our recent acquisition of active EPON and RFoG products better positions us to compete in the MSO market. Competition might further increase if new technologies emerge, new companies enter the market, or existing competitors expand their product lines.

Competitors of our Network Solutions business include Aerohive Networks, Arris, Calix, Inc., Ciena Corporation, Cisco, Edgewater Networks, Fujitsu Network Communications, Hewlett Packard Enterprise, Huawei Technologies, Nokia, Ruckus Wireless (part of the Brocade Communications Systems business recently acquired by Broadcom), Ubiquiti Networks, DASAN Zhone Solutions and ZTE Corporation. We also compete with various ODM vendors who are being engaged directly by some of our service provider customers. Some of these companies compete in a single product segment, while others compete across multiple product lines.

Competitors of our Services & Support business include Ericsson, Fujitsu Network Communications, Nokia, and Calix, Inc.

For further discussion of risks associated with our competition, see "Risk Factors – We must continue to update and improve our products and develop new products in order to compete and to keep pace with improvements in communications technology" and "Risk Factors – We compete in markets that have become increasingly competitive, which may result in reduced gross profit margins and market share", in Item 1A of this report.

Seasonality

We have experienced quarterly fluctuations in customer activity due to seasonal considerations. We typically experience reductions in order volume toward the beginning and end of the calendar year, which may result in lower revenues in the first and fourth quarters of our fiscal year. These seasonal effects may vary and do not always correlate to our operating results. Accordingly, they should not be considered a reliable indicator of our future revenue or operating results.

Foreign Currency

We record transactions denominated in foreign currencies on a monthly basis using exchange rates from throughout the year. Assets and liabilities denominated in foreign currencies are translated at the balance sheet dates using the closing rates of exchange between those foreign currencies and the functional currency with any transaction gains or losses reported in other income (expense). Our primary exposures to foreign currency exchange rate movements are with our German subsidiary, whose functional currency is the Euro, our Australian subsidiary, whose functional currency is the Australian dollar, and our Mexican subsidiary, whose functional currency is the United States dollar. Adjustments resulting from translating financial statements of international subsidiaries are recorded as a component of accumulated other comprehensive income (loss).

Backlog and Inventory

A substantial portion of our shipments in any fiscal period relate to orders received and shipped within that fiscal period for customers under agreements containing non-binding purchase commitments. Further, a significant percentage of orders require delivery within a few days. These factors normally result in very little order backlog or order flow visibility. Additionally, backlog levels may vary because of seasonal trends, timing of customer projects and other factors that affect customer order lead times. We believe that because we fill a substantial portion of customer orders within the fiscal quarter of receipt, backlog is not a meaningful indicator of actual sales for any succeeding period.

To meet this type of demand, we have implemented supply chain management systems to manage the production process. We also maintain substantial finished goods inventories. Our practice of maintaining sufficient inventory levels to assure prompt delivery of our products and services increases the amount of inventory that may become obsolete. The obsolescence of this inventory may require us to write down the value of the obsolete inventory, which may have an adverse effect on our operating results.

For further discussion of risks associated with managing our inventory, see “Risk Factors – Managing our inventory is complex and may include write-downs of excess or obsolete inventory”, in Item 1A of this report.

Government Regulation

Our products must comply with various regulations and standards established by communications authorities in various countries, as well as those of certain international bodies. For instance, environmental legislation within the European Union (EU) may increase our cost of doing business as we amend our products to comply with these requirements. The EU issued directives on the Restriction of the Use of Certain Hazardous Substances in Electrical and Electronic Equipment (RoHS), Waste Electrical and Electronic Equipment (WEEE), and the Registration, Evaluation, Authorization and Restriction of Chemicals (REACH). We continue to implement measures to comply with the RoHS directive, the WEEE directive and the REACH regulation as individual countries issue their implementation guidance.

For further discussion of risks associated with government regulation, see “Risk Factors – Our products may not continue to comply with evolving regulations governing their sale, which may harm our business” and “Risk Factors – Regulatory and potential physical impacts of climate change and other natural events may affect our customers and our production operations, resulting in adverse effects on our operating results”, in Item 1A of this report.

Employees

As of December 31, 2016, we had 2,033 full-time employees in the United States and in our international subsidiaries located in Canada, Mexico, the Asia-Pacific region, Europe and the Middle East region. The majority of ADTRAN GmbH employees, our subsidiary in Germany, are subject to collective bargaining agreements of either the Association of Metal and Electrical Industry in Berlin and Brandenburg e.V. or NORDMETALL Association of Metal and Electrical Industry e.V. In addition, a small number of our ADTRAN GmbH employees are represented by other collective bargaining agreements. We have never experienced a work stoppage, and we believe that our relationship with our employees is good.

We also utilize contractors and temporary employees domestically and internationally in various manufacturing, engineering, sales, and general and administrative capacities, as needed.

Intellectual Property

The ADTRAN corporate logo is a registered trademark of ADTRAN. The name "ADTRAN" is a registered trademark of ADTRAN. A number of our product identifiers and names also are registered. We claim rights to a number of unregistered trademarks as well.

We have ownership of over 520 patents worldwide related to our products and have over 113 additional patent applications pending, of which at least 10 have been approved and are in the process of being issued by various patent offices worldwide. Our patents expire at various dates between January 2017 and July 2035. We will continue to seek additional patents from time to time related to our research and development activities. We do not derive any material amount of revenue from the licensing of our patents.

We protect our intellectual property and proprietary rights in accordance with good legal and business practices. We believe, however, that our competitive success will not depend on the ownership of intellectual property, but instead will depend primarily on the innovative skills, technical competence and marketing abilities of our personnel.

The communications industry is characterized by the existence of an ever-increasing volume of patent litigation and licensing activities. From time to time we receive and may continue to receive notices of claims alleging that we are infringing upon patents or other intellectual property. We cannot predict whether we will prevail in any claims or litigation over alleged infringements, or whether we will be able to license any valid and infringed patents, or other intellectual property, on commercially reasonable terms. It is possible that litigation may result in significant legal costs and judgments. Any intellectual property infringement claims, or related litigation against or by us, could have a material adverse effect on our business and operating results.

For a discussion of risks associated with our intellectual property and proprietary rights, see "Risk Factors – Our failure to maintain rights to intellectual property used in our business could adversely affect the development, functionality, and commercial value of our products", in Item 1A of this report.

Available Information

A copy of this Annual Report on Form 10-K, as well as our Quarterly Reports on Form 10-Q, Current Reports on Form 8-K and any amendments to these reports, are available free of charge on the Internet at our Web site, www.adtran.com, as soon as reasonably practicable (generally, within one day) after we electronically file these reports with, or furnish these reports to, the Securities and Exchange Commission (SEC). The reference to our Web site address does not constitute incorporation by reference of the information contained on the Web site, which information should not be considered part of this document. You may also read and copy any materials we file with the SEC at the SEC's Public Reference Room at 100 F Street, N.E., Washington, D.C. 20549. The public may obtain information on the operation of the Public Reference Room by calling the SEC at 1-800-SEC-0330. The SEC maintains an Internet site (www.sec.gov) that contains our reports, proxy and information statements, and other information that we have filed electronically with the SEC.

ITEM 1A. RISK FACTORS

The Private Securities Litigation Reform Act of 1995 provides a safe harbor for forward-looking statements made by or on behalf of ADTRAN. ADTRAN and its representatives may from time to time make written or oral forward-looking statements, including statements contained in this report and our other filings with the SEC and other communications with our stockholders. Generally, the words, "believe," "expect," "intend," "estimate," "anticipate," "will," "may," "could" and similar expressions identify forward-looking statements. We caution you that any forward-looking statements made by us or on our behalf are subject to uncertainties and other factors that could cause these statements to be wrong. Some of these uncertainties and other factors are listed below. Though we have attempted to list comprehensively these important factors, we caution investors that other factors may prove to be important in the future in affecting our operating results. New factors emerge from time to time, and it is not possible for us to predict all of these factors, nor can we assess the impact each factor or combination of factors may have on our business.

You are further cautioned not to place undue reliance on those forward-looking statements because they speak only of our views as of the date the statements were made. We undertake no obligation to publicly update or revise any forward-looking statements, whether as a result of new information, future events or otherwise, except as required by law. The following are some of the risks that could affect our financial performance or could cause actual results to differ materially from those expressed or implied in our forward-looking statements:

Our operating results may fluctuate in future periods, which may adversely affect our stock price.

Our operating results have been and will continue to be subject to quarterly and annual fluctuations as a result of numerous factors. These factors include, but are not limited to:

- Fluctuations in demand for our products and services, especially with respect to significant network expansion projects undertaken by CSPs;
- Continued growth of communications network traffic and the adoption of communication services and applications by enterprise and consumer end users;
- Changes in sales and implementation cycles for our products and reduced visibility into our customers' spending plans and associated revenue;
- Reductions in demand for our traditional products as new technologies gain acceptance;
- Our ability to maintain appropriate inventory levels and purchase commitments;
- Price and product competition in the communications and networking industries, which can change rapidly due to technological innovation;
- The overall movement toward industry consolidation among both our competitors and our customers;
- Our dependence on sales of our products by channel partners, the timing of their replenishment orders, the potential for conflicts and competition involving our channel partners and large end use customers and the potential for consolidation among our channel partners;
- Variations in sales channels, product cost or mix of products and services sold;
- Delays in receiving acceptance from certain customers as defined under contract, for shipments or services performed near the end of a reporting period;
- Our ability to maintain high levels of product support and professional services;
- Manufacturing and customer order lead times;
- Fluctuations in our gross margin, and the factors that contribute to this as described below;
- Our ability to achieve cost reductions;
- The ability of our customers, channel partners, and suppliers to obtain financing or to fund capital expenditures;
- Our ability to execute on our strategy and operating plans;
- Benefits anticipated from our investments in engineering, sales and marketing activities;
- The effects of climate change and other natural events;

- The effect of political or economic conditions, terrorist attacks, acts of war, or other unrest in certain international markets; and
- Changes in tax laws and regulations, or accounting pronouncements.

As a result, operating results for a particular future period are difficult to predict, and prior results are not necessarily indicative of results to be expected in future periods. Any of the above mentioned factors, or other factors discussed elsewhere in this document, could have a material adverse effect on our business, results of operations, financial condition and cash flow that could adversely affect our stock price.

Our revenue for a particular period can be difficult to predict, and a shortfall in revenue may harm our operating results.

As a result of the many factors discussed in this report, our revenue for a particular quarter is difficult to predict and will fluctuate from quarter to quarter. Our typical pattern of customer orders requests product delivery within a short period following receipt of an order. Consequently, we do not typically carry a significant order backlog, and are dependent upon obtaining orders and completing delivery in accordance with shipping terms that are predominantly within each quarter to achieve our targeted revenues. Our net sales may grow at a slower rate than in previous quarters or may decline. Our deployment/installation cycle can vary depending on the customer's schedule, site readiness, network size and complexity and other factors, which can cause our revenue to fluctuate from period to period. Our ability to meet financial expectations could also be affected if the variable sales patterns seen in prior quarters recur in future quarters. We have experienced periods of time during which manufacturing issues have delayed shipments, leading to variable shipping patterns. In addition, to the extent that manufacturing issues and any related component shortages result in delayed shipments in the future, and particularly in quarters in which we and our subcontractors are operating at higher levels of capacity, it is possible that revenue for a quarter could be adversely affected, and we may not be able to remediate the conditions within the same quarter.

In the past, under certain market conditions, long manufacturing lead times have caused our customers to place the same order multiple times. When this multiple ordering occurs, along with other factors, it may cause difficulty in predicting our sales and, as a result, could impair our ability to manage parts inventory effectively.

We plan our operating expense levels based primarily on forecasted revenue levels. These expenses and the impact of long-term commitments are relatively fixed in the short term. A shortfall in revenue could lead to operating results being below expectations because we may not be able to quickly reduce these fixed expenses in response to short-term business changes.

General economic conditions may reduce our revenues and harm our operating results.

Economic conditions may contribute to a slowdown in communications industry spending, including specific market segments in which we operate. The potential reoccurrence of these trends and their duration and depth are difficult to predict. Capital spending for network infrastructure projects of our largest customers could be delayed or cancelled in response to reduced consumer spending, tight capital markets or declining liquidity trends. Sustained trends of this nature could have a material, adverse effect on our revenues, results of operations, financial condition and cash flow.

Our exposure to the credit risks of our customers and distributors may make it difficult to collect accounts receivable and could adversely affect our operating results, financial condition and cash flow.

Most of our sales are made on an open credit basis, frequently with payment terms of 30 to 45 days in the United States and typically longer in many geographic markets outside the United States. As our international sales grow, our total accounts receivable balance will likely increase. Our days sales outstanding (DSO) could also increase as a result of greater mix of international sales. Additionally, international laws may not provide the same degree of protection against defaults on accounts receivable as provided under United States laws governing domestic transactions; therefore, as our international business grows, we may be subject to higher bad debt expense compared to historical trends. Overall, we monitor individual customer payment capability in granting such open credit arrangements, seek to limit such open credit to amounts that we believe customers can pay, and maintain reserves we believe are adequate to cover exposure for doubtful accounts. 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 may be exposed to similar credit risks relating to collections from distributors of our products, and we apply similar processes to monitor and reserve for any exposures. Turmoil in the financial markets could impact certain of our customers' ability to maintain adequate credit facilities with financial institutions, thereby potentially impacting their ability to pay their debts. While we attempt to monitor these situations carefully and attempt to take appropriate measures to collect accounts receivable balances, there are no assurances we can avoid accounts receivable write-downs or write-offs of doubtful accounts. Such write-downs or write-offs could negatively affect our operating results for the period in which they occur, and could potentially have a material adverse effect on our results of operations, financial condition and cash flow.

We expect gross margins to vary over time, and our levels of product and services gross margins may not be sustainable.

Our 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 software and the mix of configurations and professional services revenue within each product group;
- Introduction of new products by competitors, including products with price-performance advantages;
- Our ability to reduce product cost;
- Increases in material or labor cost;
- Foreign currency exchange rate movements;
- Expediting costs incurred to meet customer delivery requirements;
- Excess inventory and inventory holding charges;
- Obsolescence charges;
- Changes in shipment volume;
- Our ability to absorb fixed manufacturing costs during short-term fluctuations in customer demand;
- Loss of cost savings due to changes in component pricing or charges incurred due to inventory holding periods if parts ordering does not correctly anticipate product demand;
- Lower than expected benefits from value engineering;
- Increased price competition, including competitors from Asia, especially China;
- Changes in distribution channels;
- Increased warranty cost;
- Liquidated damages costs relating to customer contractual terms; and
- Our ability to manage the impact of foreign currency exchange rate fluctuations relating to our accounts receivable and accounts payable.

We must continue to update and improve our products and develop new products in order to compete and to keep pace with improvements in communications technology.

The markets for our products are characterized by rapidly changing technology, evolving industry standards, and continuing improvements in the communications service offerings of CSPs. If technologies or standards applicable to our products, or CSP offerings based on our products, become obsolete or fail to gain widespread commercial acceptance, our existing products or products under development may become obsolete or unmarketable. Moreover, the introduction of products embodying new technologies, the emergence of new industry standards, or changes in CSP offerings could adversely affect our ability to sell our products. For instance, we offer a large number of products that apply primarily to the delivery of high-speed digital communications over the local loop utilizing copper wire. We compete favorably with our competitors by developing a high-performance line of these products. We market products that apply to fiber optic transport in the local loop. We expect, however, that use of coaxial cable and mobile wireless access in place of local loop access will increase. Also, MSOs are increasing their presence in the local loop. To meet the requirements of these new delivery systems and to maintain our market position, we expect to continue to develop new products and/or modify existing products. We expect that our recent acquisition of EPON and RFoG products from a third party will better position us to compete in this adjacent market.

Our sales and profitability in the past have, to a significant extent, resulted from our ability to anticipate changes in technology, industry standards and CSP offerings, and to develop and introduce new and enhanced products. Our continued ability to adapt will be a significant factor in maintaining or improving our competitive position and our prospects for growth. We cannot assure that we will be able to respond effectively to changes in technology, industry standards, CSP offerings or new product announcements by our competitors. We also cannot assure that we will be able to successfully develop and market new products or product enhancements, or that these products or enhancements will achieve market acceptance. Should the rate of decline in sales of certain traditional TDM based products exceed the rate of market acceptance and growth in sales of our newer IP-based products, our revenues may be adversely affected. Any failure by us to continue to anticipate or respond in a cost-effective and timely manner to changes in technology, industry standards, CSP offerings, or new product announcements by our competitors, or any significant delays in product development or introduction, could have a material adverse effect on our ability to competitively market our products and on our revenues, results of operations, financial condition and cash flow.

Our products may not continue to comply with evolving regulations governing their sale, which may harm our business.

Our products must comply with various regulations, regional standards established by communications authorities, import/export control authorities or other authorities who control the execution of trade agreements in various countries, as well as those of certain international bodies. Although we believe our products are currently in compliance with domestic and international standards and regulations in countries in which we currently sell, there can be no assurance that we will be able to design our products to comply with evolving standards and regulations in the future. Changes in domestic or international communications regulations, tariffs, potential changes in trade policies by the U.S. and other nations, application requirements, import/export controls or expansion of regulation to new areas, including access, communications or commerce over the Internet, may affect customer demand for our products or slow the adoption of new technologies which may affect our sales. Further, the cost of complying with the evolving standards and regulations, or the failure to obtain timely domestic or foreign regulatory approvals or certification such that we may not be able to sell our products where these standards or regulations apply, may adversely affect our revenues, results of operations, financial condition and cash flow.

Failure to comply with the U.S. Foreign Corrupt Practices Act and similar laws associated with our global activities could subject us to penalties or other adverse consequences.

A significant portion of our total revenues is generated from sales outside of the United States. As a result, we are subject to the U.S. Foreign Corrupt Practices Act (FCPA), which prohibits U.S. companies and their intermediaries from making corrupt payments to foreign officials for the purpose of directing, obtaining or keeping business, and requires companies to maintain reasonable books and records and a system of internal accounting controls. The FCPA applies to companies, individual directors, officers, employees and agents. Under the FCPA, U.S. companies may be held liable for the corrupt actions taken by employees, strategic or local partners or other representatives. If we or our intermediaries fail to comply with the requirements of the FCPA or similar legislation, governmental authorities in the U.S. and elsewhere could seek to impose civil and/or criminal fines and penalties which could have an adverse effect on our results of operations, financial condition and cash flow. To address this risk, we have implemented a comprehensive, online training program that employees must complete every two years.

We are subject to complex and evolving U.S. and foreign laws and regulations regarding privacy, data protection and other matters. Violations of these laws and regulations may harm our business.

A wide variety of provincial, state, national and international laws and regulations apply to the collection, use, retention, protection, disclosure, transfer and other processing of data, including personal data. Foreign data protection, privacy and other laws and regulations are often more restrictive than those in the U.S. These data protection and privacy-related laws and regulations are varied, evolving, can be subject to significant change, may be augmented or replaced by new or additional laws and regulations, and may result in ever-increasing regulatory and public scrutiny and escalating levels of enforcement and sanctions. If we violate these laws and regulations, governmental authorities in the U.S. and elsewhere could seek to impose civil and/or criminal fines and penalties which could have an adverse effect on our results of operations, financial condition and cash flow.

Our failure or the failure of our contract manufacturers to comply with applicable environmental 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. Our failure or the failure of our contract manufacturers to comply with any of these applicable requirements could result in regulatory penalties, legal claims or disruption of production. In addition, our failure or the failure of our contract 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 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.

If our products do not interoperate with our customers' networks, installations may be delayed or cancelled, which could harm our business.

Our products must interface with existing networks, each of which may have different specifications, utilize multiple protocol standards and incorporate products from other vendors. Many of our customers' networks contain multiple generations of products that have been added over time as these networks have grown and evolved. Our products may be required to interoperate with many or all of the products within these networks, as well as future products in order to meet our customers' requirements. If we find errors in the existing software or defects in the hardware used in our customers' networks, we may have to modify our software or hardware to fix or overcome these errors so that our products will interoperate with the existing software and hardware. Implementation of product corrections involving interoperability issues could increase our costs and adversely affect our results of operations. Such issues may affect our ability to obtain product acceptance from other customers.

The lengthy sales and approval process required by major and other CSPs for new products could result in fluctuations in our revenue.

In the industry in which we compete, sales and approval cycles are often lengthy. Selling efforts often involve a significant commitment of time and resources by us and our customers that may include extensive product testing, laboratory or network certification, or region-specific product certification and homologation requirements for deployment in networks. Additionally, a supplier must first obtain product approval from a major or other CSP to sell its products to them. This process can last from six to 18 months, or longer, depending on the technology, the CSP, and the demand for the product from the CSP's subscribers. Consequently, we are involved in a constant process of submitting for approval succeeding generations of products, as well as products that deploy new technology or respond to new technology demands from a major or other CSP. We have been successful in the past in obtaining these approvals; however, we cannot be certain that we will obtain these approvals in the future or that sales of these products will continue to occur. Any attempt by a major or other CSP to seek out additional or alternative suppliers, or to undertake, as permitted under applicable regulations, the production of these products internally, could have a material adverse effect on our operating results. Furthermore, the delay in sales until the completion of the approval process, the length of which is difficult to predict, could result in fluctuations of revenue and uneven operating results from quarter to quarter or year to year.

We engage in research and development activities to improve the application of developed technologies, and as a consequence may miss certain market opportunities enjoyed by larger companies with substantially greater research and development efforts who may focus on more leading edge development.

A portion of our research and development activities are focused on the refinement and redefinition of access technologies that are currently accepted and commonly practiced, which may include emerging technologies not yet widely distributed across all networks. These research and development efforts result in improved applications of technologies for which demand already exists or is latent. We rarely engage in research projects that represent a vast departure from the current business practices of our key customers. This includes pioneering new services and participating in leading edge field trials or demonstration projects for new technologies. While we believe our strategy provides a higher likelihood of producing nearer term revenue streams, this strategy could reduce our ability to influence industry standards and share in the establishment of intellectual property rights associated with new technologies, and could result in lost revenue opportunities should a new technology achieve rapid and widespread market acceptance.

We depend heavily on sales to certain customers; the loss of any of these customers would significantly reduce our revenues and net income.

Historically, a large percentage of our sales have been made to major CSPs and larger independent communications companies. In 2016, these customers continued to comprise over half of our revenue. As long as the major and larger independent communications companies represent such a substantial percentage of our total sales, our future success will significantly depend upon certain factors which are not within our control, including:

- the timing and size of future purchase orders, if any, from these customers;
- the product requirements of these customers;
- the financial and operational success of these customers;
- the impact of legislative and regulatory changes on these customers;
- the success of these customers' services deployed using our products; and
- the impact of work stoppages at these customers.

In the past, sales to our large customers have fluctuated and may fluctuate significantly from quarter to quarter and year to year. The loss of, or a significant reduction or delay in, sales to any such customer or the occurrence of sales fluctuations could have a material adverse effect on our business and results of operations. Further, any attempt by a major or other CSP to seek out additional or alternative suppliers or to undertake, as permitted under applicable regulations, the production of these products internally, could have a material adverse effect on our operating results.

There has been a trend toward industry consolidation in our markets for several years. We expect this trend to continue as companies attempt to strengthen or hold their market positions and as companies are acquired or are unable to continue operations. This could lead to variability in our operating results and could have a material adverse effect on our business, operating results, financial condition and cash flow. In addition, particularly in the CSP market, rapid consolidation will lead to fewer customers, with the effect that a loss of a major customer could have a material impact on our results that we would not have anticipated in a marketplace composed of more numerous participants.

Our strategy of outsourcing a portion of our manufacturing requirements to subcontractors located in various international regions may result in us not meeting our cost, quality or performance standards.

We are heavily dependent on subcontractors for the assembly and testing of certain printed circuit board assemblies, subassemblies, chassis, enclosures and equipment shelves, and the purchase of some raw materials used in such assemblies. This reliance involves several risks, including the unavailability of, or interruptions in, access to certain process technologies and reduced control over product quality, delivery schedules, transportation, manufacturing yields and costs. We may not be able to provide product order volumes to our subcontractors that are high enough to achieve sufficient cost savings. If shipments fall below forecasted levels, we may incur increased costs or be required to take ownership of excess inventory. Changes in international tariff structures could adversely impact our product costs. In addition, a significant component of maintaining cost competitiveness is the ability of our subcontractors to adjust their own costs to compensate for possible adverse exchange rate movements. To the extent that the subcontractors are unable to do so, and we are unable to procure alternative product supplies, then our own competitiveness and results of operations could be adversely impaired. These risks may be exacerbated by economic or political uncertainties, terrorist actions, the effects of climate change, natural disasters or pandemics in the foreign countries in which our subcontractors are located.

To date, we believe that we have successfully managed the risks of our dependence on these subcontractors through a variety of efforts, which include seeking and developing alternative subcontractors while maintaining existing relationships; however, we cannot be assured that delays in product deliveries will not occur in the future because of shortages resulting from this limited number of subcontractors or from the financial or other difficulties of these parties. Our inability to develop alternative subcontractors if and as required in the future, or the need to undertake required retraining and other activities related to establishing and developing a new subcontractor relationship, could result in delays or reductions in product shipments which, in turn, could have a negative effect on our customer relationships and operating results.

Our dependence on a limited number of suppliers for certain raw materials and key components may prevent us from delivering our products on a timely basis, which could have a material adverse effect on customer relations and operating results.

Certain raw materials and key components used in our products are currently available from only one source, and others are available from only a limited number of sources. The availability of these raw materials and supplies may be subject to market forces beyond our control. From time to time, there may not be sufficient quantities of raw materials and supplies in the marketplace to meet customer demand. Many companies utilize the same raw materials and supplies that we do in the production of their products. Companies with more resources than our own may have a competitive advantage in obtaining raw materials and supplies due to greater buying power. These factors can result in reduced supply, higher prices of raw materials, and delays in the receipt of certain of our key components, which in turn may generate increased costs, lower margins, and delays in product delivery, with a corresponding adverse effect on revenues and customer relationships. Furthermore, due to general economic conditions in the United States and globally, our suppliers may experience financial difficulties, which could result in increased delays, additional costs, or loss of a supplier. We attempt to manage these risks through developing alternative sources, by staging inventories at strategic locations, through engineering efforts designed to obviate the necessity of certain components, and by building long-term relationships and close contact with each of our key suppliers; however, we cannot assure you that delays in or failures of deliveries of key components, either to us or to our contract manufacturers, and consequent delays in product deliveries, will not occur in the future.

In addition, the SEC has adopted disclosure requirements regarding the use of “conflict minerals” mined from the Democratic Republic of Congo and adjoining countries and procedures to identify the source of such minerals included in manufactured products. The required disclosures began in 2014, and will require us to incur additional costs to verify the origins of the identified minerals used and comply with disclosure requirements. The implementation of these requirements could affect the availability of minerals used in the manufacture of a limited number of parts contained in our products. This may reduce the number of suppliers who provide conflict-free minerals, and may affect our ability to obtain products in sufficient quantities or at competitive prices. Our material sourcing is broad based and multi-tiered. While we are taking steps to identify sourcing based on recommended standards for our industry, we may not be able to conclusively verify the origins for all minerals used in our products. An inability to make a sourcing determination of minerals in our products could impact our revenues and harm our financial condition should our customers require that we certify that all components used in our products are free of minerals from this region.

We compete in markets that have become increasingly competitive, which may result in reduced gross profit margins and market share.

The markets for our products are intensely competitive. Additional manufacturers have entered the markets in recent years to offer products in competition with us. Additionally, certain companies have, in recent years, developed the ability to deliver competing products using coaxial cable and cellular transmission, especially in high-density metropolitan areas. Competition would further increase if new companies enter the market or existing competitors expand their product lines. Some of these potential competitors may have greater financial, technological, manufacturing, sales and marketing, and personnel resources than we have. As a result, these competitors may be able to respond more rapidly or effectively to new or emerging technologies and changes in customer requirements, withstand significant price decreases, or devote greater resources to the development, promotion, and sale of their products than we can.

In addition, our present and future competitors may be able to enter our existing or future markets with products or technologies comparable or superior to those that we offer. An increase in competition could cause us to reduce prices, decrease our market share, require increased spending by us on product development and sales and marketing, or cause delays or cancellations in customer orders, any one of which could reduce our gross profit margins and adversely affect our business and results of operations.

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

Our products are highly complex, and we cannot ensure that our extensive product development, manufacturing and integration testing will 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, financial position and cash flow. The development and production of new products with high complexity often involves problems with software, components and manufacturing methods. If significant warranty obligations arise due to reliability or quality issues arising from defects in software, faulty components, or manufacturing methods, our operating results, financial position and cash flow could be negatively impacted by:

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

Managing our inventory is complex and may include write-downs of excess or obsolete inventory.

Managing our inventory of components and finished products is complicated by a number of factors, including the need to maintain a significant inventory of certain components that are in short supply, have been discontinued by the component manufacturer, that must be purchased in bulk to obtain favorable pricing or that require long lead times. These issues may result in our purchasing and maintaining significant amounts of inventory, which if not used or expected to be used based on anticipated production requirements, may become excess or obsolete. Any excess or obsolete inventory could also result in sales price reductions and/or inventory write-downs, which could adversely affect our business and results of operations.

The continuing growth of our international operations could expose us to additional risks, increase our costs and adversely affect our operating results, financial condition and cash flow.

We are expanding our presence in international markets, which represented 21.3% of our net sales for 2016, and as a result, we anticipate increased sales and operating costs in these markets. This international expansion may increase our operational risks and impact our results of operations, including:

- Exposure to unfavorable commercial terms in certain countries;
- The time and cost to staff and manage foreign operations;
- The time and cost to maintain good relationships with employee associations and works councils;
- The time and cost to ensure adequate business interruption controls, processes and facilities;
- The time and cost to manage and evolve financial reporting systems, maintain effective financial disclosure controls and procedures, and comply with corporate governance requirements in multiple jurisdictions;
- The cost to collect accounts receivable and extension of collection periods;
- The cost and potential disruption of facilities transitions required in some business acquisitions;
- Less regulation of patents or other safeguards of intellectual property in certain countries;
- Potential impact of adverse tax, customs regulations and transfer-pricing issues;
- Exposure to global social, political and economic instability, changes in economic conditions, and foreign currency exchange rate movements;
- Potential exposure to liability or damage of reputation resulting from a higher incidence of corruption or unethical business practices in some countries;
- Potential regulations on data protection, regarding the collection, use, disclosure and security of data;
- Potential trade protection measures, export compliance issues, domestic preference procurement requirements, qualification to transact business and additional regulatory requirements; and
- Potential exposure to natural disasters, epidemics and acts of war or terrorism.

If we are unable to successfully address the potential risks associated with our overall international expansion, our operating results, financial condition and cash flow may be negatively impacted.

We may be adversely affected by fluctuations in currency exchange rates.

As our international sales increase or as utilization of international suppliers expands, we may transact additional business in currencies other than United States currency. As a result, we will be subject to the possibility of greater effects of foreign currency exchange translation on our financial statements. Sales contract commitments and accounts receivable balances based on foreign currency expose us to potential risk of loss as the value of the United States dollar fluctuates over time. In addition, for those countries outside the United States where we have significant sales or significant purchases of supplies, devaluation in the local currency could make our products more expensive for customers to purchase or increase our costs, thereby adversely affecting our competitiveness or results of operation. When appropriate, we may enter into various derivative transactions to enhance our ability to manage the volatility relating to these typical business exposures. If used, the derivative transactions will be intended to reduce, but not eliminate, the impact of foreign currency exchange rate movements; therefore, we generally would not anticipate hedging all outstanding foreign currency risk. There can be no assurance that exchange rate fluctuations in the future will not have a material adverse effect on our revenue from international sales, manufacturing costs, results of operations, financial condition and cash flow.

Our success depends on our ability to reduce the selling prices of succeeding generations of our products.

Our strategy is to increase unit sales volumes and market share each year by introducing succeeding generations of products having lower selling prices and increased functionality as compared to prior generations of products. To maintain or increase our revenues and margins while continuing this strategy, we must continue, in some combination, to increase sales volumes of existing products, introduce and sell new products, or reduce our per unit costs at rates sufficient to compensate for the reduced revenue effect of continuing reductions in the average sales prices of our products. We cannot ensure that we will be able to maintain or increase revenues or margins by increasing unit sales volumes of our products, introducing and selling new products, or reducing unit costs of our products.

We are currently evaluating implementation of a new enterprise resource planning (ERP) software solution. If we do not appropriately manage this project, our operations could be significantly disrupted.

We are currently evaluating implementation of a new ERP software solution. This project could have a significant impact on our business processes, information systems, and internal controls, and will require significant change management, meaningful investment in capital and personnel resources, and coordination of numerous software and system providers and internal business teams. We may experience difficulties as we manage these changes and transition to a new ERP solution, including loss or corruption of data, delayed shipments, decreases in productivity as our personnel implement and become familiar with the new systems and processes, unanticipated expenses (including increased costs of implementation or costs of conducting business), and lost revenues. Difficulties in implementing a new ERP solution could disrupt our operations, divert management's attention from key strategic initiatives, and have an adverse effect on our results of operations, financial condition, and cash flow.

Breaches in our information systems and cyber-attacks could compromise our intellectual property and cause significant damage to our business and reputation.

We maintain sensitive data on our information systems and the networks of third party providers, including intellectual property, financial data and proprietary or confidential business information relating to our business, customers, suppliers, and business partners. We also produce networking equipment solutions and software used by network operators to ensure security and reliability in their management and transmission of data. Our customers, particularly those in regulated industries, are increasingly focused on the security features of our technology solutions and maintaining the security of information sensitive to us and our business partners is critical to our business and reputation. We rely upon a number of internal business processes and information systems to support key operations and financial functions, and the efficient operation of these processes and systems is critical. Companies are increasingly subjected to cyber-attacks and other attempts to gain unauthorized access. We have multiple layers of access control, and devote significant resources to data encryption and other security measures to protect our information technology and communications systems. We test our vulnerability periodically and take action to further secure our networks, yet our network and storage applications, and those systems and storage applications maintained by our third party providers, may be subject to unauthorized access by cyber-attack or breached due to operator error, fraudulent activity or other system disruptions. In some cases, it is difficult to anticipate or immediately detect damage caused by such incidents. Unauthorized access or disclosure of our information could compromise our intellectual property and expose sensitive business information. Our information systems are designed to appropriate industry standards to reduce downtime in the event of power outages, weather or climate events and cyber-security issues. A significant failure of our systems due to these issues could result in significant remediation costs, disrupt business operations, and divert management attention, which could result in harm to our business reputation, operating results, financial condition and cash flow.

Our failure to maintain rights to intellectual property used in our business could adversely affect the development, functionality, and commercial value of our products.

Our future success depends in part upon our proprietary technology. Although we attempt to protect our proprietary technology by contract, trademark, copyright and patent registration, and internal security, these protections may not be adequate. Furthermore, our competitors can develop similar technology independently without violating our proprietary rights. From time to time, we receive and may continue to receive notices of claims alleging that we are infringing upon patents or other intellectual property. Any of these claims, whether with or without merit, could result in significant legal fees; divert our management's time, attention and resources; delay our product shipments; or require us to enter into royalty or licensing agreements. We cannot predict whether we will prevail in any claims or litigation over alleged infringements, or whether we will be able to license any valid and infringed patents, or other intellectual property, on commercially reasonable terms. If a claim of intellectual property infringement against us is successful and we fail to obtain a license or develop or license non-infringing technology, our business, operating results, financial condition and cash flow could be affected adversely.

Software under license from third parties for use in certain of our products may not continue to be available to us on commercially reasonable terms.

We integrate third-party software into certain of our products. Licenses for this technology may not be available or continue to be available to us on commercially reasonable terms. Difficulties with third party technology licensors could result in termination of such licenses, which may result in increased costs or require us to purchase or develop a substitute technology. Difficulty obtaining and maintaining third-party technology licenses may disrupt development of our products and increase our costs, which could harm our business.

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

Several of our solutions utilize elements of open source or publicly available software. 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.

We may incur liabilities or become subject to litigation that would have a material effect on our business.

In the ordinary course of business, we accept purchase orders, and enter into sales and other related contracts, for the marketing, sale, manufacture, distribution, or use of our products and services. We may incur liabilities relating to our performance under such agreements, or which result from damage claims arising from certain events as outlined within the particular contract. While we attempt to structure all agreements to include normal protection clauses, such agreements may not always contain, or be subject to, maximum loss clauses, and liabilities arising from them may result in significant adverse changes to our results of operations, financial condition and cash flow.

In the ordinary course of business, we may be subject to various legal proceedings and claims, including employment disputes, patent claims, disputes over contract agreements and other commercial disputes. In some cases, claimants seek damages, or other relief, such as royalty payments related to patents, which, if granted, could require significant expenditures. Any such disputes may be resolved before trial, or if litigated, may be resolved in our favor; however, the cost of claims sustained in litigation, and costs associated with the litigation process, may not be covered by our insurance. Such costs, and the demands on management time during such an event, could harm our business and have a material adverse effect on our liquidity, results of operations, financial condition and cash flow.

Consolidation and deterioration in the Competitive Local Exchange Carrier (CLEC) market could result in a significant decrease in our revenue.

We sell a moderate volume of products directly or indirectly to CLECs who compete with the established ILECs. The CLEC market is experiencing a process of consolidation. Many of our CLEC customers do not have a strong financial position and have limited ability to access the public financial markets for additional funding for growth and operations. If one or more of these CLECs fail, we could face a loss in revenue and an increased bad debt expense, due to their inability to pay outstanding invoices, as well as the corresponding decrease in customer base and future revenue. Furthermore, significant portions of our sales to CLECs are made through independent distributors. The failure of one or more CLECs could also negatively affect the financial position of a distributor to the point that the distributor could also experience business failure and/or default on payments to us.

We depend on distributors who maintain inventories of our products. If the distributors reduce their inventories of these products, our sales could be adversely affected.

We work closely with our distributors to monitor channel inventory levels and ensure that appropriate levels of product are available to resellers and end users. If our distributors reduce their levels of inventory of our products, our sales would be negatively impacted during the period of change.

If we are unable to successfully develop and maintain relationships with system integrators, CSPs, and enterprise VARs, our sales may be negatively affected.

As part of our sales strategy, we are targeting system integrators (SIs), CSPs, and enterprise VARs. In addition to specialized technical expertise, SIs, CSPs and VARs typically offer sophisticated service capabilities that are frequently desired by enterprise customers. In order to expand our distribution channel to include resellers with such capabilities, we must be able to provide effective support to these resellers. If our sales, marketing or service capabilities are not sufficient to provide effective support to such SIs, CSPs and VARs, our sales may be negatively affected, and current SI, CSP and VAR partners may terminate their relationships with us, which would adversely impact our sales and overall results of operations.

If we fail to manage our exposure to worldwide financial and securities markets successfully, our operating results and financial statements could be materially impacted.

We are exposed to financial market risks, including changes in interest rates and prices of marketable equity and fixed-income securities. The primary objective of the large majority of our investment activities is to preserve principal while at the same time achieving appropriate yields without significantly increasing risk. To achieve this objective, a majority of our marketable securities are investment grade corporate and municipal fixed-rate bonds, municipal variable rate demand notes and municipal money market instruments denominated in United States dollars. Our investment policy provides limitations for issuer concentration, which limits, at the time of purchase, the concentration in any one issuer to 5% of the market value of our total investment portfolio.

We have significant investments in corporate and municipal fixed-rate bonds, asset-backed bonds, mortgage/agency-backed bonds, U.S. government bonds, foreign government bonds, and variable rate demand notes. Through December 31, 2016, we have not been required to impair any of these investments; however, we may experience a reduction in value or loss of liquidity in these investments, which may have an adverse effect on our results of operations, liquidity and financial condition. Fixed rate interest securities may have their fair value adversely impacted due to a rise in interest rates, while variable rate securities may produce less income than expected if interest rates fall. Our investments are subject to general credit, liquidity, market, and interest rate risks, which may increase because of conditions in the financial markets and related credit liquidity issues. Consequently, our future investment income may fall short of expectations due to changes in interest rates, or we may suffer losses in principal if we are forced to sell securities that decline in fair value due to changes in interest rates.

At December 31, 2016, our long-term investments included \$29.4 million of marketable equity securities, which included 351 unique securities, and had total net unrealized losses of \$1.2 million. If market conditions deteriorate in 2017, we may be required to record impairment charges related to our marketable equity securities.

See “Management’s Discussion and Analysis of Financial Condition and Results of Operations – Liquidity and Capital Resources” in Item 7, Part II of this report and “Quantitative and Qualitative Disclosures about Market Risk” in Item 7A, Part II of this report for more information about our investments.

New or revised tax regulations, changes in our effective tax rate, or assessments arising from tax audits may have an adverse impact on our results.

We are subject to taxation in various jurisdictions, both domestically and internationally, in which we conduct business. Significant judgment is required in the determination of our provision for income taxes and this determination requires the interpretation and application of complex and sometimes uncertain tax laws and regulations. Many of these jurisdictions have made changes to their tax policies or are contemplating changes, or have unpredictable enforcement activity. Increases in applicable tax rates, implementation of new taxes, changes in applicable tax laws and interpretations of these tax laws and actions by tax authorities in jurisdictions in which we operate could reduce our after-tax income and have an adverse effect on our results of operations. Our effective tax rate may be adversely impacted by changes in the mix of earnings between jurisdictions with different statutory tax rates, in the valuation of our deferred tax assets, and by changes in tax rules and regulations. For instance, the accounting of uncertain tax positions and the amount of our estimated tax deduction for manufacturer’s domestic production activities under Internal Revenue Code Section 199 may add more variability to our future effective tax rates. We currently receive corporate income tax credits under a program administered by the Alabama State Industrial Development Authority in connection with revenue bonds issued to provide funding for expansion of our corporate facilities. We cannot be certain that the state of Alabama will continue to make these corporate income tax credits available; therefore, we may not realize the full benefit of these incentives, which would increase our effective tax rate. Also, employment related tax benefits are currently accounted for in our effective tax rate. In addition, we are subject to examination of our income tax returns by the Internal Revenue Service and various other jurisdictions in which we conduct business. We regularly assess the likelihood of adverse outcomes resulting from these examinations to determine the adequacy of our provision for income taxes. There can be no assurance that the outcomes from these continuous examinations will not have an adverse effect on our results of operations, financial condition and cash flow.

We are required to periodically evaluate the value of our long-lived assets, including the value of intangibles acquired and goodwill resulting from business acquisitions. Any future impairment charges required may adversely affect our operating results.

Valuation of our long-lived assets requires us to make assumptions about future sales prices and sales volumes for our products. These assumptions are used to forecast future, undiscounted cash flows. Forecasting future business trends is difficult and subject to modification. Should actual market conditions differ or our forecasts change, we may be required to reassess long-lived assets and could record an impairment charge. Any impairment charge relating to long-lived assets would have the effect of decreasing our earnings or increasing our losses in such period.

We may not fully realize the anticipated benefits of our restructuring plans. Our restructuring efforts may adversely affect our business and our operating results.

We have undertaken restructuring efforts to realign our organization to better match our market opportunities, technology development initiatives and improve efficiencies. There can be no assurance that we will fully realize the anticipated benefits to future financial results from our efforts. This realignment could adversely affect our ability to execute our business strategy by diverting management's attention from normal daily operations, decreasing cash flow and operating results due to severance payments and facility termination costs, and could be disruptive to our business. If we fail to realize some or all of the expected benefits of this realignment, it could have an adverse effect on our results of operations, financial condition and cash flow.

Our success depends on attracting and retaining key personnel.

Our business has grown significantly since its inception. Our success is dependent in large part on the continued employment of our executive officers, including Thomas R. Stanton, our Chief Executive Officer, and other key management personnel. The unplanned departure of one or more of these individuals could adversely affect our business. In addition, for ADTRAN to continue as a successful entity we must also be able to attract and retain key engineers and technicians whose expertise helps us maintain competitive advantages. We believe that our future success will depend, in large part, upon our ability to continue to attract, retain, train, and motivate highly-skilled employees who are in great demand. Stock awards are designed to reward employees for their long-term contributions and to provide incentives for them to remain with us. Changes to our overall compensation program, including our stock incentive program, may adversely affect our ability to retain key employees. Properly managing our continued growth, avoiding the problems often resulting from such growth and expansion, and continuing to operate in the manner which has proven successful to us to date will be critical to the future success of our business.

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

There is a growing political and scientific consensus that emissions of greenhouse gases continue to alter the composition of the atmosphere, affecting large-scale weather patterns and the global climate. It appears that some form of U.S. federal regulation related to greenhouse gas emissions may occur, and any such regulation could result in the creation of additional costs in the form of taxes or emission allowances. The impact of any future legislation, regulations or product specification requirements on our products and business operations is dependent on the design of the final mandate or standard, so we are unable to predict its significance at this time.

The potential physical impacts of climate change and other natural events on our customers, suppliers, and on our operations are highly uncertain, and will be particular to the circumstances developing in various geographical regions. These events may include changes in weather patterns (including drought and rainfall levels), water availability, storm patterns and intensities, ocean levels, temperature levels, earthquakes and tsunamis. These potential physical effects may adversely affect our revenues, costs, production and delivery schedules, and cause harm to our results of operations, financial condition and cash flow.

While we believe our internal control over financial reporting is adequate, a failure to maintain effective internal control over financial reporting as our business expands could result in a loss of investor confidence in our financial reports and have an adverse effect on our stock price.

Section 404 of the Sarbanes-Oxley Act of 2002 requires that we assess the effectiveness of our internal control over financial reporting as of the end of our fiscal year, and issue a report that states whether or not such internal control is effective. Compliance with these requirements requires significant cost and the commitment of time and staff resources. Expansion of our business, particularly in international geographies, will necessitate ongoing changes to our internal control systems, processes and information systems. We cannot be certain that as this expansion occurs, our current design for internal control over financial reporting will be sufficient to enable management or our independent registered public accounting firm to determine that our internal control is effective for any period, or on an ongoing basis. If we or our independent registered public accounting firm are unable to assert that our internal control over financial reporting is effective, we could lose investor confidence in the accuracy and completeness of our financial statements, which could have an adverse effect on our stock price.

The price of our common stock has been volatile and may continue to fluctuate significantly.

Our common stock is traded on the NASDAQ Global Select Market under the symbol ADTN. Since our initial public offering in August 1994, there has been, and may continue to be, significant volatility in the market for our common stock, based on a variety of factors, including factors listed in this section, some of which are beyond our control.

ITEM 1B. UNRESOLVED STAFF COMMENTS

None.

ITEM 2. PROPERTIES

Our headquarters and principal administrative, engineering and manufacturing facilities are located on an 82-acre campus in Cummings Research Park in Huntsville, Alabama. Two office buildings serve both our Network Solutions and our Services & Support segments. We lease engineering facilities in Europe and India that are used to develop products sold by our Network Solutions segment.

In addition, we lease office space in North America, Latin America, EMEA, and the Asia-Pacific region, providing sales and service support for both of our segments.

These cancelable and non-cancelable leases expire at various times through 2025. For more information, see Note 13 of the Notes to Consolidated Financial Statements included in this report.

We also have numerous sales and support staff operating from home-based offices serving both our Network Solutions and our Services & Support segments, which are located within the United States and abroad.

ITEM 3. LEGAL PROCEEDINGS

We have been involved from time to time in litigation in the normal course of our business. We are not aware of any pending or threatened litigation matters that could have a material adverse effect on us.

ITEM 4. MINE SAFETY DISCLOSURES

Not applicable.

ITEM 4A. EXECUTIVE OFFICERS OF THE REGISTRANT

Set forth below, in accordance with General Instruction G(3) of Form 10-K and Instruction 3 of Item 401(b) of Regulation S-K, is certain information regarding the executive officers of ADTRAN. Unless otherwise indicated, the information set forth is as of December 31, 2016.

Thomas R. Stanton 2007 to present	Age 52 Chief Executive Officer and Chairman of the Board
Roger D. Shannon 2015 to present 2006 – 2015	Age 51 Senior Vice President of Finance, Chief Financial Officer, Corporate Secretary and Treasurer Chief Financial Officer and Treasurer – Steel Technologies LLC
Michael K. Foliano 2006 to present	Age 56 Senior Vice President of Global Operations
Kevin P. Heering 2014 to present 2010 – 2014	Age 45 Senior Vice President, Quality and Administration Vice President, Quality
Raymond R. Schansman 2015 to present 2006 – 2015	Age 60 Senior Vice President of Global Services & Support Senior Vice President and General Manager, Enterprise Networks
Eduard Scheiterer 2015 to present 2014 – 2015 2012 – 2014 2009 – 2012	Age 63 Senior Vice President, Engineering and Development Senior Vice President and Managing Director, International Markets Managing Director – Adtran GmbH, a German wholly owned subsidiary of Adtran, Inc. Head of Broadband Access – Nokia (formerly Nokia Siemens Networks), Germany
James D. Wilson, Jr. 2015 to present 2006 – 2015	Age 46 Senior Vice President of Technology and Strategy Senior Vice President and General Manager, Carrier Networks

There are no family relationships among our directors or executive officers. All officers are elected annually by, and serve at the discretion of, the Board of Directors of ADTRAN.

PART II

ITEM 5. MARKET FOR REGISTRANT'S COMMON EQUITY, RELATED STOCKHOLDER MATTERS AND ISSUER PURCHASES OF EQUITY SECURITIES

ADTRAN's common stock is traded on the NASDAQ Global Select Market under the symbol ADTN. As of February 2, 2017, ADTRAN had 187 stockholders of record and approximately 7,434 beneficial owners of shares held in street name. The following table shows the high and low closing prices per share for our common stock as reported by NASDAQ for the periods indicated.

Common Stock Prices			
		High	Low
2016			
First Quarter	\$	20.47	\$ 16.60
Second Quarter	\$	20.43	\$ 17.14
Third Quarter	\$	19.74	\$ 17.81
Fourth Quarter	\$	23.15	\$ 17.90
2015			
First Quarter	\$	23.38	\$ 18.32
Second Quarter	\$	19.27	\$ 15.98
Third Quarter	\$	17.28	\$ 14.38
Fourth Quarter	\$	17.52	\$ 14.46

The following table shows the shareholder dividends paid in each quarter of 2016 and 2015. The Board of Directors presently anticipates that it will declare a regular quarterly dividend so long as the present tax treatment of dividends exists and adequate levels of liquidity are maintained.

Dividends per Common Share			
		2016	2015
First Quarter	\$	0.09	\$ 0.09
Second Quarter	\$	0.09	\$ 0.09
Third Quarter	\$	0.09	\$ 0.09
Fourth Quarter	\$	0.09	\$ 0.09

Stock Repurchases

The following table sets forth repurchases of our common stock for the months indicated.

Period	Total Number of Shares Purchased	Average Price Paid per Share	Total Number of Shares Purchased as Part of Publicly Announced Plans or Programs (1)	Maximum Number of Shares that May Yet Be Purchased Under the Plans or Programs
October 1, 2016 – October 31, 2016	37,082	17.81	37,082	4,539,322
November 1, 2016 – November 30, 2016	124,414	18.00	124,414	4,414,908
December 1, 2016 – December 31, 2016	—	—	—	4,414,908
Total	161,496		161,496	

- (1) Since 1997, our Board of Directors has approved multiple share repurchase programs that have authorized open market repurchase transactions of up to 50.0 million shares of our common stock, which will be implemented through open market or private purchases from time to time as conditions warrant.

ITEM 6. SELECTED FINANCIAL DATA**Income Statement Data***(In thousands, except per share amounts)*

<i>Year Ended December 31,</i>	<i>2016</i>	<i>2015</i>	<i>2014</i>	<i>2013</i>	<i>2012</i>
Sales	\$ 636,781	\$ 600,064	\$ 630,007	\$ 641,744	\$ 620,614
Cost of sales	345,437	333,167	318,680	332,858	303,971
Gross profit	291,344	266,897	311,327	308,886	316,643
Selling, general and administrative expenses	131,805	123,542	131,958	129,366	134,523
Research and development expenses	124,804	129,876	132,258	131,055	125,951
Operating income	34,735	13,479	47,111	48,465	56,169
Interest and dividend income	3,918	3,953	5,019	7,012	7,657
Interest expense	(572)	(596)	(677)	(2,325)	(2,347)
Net realized investment gain	5,923	10,337	7,278	8,614	9,550
Other income (expense), net	(651)	(1,465)	1,175	(911)	183
Gain on bargain purchase of a business	3,542	—	—	—	1,753
Income before provision for income taxes	46,895	25,708	59,906	60,855	72,965
Provision for income taxes	(11,666)	(7,062)	(15,286)	(15,061)	(25,702)
Net income	\$ 35,229	\$ 18,646	\$ 44,620	\$ 45,794	\$ 47,263
Weighted average shares outstanding – basic	48,724	51,145	55,120	59,001	63,259
Weighted average shares outstanding – assuming dilution (1)	48,949	51,267	55,482	59,424	63,774
Earnings per common share – basic	\$ 0.72	\$ 0.36	\$ 0.81	\$ 0.78	\$ 0.75
Earnings per common share – assuming dilution (1)	\$ 0.72	\$ 0.36	\$ 0.80	\$ 0.77	\$ 0.74
Dividends declared and paid per common share	\$ 0.36	\$ 0.36	\$ 0.36	\$ 0.36	\$ 0.36

Balance Sheet Data (In thousands)

<i>At December 31,</i>	<i>2016</i>	<i>2015</i>	<i>2014</i>	<i>2013</i>	<i>2012</i>
Working capital (2)	\$ 226,367	\$ 219,219	\$ 214,985	\$ 260,252	\$ 324,924
Total assets	\$ 667,235	\$ 632,904	\$ 738,694	\$ 789,898	\$ 883,656
Total debt	\$ 27,800	\$ 28,900	\$ 30,000	\$ 46,500	\$ 46,500
Stockholders' equity	\$ 479,517	\$ 480,160	\$ 549,013	\$ 604,606	\$ 692,406

(1) Assumes exercise of dilutive stock options calculated under the treasury method. See Notes 1 and 14 of Notes to Consolidated Financial Statements.

(2) Working capital consists of current assets less current liabilities. Prior year amounts have been recast to conform to the current period's presentation as a result of our early adoption of Accounting Standards Update 2015-17, Balance Sheet Classification of Deferred Taxes. See Note 1 of Notes to Consolidated Financial Statements.

Overview

ADTRAN, Inc. (ADTRAN) is a leading global provider of networking and communications equipment. Our solutions enable voice, data, video and Internet communications across a variety of network infrastructures. These solutions are deployed by many of the United States' and the world's largest CSPs, distributed enterprises and small and medium-sized businesses, public and private enterprises, and millions of individual users worldwide.

Our success depends upon our ability to increase unit volume and market share through the introduction of new products and succeeding generations of products having lower selling prices and increased functionality as compared to both the prior generation of a product and to the products of competitors. An important part of our strategy is to reduce the cost of each succeeding product generation and then lower the product's selling price based on the cost savings achieved in order to gain market share and/or improve gross margins. As a part of this strategy, we seek in most instances to be a high-quality, low-cost provider of products in our markets. Our success to date is attributable in large measure to our ability to design our products initially with a view to their subsequent redesign, allowing both increased functionality and reduced manufacturing costs in each succeeding product generation. This strategy enables us to sell succeeding generations of products to existing customers, while increasing our market share by selling these enhanced products to new customers.

In addition to reporting our Network Solutions and Services & Support segments, we report revenue across three categories – **Access & Aggregation**, **Customer Devices**, and **Traditional & Other Products**.

Access & Aggregation solutions are used by CSPs to connect their network infrastructure to their subscribers. This category includes software and hardware-based products and services that aggregate and/or originate access technologies. The portfolio of ADTRAN solutions within this category includes a wide array of modular or fixed physical form factors designed to deliver the best technology and economic fit based on the target subscriber density and environmental conditions.

The Access & Aggregation category includes product and service families such as:

- Total Access 5000 Series Fiber to the Premises (FTTP) and Fiber to the Node (FTTN) Multi-Service Access Nodes (MSAN)
- hiX 5600 Series fiber aggregation and FTTN MSAN
- Fiber to the Distribution Point (FTTdp) Optical Network Units (ONU)
- GPON, EPON and 10G PON Optical Line Terminals (OLT)
- Optical Networking Edge (ONE) aggregation
- IP Digital Subscriber Line Access Multiplexers (DSLAMs)
- Cabinet and Outside-Plant (OSP) enclosures and services
- Network Management and Cloud-based software platforms and applications
- Pluggable optical transceivers (i.e., SFP, SFP+, XFP, QSFP), cables and other miscellaneous materials
- Planning, engineering, program management, maintenance, installation and commissioning services to implement customer network solutions
- Other products and services that are generally applicable to Access & Aggregation

Customer Devices includes our products and services that provide end users access to CSP networks. Our Customer Devices portfolio includes a comprehensive array of service provider and enterprise hardware and software products and services.

The Customer Devices category includes products and services such as:

- Broadband customer premise solutions, including Passive Optical Network (PON) and point-to-point Ethernet Optical Network Terminals (ONTs)
- Radio Frequency over Glass (RfOG) MicroNodes
- Residential and business gateways
- Wi-Fi access points and associated powering and switching infrastructure
- Enterprise Session Border Controllers (eSBC)
- Branch office and access routers
- Carrier Ethernet services termination devices
- VoIP media gateways
- ProServices pre-sale and post-sale technical support
- Planning, engineering, program management, maintenance, installation and commissioning services to implement the customer devices solutions into consumer, small business and enterprise locations
- Other products and services that are generally applicable to customer devices

Traditional & Other Products generally includes a mix of prior generation technologies' products and services, as well as other products and services that do not fit within the Access & Aggregation or Customer Devices categories.

The Traditional & Other Products category includes products and services such as:

- Time Division Multiplexed (TDM) and Asynchronous Transfer Mode (ATM) based aggregation systems and customer devices
- HDSL, ADSL and other mature technologies used to deliver business and residential services over the CSP access and customer networks
- Other products and services that do not fit within the Access & Aggregation and Customer Devices categories

Sales were \$636.8 million in 2016, compared to \$600.1 million in 2015 and \$630.0 million in 2014. Our gross profit margin was 45.8% in 2016, compared to 44.5% in 2015 and 49.4% in 2014. Net income was \$35.2 million in 2016, compared to \$18.6 million in 2015 and \$44.6 million in 2014. Earnings per share, assuming dilution, were \$0.72 in 2016, compared to \$0.36 in 2015 and \$0.80 in 2014. Earnings per share in 2016, 2015 and 2014 include the effect of the repurchase of 1.4 million, 4.0 million and 3.7 million shares of our stock in those years, respectively.

Our operating results have fluctuated on a quarterly basis in the past, and may vary significantly in future periods due to a number of factors, including customer order activity and backlog. Backlog levels vary because of seasonal trends, the timing of customer projects and other factors that affect customer order lead times. Many of our customers require prompt delivery of products. This requires us to maintain sufficient inventory levels to satisfy anticipated customer demand. If near-term demand for our products declines, or if potential sales in any quarter do not occur as anticipated, our financial results could be adversely affected. Operating expenses are relatively fixed in the short term; therefore, a shortfall in quarterly revenues could significantly impact our financial results in a given quarter.

Our operating results may also fluctuate as a result of a number of other factors, including a decline in general economic and market conditions, foreign currency exchange rate movements, increased competition, customer order patterns, changes in product and services mix, timing differences between price decreases and product cost reductions, product warranty returns, expediting costs and announcements of new products by us or our competitors. Additionally, maintaining sufficient inventory levels to assure prompt delivery of our products increases the amount of inventory that may become obsolete and increases the risk that the obsolescence of this inventory may have an adverse effect on our business and operating results. Also, not maintaining sufficient inventory levels to assure prompt delivery of our products may cause us to incur expediting costs to meet customer delivery requirements, which may negatively impact our operating results in a given quarter.

Accordingly, our historical financial performance is not necessarily a meaningful indicator of future results, and, in general, management expects that our financial results may vary from period to period. See Note 15 of Notes to Consolidated Financial Statements for additional information. *For a discussion of risks associated with our operating results, see Item 1A of this report.*

Critical Accounting Policies and Estimates

An accounting policy is deemed to be critical if it requires an accounting estimate to be made based on assumptions about matters that are highly uncertain at the time the estimate is made, if different estimates reasonably could have been used, or if changes in the accounting estimate that are reasonably likely to occur could materially impact the results of financial operations. We believe the following critical accounting policies affect our more significant judgments and estimates used in the preparation of our consolidated financial statements. These policies have been consistently applied across our two reportable segments: (1) Network Solutions and (2) Services & Support.

- Revenue is generally recognized when persuasive evidence of an arrangement exists, delivery has occurred, the product price is fixed or determinable, collection of the resulting receivable is reasonably assured, and product returns are reasonably estimable. For product sales, revenue is generally recognized upon shipment of the product to our customer in accordance with the title transfer terms of the sales agreement, generally Ex Works, per International Commercial Terms. In the case of consigned inventory, revenue is recognized when the end customer assumes ownership of the product. Contracts that contain multiple deliverables are evaluated to determine the units of accounting, and the consideration from the arrangement is allocated to each unit of accounting based on the relative selling price and corresponding terms of the contract. We use vendor-specific objective evidence of selling price. When this evidence is not available, we are generally not able to determine third-party evidence of selling price because of the extent of customization among competing products or services from other companies. In these instances, we use best estimates to allocate consideration to each respective unit of accounting. These estimates include analysis of respective bills of material and review and analysis of similar product and service offerings. We record revenue associated with installation services when respective contractual obligations are complete. In instances where customer acceptance is required, revenue is deferred until respective acceptance criteria have been met. Contracts that include both installation services and product sales are evaluated for revenue recognition in accordance with contract terms. As a result, installation services may be considered a separate deliverable or may be considered a combined single unit of accounting with the delivered product. Generally, either the purchaser, ADTRAN, or a third party can perform the installation of our products. Sales taxes invoiced to customers are included in revenue, and represent less than one percent of total revenues. The corresponding sales taxes paid are included in cost of goods sold. Value added taxes collected from customers in international jurisdictions are recorded in accrued expenses as a liability. Revenue is recorded net of discounts. Sales returns are recorded as a reduction of revenue and accrued based on historical sales return experience, which we believe provides a reasonable estimate of future returns.

A significant portion of our products are sold in the United States through a non-exclusive distribution network of major technology distributors. These organizations then distribute or provide fulfillment services to an extensive network of VARs and SIs. VARs and SIs may be affiliated with us as a channel partner, or they may purchase from the distributor on an unaffiliated basis. Additionally, with certain limitations, our distributors may return unused and unopened product for stock-balancing purposes when these returns are accompanied by offsetting orders for products of equal or greater value.

- We carry our inventory at the lower of cost or market, with cost being determined using the first-in, first-out method. We use standard costs for material, labor, and manufacturing overhead to value our inventory. Our standard costs are updated on at least a quarterly basis and any variances are expensed in the current period; therefore, our inventory costs approximate actual costs at the end of each reporting period. We write down our inventory for estimated obsolescence or unmarketable inventory by an amount equal to the difference between the cost of inventory and the estimated fair value based upon assumptions about future demand and market conditions. If actual future demand or market conditions are less favorable than those projected by management, we may be required to make additional inventory write-downs. Our reserve for excess and obsolete inventory was \$25.2 million and \$26.7 million at December 31, 2016 and 2015, respectively. Inventory disposals charged against the reserve were \$4.7 million, \$0.2 million and \$2.1 million for the years ended December 31, 2016, 2015 and 2014, respectively.
- For purposes of determining the estimated fair value of our stock option awards on the date of grant, we use the Black-Scholes Model. This model requires the input of certain assumptions that require subjective judgment. These assumptions include, but are not limited to, expected stock price volatility over the term of the awards and actual and projected employee stock option exercise behaviors. Because our stock option awards have characteristics significantly different from those of traded options, and because changes in the input assumptions can materially affect the fair value estimate, the existing model may not provide a reliable, single measure of the fair value of our stock option awards. For purposes of determining the estimated fair value of our performance-based performance stock unit (PSU) awards on the date of grant, we use a Monte Carlo Simulation valuation method. The PSUs are subject to a market condition based on the relative total shareholder return of ADTRAN against all of the companies in the NASDAQ Telecommunications Index and vest at the end of a three-year performance period. The fair value of restricted stock and restricted stock units (RSUs) is equal to the closing price of our stock on the business day immediately preceding the grant date. Management will continue to assess the assumptions and methodologies used to calculate the estimated fair value of stock-based compensation. Circumstances may change and additional data may become available over time, which could result in changes to these assumptions and methodologies and thereby materially impact our fair value determination. If factors change in future periods, the compensation expense that we record may differ significantly from what we have recorded in the current period.
- We estimate our income tax provision or benefit in each of the jurisdictions in which we operate, including estimating exposures related to examinations by taxing authorities. We also make judgments regarding the realization of deferred tax assets, and establish valuation allowances where we believe it is more likely than not that future taxable income in certain jurisdictions will be insufficient to realize these deferred tax assets. Our estimates regarding future taxable income and income tax provision or benefit may vary due to changes in market conditions, changes in tax laws, or other factors. If our assumptions, and consequently our estimates, change in the future, the valuation allowances we have established may be increased or decreased, impacting future income tax expense. At December 31, 2016 and 2015 respectively, the valuation allowance was \$6.1 million and \$7.3 million. As of December 31, 2016, we have state research tax credit carry-forwards of \$3.9 million, which will expire between 2017 and 2030. These carry-forwards were caused by tax credits in excess of our annual tax liabilities to an individual state where we no longer generate sufficient state income. In addition, as of December 31, 2016, we have a deferred tax asset of \$7.3 million relating to net operating loss carry-forwards which will expire between 2017 and 2030. These carry-forwards are the result of acquisitions in 2009 and in 2011. The acquired net operating losses are in excess of the amount of estimated earnings. We believe it is more likely than not that we will not realize the full benefits of our deferred tax asset arising from these credits and net operating losses, and accordingly, have provided a valuation allowance against that piece.

We establish reserves to remove some or all of the tax benefit of any of our tax positions at the time we determine that the positions become uncertain. We adjust these reserves, including any impact on the related interest and penalties, as facts and circumstances change.
- Our products generally include warranties of 90 days to five years for product defects. We accrue for warranty returns at the time revenue is recognized based on our estimate of the cost to repair or replace the defective products. We engage in extensive product quality programs and processes, including actively monitoring and evaluating the quality of our component suppliers. Our products continue to become more complex in both size and functionality as many of our product offerings migrate from line card applications to total systems. The increasing complexity of our products will cause warranty incidences, when they arise, to be more costly. Our estimates regarding future warranty obligations may change due to product failure rates, material usage, and other rework costs incurred in correcting a product failure. In addition, from time to time, specific warranty accruals may be recorded if unforeseen problems arise. Should our actual experience relative to these factors be worse than our estimates, we will be required to record additional warranty expense. Alternatively, if we provide for more reserves than we require, we will reverse a portion of such provisions in future periods. The liability for warranty obligations totaled \$8.5 million and \$8.7 million at December 31, 2016 and 2015, respectively. These liabilities are included in accrued expenses in the accompanying Consolidated Balance Sheets.

- Pension benefit plan obligations are based on various assumptions used by our actuaries in calculating these amounts. These assumptions include discount rates, compensation rate increases, expected return on plan assets, retirement rates, and mortality rates. Actual results that differ from the assumptions and changes in assumptions could affect future expenses and obligations. Our net pension liability totaled \$10.0 million and \$7.6 million at December 31, 2016 and 2015, respectively. This liability is included in other non-current liabilities in the accompanying Consolidated Balance Sheets.
- We evaluate the carrying value of goodwill during the fourth quarter of each year and between annual evaluations if events occur or circumstances change that would more likely than not reduce the fair value of the reporting unit below its carrying value. We have elected to first assess the qualitative factors to determine whether it is more likely than not that the fair value of the reporting unit to which the goodwill is assigned is less than its carrying amount as a basis for determining whether it is necessary to perform the two-step impairment test. If we determine that it is more likely than not that its fair value is less than its carrying amount, then the two-step impairment test will be performed. Based on the results of our qualitative assessment in 2016, we concluded that it was not necessary to perform the two-step impairment test. There have been no impairment losses recognized since the acquisition in 2011.

Results of Operations

The following table presents selected financial information derived from our consolidated statements of income expressed as a percentage of sales for the years indicated.

<i>Year Ended December 31,</i>	<i>2016</i>	<i>2015</i>	<i>2014</i>
Sales			
Products	82.5%	87.9%	88.8%
Services	17.5	12.1	11.2
Total sales	100.0	100.0	100.0
Cost of sales			
Products	42.5	49.0	45.7
Services	11.7	6.6	4.9
Gross profit	45.8	44.5	49.4
Selling, general and administrative expenses	20.7	20.6	20.9
Research and development expenses	19.6	21.6	21.0
Operating income	5.5	2.2	7.5
Interest and dividend income	0.6	0.7	0.8
Interest expense	(0.1)	(0.1)	(0.1)
Net realized investment gain	0.9	1.7	1.2
Other income (expense), net	(0.1)	(0.2)	0.2
Gain on bargain purchase of a business	0.6	—	—
Income before provision for income taxes	7.4	4.3	9.5
Provision for income taxes	(1.8)	(1.2)	(2.4)
Net income	5.5%	3.1%	7.1%

2016 Compared to 2015

Sales

Our sales increased 6.1% from \$600.1 million in 2015 to \$636.8 million in 2016. The increase in sales is primarily attributable to a \$38.6 million increase in Services & Support sales, partially offset by a \$1.9 million decrease in Network Solutions sales.

Network Solutions sales decreased 0.4% from \$527.4 million in 2015 to \$525.5 million in 2016. The decrease in sales in 2016 is primarily attributable to a decrease in sales of our Access & Aggregation products and Traditional & Other products, partially offset by an increase in sales of our Customer Devices products. The decrease in sales of our Access & Aggregation products is primarily attributable to a decrease in international hiX product sales, partially offset by an increase in OSP DSLAM sales. The increase in sales of our Customer Devices products is primarily attributable to increased sales of our FTTP ONT products. While we expect that revenues from Traditional & Other products will continue to decline over time, these revenues may fluctuate and continue for years because of the time required for our customers to transition to newer technologies.

Services & Support sales increased 53.2% from \$72.6 million in 2015 to \$111.3 million in 2016. The increase in sales in 2016 is primarily attributable to an increase in network installation services for Access & Aggregation products.

International sales, which are included in the Network Solutions and Services & Support amounts discussed above, decreased 25.0% from \$180.7 million in 2015 to \$135.4 million in 2016. International sales, as a percentage of total sales, decreased from 30.1% in 2015 to 21.3% in 2016. Our international revenues are affected to a great extent by the timing of network upgrade projects at our larger European and Latin American customers and by changes in foreign exchange rates in territories in which we sell our products and services. Throughout 2016, our largest European customer focused on completing network upgrade activities in regions outside of our footprint with them. However, we expect that once current projects are completed, future network upgrades will resume in the second half of 2017 within our geographic footprint with this customer. Additionally, after reaching a cyclical high in the second quarter of 2014, the value of the Euro currency relative to the U.S. dollar declined significantly throughout the second half of 2014 and in 2015. Though the Euro-USD exchange rate appears to have stabilized since reaching a low in the fourth quarter of 2015, it remains approximately 20% below the highs of 2014. This decline in the value of the Euro throughout 2015 and into 2016 significantly reduced the U.S. dollar value of revenue from our European sales.

Cost of Sales

As a percentage of sales, cost of sales decreased from 55.5% in 2015 to 54.2% in 2016. The decrease is primarily attributable to a regional revenue shift and customer and product mix, partially offset by a change in services mix, restructuring expenses and an increase in warranty expense related to a product recall caused by a defect in a part provided by a third party supplier.

Network Solutions cost of sales, as a percent of that segment's sales, decreased from 55.7% of sales in 2015 to 51.5% of sales in 2016. The decrease in Network Solutions cost of sales as a percentage of that segment's sales is primarily attributable to a regional revenue shift and customer and product mix, partially offset by restructuring expenses and an increase in warranty expense related to a product recall caused by a defect in a part provided by a third party supplier.

Services & Support cost of sales, as a percent of that segment's sales, increased from 54.1% of sales in 2015 to 67.2% of sales in 2016. The increase in Services & Support cost of sales as a percentage of that segment's sales is primarily attributable to an increase in network installation services, which have higher costs than maintenance and support services, and in restructuring expenses.

An important part of our strategy is to reduce the product cost of each succeeding product generation and then to lower the product's price based on the cost savings achieved. This may cause variations in our gross profit percentage due to timing differences between the recognition of cost reductions and the lowering of product selling prices.

Selling, General and Administrative Expenses

Selling, general and administrative expenses increased 6.7% from \$123.5 million in 2015 to \$131.8 million in 2016. Selling, general and administrative expenses include personnel costs for administration, finance, information systems, human resources, sales and marketing, and general management, as well as rent, utilities, legal and accounting expenses, bad debt expense, advertising, promotional material, trade show expenses, and related travel costs. The increase in selling, general and administrative expenses is primarily attributable to an increase in variable incentive compensation expense and use tax expense, partially offset by a decrease in professional services.

Selling, general and administrative expenses as a percentage of sales increased from 20.6% for the year ended December 31, 2015 to 20.7% for the year ended December 31, 2016. Selling, general and administrative expenses as a percentage of sales will generally fluctuate whenever there is a significant fluctuation in revenues for the periods being compared.

Research and Development Expenses

Research and development expenses decreased 3.9% from \$129.9 million in 2015 to \$124.8 million in 2016. The decrease in research and development expenses is primarily attributable to a decrease in compensation expense, lease expense and testing expense, partially offset by an increase in contract services. The decrease in compensation expense and lease expense in 2016 was primarily attributable to the consolidation of engineering resources that occurred during the second quarter of 2015.

Research and development expenses as a percentage of sales decreased from 21.6% for the year ended December 31, 2015 to 19.6% for the year ended December 31, 2016. Research and development expenses as a percentage of sales will fluctuate whenever there are incremental product development activities or a significant fluctuation in revenues for the periods being compared.

We expect to continue to incur research and development expenses in connection with our new and existing products and our expansion into international markets. We continually evaluate new product opportunities and engage in intensive research and product development efforts which provide for new product development, enhancement of existing products and product cost reductions. We may incur significant research and development expenses prior to the receipt of revenues from a major new product group.

Interest and Dividend Income

Interest and dividend income remained constant at \$3.95 million in 2015 and \$3.92 million in 2016.

Interest Expense

Interest expense, which is primarily related to our taxable revenue bond, remained consistent at \$0.6 million in 2015 and 2016, as we had no substantial change in our fixed-rate borrowing. See “Financing Activities” in “Liquidity and Capital Resources” below for additional information on our taxable revenue bond.

Net Realized Investment Gain

Net realized investment gain decreased from \$10.3 million in 2015 to \$5.9 million in 2016. The decrease in realized investment gains is primarily attributable to fewer gains from the sale of equity securities in 2016. See “Investing Activities” in “Liquidity and Capital Resources” below for additional information.

Other Income (Expense), net

Other income (expense), net, comprised primarily of miscellaneous income, gains and losses resulting from foreign currency exchange rate movements, and investment account management fees, decreased from \$1.5 million of expense in 2015 to \$0.7 million of expense in 2016. The change is primarily attributable to gains on forward currency contracts during the fourth quarter of 2016.

Gain on Bargain Purchase of a Business

Gain on bargain purchase of a business is related to our acquisition of key fiber access products, technologies and service relationships from a third party on September 13, 2016. See note 2 of Notes to Consolidated Financial Statements for additional information.

Income Taxes

Our effective tax rate decreased from 27.5% in 2015 to 24.9% in 2016. The decrease in the effective tax rate between the two periods is primarily attributable to the benefit associated with the bargain purchase gain.

Net Income

As a result of the above factors, net income increased from \$18.6 million in 2015 to \$35.2 million in 2016. As a percentage of sales, net income increased from 3.1% in 2015 to 5.5% in 2016.

2015 Compared to 2014

Sales

Our sales decreased 4.8% from \$630.0 million in 2014 to \$600.1 million in 2015. The decrease in sales is primarily attributable to a \$32.1 million decrease in Network Solutions sales, partially offset by a \$2.2 million increase in Services & Support sales.

Network Solutions sales decreased 5.7% from \$559.5 million in 2014 to \$527.4 million in 2015. The decrease in sales in 2015 is primarily attributable to a decrease in sales of our Customer Devices products and Traditional & Other products. The decrease in sales of our Customer Devices products is primarily attributable to weakness in sales of IP gateway products to the CLEC and MSO markets. While we expect that revenues from Traditional & Other products will continue to decline over time, these revenues may fluctuate and continue for years because of the time required for our customers to transition to newer technologies. Network Solutions sales were also negatively impacted by the impact of the strengthening U.S. dollar against the Euro.

Services & Support sales increased 3.1% from \$70.5 million in 2014 to \$72.6 million in 2015. The increase in sales in 2015 is primarily attributable to an increase in network installation services for Access & Aggregation products.

International sales, which are included in the Network Solutions and Services & Support amounts discussed above, decreased 27.3% from \$248.6 million in 2014 to \$180.7 million in 2015. International sales, as a percentage of total sales, decreased from 39.5% in 2014 to 30.1% in 2015. Our international revenues are affected to a great extent by the timing of network upgrade projects at our larger European and Latin American customers and by changes in foreign exchange rates in territories in which we sell our products and services. After reaching a cyclical high in the second quarter of 2014, the value of the Euro currency relative to the U.S. dollar declined significantly throughout the second half of 2014 and in 2015. This decline in the value of the Euro throughout 2015 significantly reduced the U.S. dollar value of revenue from our European sales.

Cost of Sales

As a percentage of sales, cost of sales increased from 50.6% in 2014 to 55.5% in 2015. The increase is primarily attributable to the strengthening of the U.S. dollar against the Euro, growth in our service-related material sales in the U.S. market, and customer and product mix.

Network Solutions cost of sales, as a percent of that segment's sales, increased from 51.5% of sales in 2014 to 55.7% of sales in 2015. The increase in Network Solutions cost of sales as a percentage of that segment's sales is primarily attributable to the strengthening of the U.S. dollar against the Euro, and customer and product mix.

Services & Support cost of sales, as a percent of that segment's sales, increased from 43.5% of sales in 2014 to 54.1% of sales in 2015. The increase in Services & Support cost of sales as a percentage of that segment's sales is primarily attributable to an increase in network installation services, which have higher costs, versus a greater mix of maintenance and support services in the prior period.

An important part of our strategy is to reduce the product cost of each succeeding product generation and then to lower the product's price based on the cost savings achieved. This may cause variations in our gross profit percentage due to timing differences between the recognition of cost reductions and the lowering of product selling prices.

Selling, General and Administrative Expenses

Selling, general and administrative expenses decreased 6.4% from \$132.0 million in 2014 to \$123.5 million in 2015. Selling, general and administrative expenses include personnel costs for administration, finance, information systems, human resources, sales and marketing, and general management, as well as rent, utilities, legal and accounting expenses, bad debt expense, advertising, promotional material, trade show expenses, and related travel costs. The decrease in selling, general and administrative expenses is primarily attributable to decreases in compensation expense, travel expense, and independent contractor expense, partially offset by an increase in professional services and restructuring charges.

Selling, general and administrative expenses as a percentage of sales decreased from 20.9% for the year ended December 31, 2014 to 20.6% for the year ended December 31, 2015. Selling, general and administrative expenses as a percentage of sales will generally fluctuate whenever there is a significant fluctuation in revenues for the periods being compared.

Research and Development Expenses

Research and development expenses decreased 1.8% from \$132.3 million in 2014 to \$129.9 million in 2015. The decrease in research and development expenses is primarily attributable to decreases in compensation expense and independent contractors, partially offset by an increase in engineering and testing expense and restructuring charges.

Research and development expenses as a percentage of sales increased from 21.0% for the year ended December 31, 2014 to 21.6% for the year ended December 31, 2015. Research and development expenses as a percentage of sales will fluctuate whenever there are incremental product development activities or a significant fluctuation in revenues for the periods being compared.

We expect to continue to incur research and development expenses in connection with our new and existing products and our expansion into international markets. We continually evaluate new product opportunities and engage in intensive research and product development efforts which provide for new product development, enhancement of existing products and product cost reductions. We may incur significant research and development expenses prior to the receipt of revenues from a major new product group.

Interest and Dividend Income

Interest and dividend income decreased from \$5.0 million in 2014 to \$4.0 million in 2015. The decrease in interest and dividend income is primarily attributable to a reduction in the average rate of return on our investments, as well as a decrease in our average investment balances.

Interest Expense

Interest expense, which is primarily related to our taxable revenue bond, decreased from \$0.7 million in 2014 to \$0.6 million in 2015. The decrease is primarily attributable to a reduction in the principal and the impact of an interest rate reduction, which occurred during the first quarter of 2014. See "Financing Activities" in "Liquidity and Capital Resources" below for additional information on our taxable revenue bond.

Net Realized Investment Gain

Net realized investment gain increased from \$7.3 million in 2014 to \$10.3 million in 2015. The increase in realized investment gains is primarily attributable to larger gains from the sale of equity securities in 2015. See "Investing Activities" in "Liquidity and Capital Resources" below for additional information.

Other Income (Expense), net

Other income (expense), net, comprised primarily of miscellaneous income, gains and losses resulting from foreign currency exchange rate movements, and investment account management fees, changed from \$1.2 million of income in 2014 to \$1.5 million of expense in 2015. The change is primarily attributable to a \$2.4 million gain recorded in the fourth quarter of 2014 related to the settlement of working capital items from an acquisition transaction that closed in 2012.

Income Taxes

Our effective tax rate increased from 25.5% in 2014 to 27.5% in 2015. The increase in the effective tax rate between the two periods is primarily attributable to a foreign tax benefit from the elimination of a valuation allowance in 2014, partially offset by a benefit from the closure of an audit and a higher R&D credit in 2015.

Net Income

As a result of the above factors, net income decreased from \$44.6 million in 2014 to \$18.6 million in 2015. As a percentage of sales, net income decreased from 7.1% in 2014 to 3.1% in 2015.

Liquidity and Capital Resources

Liquidity

We intend to finance our operations with cash flow from operations. We have used, and expect to continue to use, the cash generated from operations for working capital, purchases of treasury stock, shareholder dividends, and other general corporate purposes, including (i) product development activities to enhance our existing products and develop new products and (ii) expansion of sales and marketing activities. We believe our cash and cash equivalents, investments and cash generated from operations to be adequate to meet our operating and capital needs for at least the next 12 months.

At December 31, 2016, cash on hand was \$79.9 million and short-term investments were \$43.2 million, which resulted in available short-term liquidity of \$123.1 million, of which \$42.1 million was held by our foreign subsidiaries. At December 31, 2015, cash on hand was \$84.6 million and short-term investments were \$34.4 million, which resulted in available short-term liquidity of \$118.9 million, of which \$38.9 million was held by our foreign subsidiaries. The increase in short-term liquidity from December 31, 2015 to December 31, 2016 is primarily attributable to shifts among available investment option tenures to provide funds for our short-term cash needs.

Operating Activities

Our working capital, which consists of current assets less current liabilities, increased 3.3% from \$219.2 million as of December 31, 2015 to \$226.4 million as of December 31, 2016. The increase in our working capital is primarily attributable to an increase in accounts receivable and inventory, partially offset by an increase in accounts payable and accrued wages and benefits. The quick ratio, defined as cash and cash equivalents, short-term investments, and net accounts receivable, divided by current liabilities, decreased from 2.06 as of December 31, 2015 to 1.70 as of December 31, 2016. The decrease in the quick ratio is primarily attributable to an increase in accounts payable and accrued wages and benefits, partially offset by an increase in accounts receivable. The current ratio, defined as current assets divided by current liabilities, decreased from 3.37 as of December 31, 2015 to 2.79 as of December 31, 2016. The decrease in the current ratio is primarily attributable to an increase in accounts payable and accrued wages and benefits, partially offset by an increase in accounts receivable and inventory. The increase in accrued wages and benefits was primarily attributable to an increase in accrued variable incentive compensation.

Net accounts receivable increased 28.4% from \$71.9 million at December 31, 2015 to \$92.3 million at December 31, 2016. Our allowance for doubtful accounts was \$19 thousand at December 31, 2015 and nil at December 31, 2016. Quarterly accounts receivable DSO increased from 48 days as of December 31, 2015 to 52 days as of December 31, 2016. The change in net accounts receivable and DSO is due to changes in customer mix and the timing of sales and collections during the quarter. Certain international customers can have longer payment terms than U.S. customers.

Annual inventory turnover decreased from 3.75 turns as of December 31, 2015 to 3.51 turns as of December 31, 2016. Inventory increased 14.8% from \$91.5 million at December 31, 2015 to \$105.1 million at December 31, 2016. We expect inventory levels to fluctuate as we attempt to maintain sufficient inventory in response to seasonal cycles of our business ensuring competitive lead times while managing the risk of inventory obsolescence that may occur due to rapidly changing technology and customer demand.

Accounts payable increased 58.9% from \$48.7 million at December 31, 2015 to \$77.3 million at December 31, 2016. Accounts payable will fluctuate due to variations in the timing of the receipt of supplies, inventory and services and our subsequent payments for these purchases.

Investing Activities

Capital expenditures totaled approximately \$21.4 million, \$11.8 million and \$11.3 million for the years ended December 31, 2016, 2015 and 2014, respectively. These expenditures were primarily used to purchase computer hardware, software, manufacturing and test equipment, and building improvements.

Our combined short-term and long-term investments decreased \$13.1 million from \$232.4 million at December 31, 2015 to \$219.3 million at December 31, 2016. This decrease reflects the impact of our cash needs for share repurchases, shareholder dividends, equipment acquisitions, as well as net realized and unrealized losses, and amortization of net premiums on our combined investments, partially offset by additional funds available for investment provided by our operating activities and stock option exercises by our employees.

We invest all available cash not required for immediate use in operations primarily in securities that we believe bear minimal risk of loss. At December 31, 2016, these investments included corporate bonds of \$66.4 million, municipal fixed-rate bonds of \$11.8 million, asset-backed bonds of \$10.2 million, mortgage/agency-backed bonds of \$13.0 million, U.S. government bonds of \$29.8 million, foreign government bonds of \$3.7 million, and variable rate demand notes of \$11.9 million. At December 31, 2015, these investments included corporate bonds of \$57.6 million, municipal fixed-rate bonds of \$26.4 million, asset-backed bonds of \$19.2 million, mortgage/agency-backed bonds of \$15.4 million and government bonds of \$35.4 million. As of December 31, 2016, our corporate bonds, municipal fixed-rate bonds, asset-backed bonds, mortgage/agency-backed bonds, U.S. government bonds, foreign government bonds, and municipal variable rate demand notes were classified as available-for-sale and had a combined duration of 1.15 years with an average credit rating of A+. Because our bond portfolio has a high quality rating and contractual maturities of a short duration, we are able to obtain prices for these bonds derived from observable market inputs, or for similar securities traded in an active market, on a daily basis.

Our long-term investments decreased 11.1% from \$198.0 million at December 31, 2015 to \$176.1 million at December 31, 2016. Long-term investments at December 31, 2016 and December 31, 2015 included an investment in a certificate of deposit of \$27.8 million and \$30.0 million, respectively, which serves as collateral for our revenue bond, as discussed below. We have investments in various marketable equity securities classified as long-term investments at a cost of \$30.6 million and \$31.6 million, and with a fair value of \$29.4 million and \$34.3 million, at December 31, 2016 and December 31, 2015, respectively.

Long-term investments at December 31, 2016 and 2015 also included \$14.6 million and \$12.8 million, respectively, related to our deferred compensation plan, and \$0.8 million and \$1.3 million, respectively, of other investments, consisting of interests in two private equity funds and an investment in a privately held telecommunications equipment manufacturer.

We review our investment portfolio for potential “other-than-temporary” declines in value on an individual investment basis. We assess, on a quarterly basis, significant declines in value which may be considered other-than-temporary and, if necessary, recognize and record the appropriate charge to write-down the carrying value of such investments. In making this assessment, we take into consideration qualitative and quantitative information, including but not limited to the following: the magnitude and duration of historical declines in market prices, credit rating activity, assessments of liquidity, public filings, and statements made by the issuer. We generally begin our identification of potential other-than-temporary impairments by reviewing any security with a fair value that has declined from its original or adjusted cost basis by 25% or more for six or more consecutive months. We then evaluate the individual security based on the previously identified factors to determine the amount of the write-down, if any. For the years ended December 31, 2016, 2015, and 2014, we recorded charges of \$0.8 million, \$0.2 million and \$0.1 million, respectively, related to the other-than-temporary impairment of certain publicly traded equity securities, our deferred compensation plan assets, and our investments in two private equity funds.

Financing Activities

In conjunction with an expansion of our Huntsville, Alabama, facility, we were approved for participation in an incentive program offered by the State of Alabama Industrial Development Authority (the “Authority”). Pursuant to the program, on January 13, 1995, the Authority issued \$20.0 million of its taxable revenue bonds and loaned the proceeds from the sale of the bonds to ADTRAN. The bonds were originally purchased by AmSouth Bank of Alabama, Birmingham, Alabama (the “Bank”). Wachovia Bank, N.A., Nashville, Tennessee (formerly First Union National Bank of Tennessee) (the “Bond holder”), which was acquired by Wells Fargo & Company on December 31, 2008, purchased the original bonds from the Bank and made further advances to the Authority, bringing the total amount outstanding to \$50.0 million. An Amended and Restated Taxable Revenue Bond (“Amended and Restated Bond”) was issued and the original financing agreement was amended. The Amended and Restated Bond bears interest, payable monthly. The interest rate is 2% per annum. The Amended and Restated Bond matures on January 1, 2020, and is currently outstanding in the aggregate principal amount of \$27.8 million. The estimated fair value of the bond using a level 2 valuation technique at December 31, 2016 was approximately \$28.1 million, based on a debt security with a comparable interest rate and maturity and a Standard & Poor’s credit rating of AAA. We are required to make payments to the Authority in amounts necessary to pay the interest on the Amended and Restated Bond. Included in long-term investments at December 31, 2016 is \$27.8 million which is invested in a restricted certificate of deposit. These funds serve as a collateral deposit against the principal of this bond, and we have the right to set-off the balance of the Bond with the collateral deposit in order to reduce the balance of the indebtedness.

In conjunction with this program, we are eligible to receive certain economic incentives from the state of Alabama that reduce the amount of payroll withholdings that we are required to remit to the state for those employment positions that qualify under the program. We realized economic incentives related to payroll withholdings totaling \$1.3 million for each of the years ended December 31, 2016, 2015 and 2014.

We made principal payments of \$1.1 million for the years ended December 31, 2016 and 2015, respectively, and we anticipate making a principal payment in 2017. At December 31, 2016, \$1.0 million of the bond debt was classified as a current liability in accounts payable in the Consolidated Balance Sheets.

Dividends

During 2016, 2015 and 2014, we paid shareholder dividends totaling \$17.6 million, \$18.4 million and \$19.9 million, respectively. The Board of Directors presently anticipates that it will declare a regular quarterly dividend so long as the present tax treatment of dividends exists and adequate levels of liquidity are maintained. The following table shows dividends paid to our shareholders in each quarter of 2016, 2015 and 2014.

Dividends per Common Share				
	2016	2015	2014	
First Quarter	\$ 0.09	\$ 0.09	\$ 0.09	
Second Quarter	\$ 0.09	\$ 0.09	\$ 0.09	
Third Quarter	\$ 0.09	\$ 0.09	\$ 0.09	
Fourth Quarter	\$ 0.09	\$ 0.09	\$ 0.09	

Stock Repurchase Program

Since 1997, our Board of Directors has approved multiple share repurchase programs that have authorized open market repurchase transactions of up to 50.0 million shares of our common stock, which will be implemented through open market or private purchases from time to time as conditions warrant. For the years 2016, 2015 and 2014, we repurchased 1.4 million shares, 4.0 million shares and 3.7 million shares, respectively, for a cost of \$25.8 million, \$66.2 million and \$80.6 million, respectively, at an average price of \$18.29, \$16.68 and \$21.96 per share, respectively. We currently have the authority to purchase an additional 4.4 million shares of our common stock under the current plans approved by the Board of Directors.

Stock Option Exercises

To accommodate employee stock option exercises, we issued 0.3 million shares of treasury stock for \$4.7 million during the year ended December 31, 2016, 0.1 million shares of treasury stock for \$1.0 million during the year ended December 31, 2015, and 0.1 million shares of treasury stock for \$2.8 million during the year ended December 31, 2014.

Off-Balance Sheet Arrangements and Contractual Obligations

We do not have off-balance sheet financing arrangements and have not engaged in any related party transactions or arrangements with unconsolidated entities or other persons that are reasonably likely to materially affect liquidity or the availability of or requirements for capital resources.

We have various contractual obligations and commercial commitments. The following table sets forth, in millions, the annual payments we are required to make under contractual cash obligations and other commercial commitments at December 31, 2016.

Contractual Obligations

(In millions)	Total	2017	2018	2019	2020	After 2020
Long-term debt	\$ 27.8	\$ 1.0	\$ —	\$ —	\$ 26.8	\$ —
Interest on long-term debt	1.5	0.5	0.5	0.5	—	—
Purchase obligations	184.5	183.4	0.8	0.3	—	—
Operating lease obligations	10.5	3.8	2.0	0.8	0.7	3.2
Totals	\$ 224.3	\$ 188.7	\$ 3.3	\$ 1.6	\$ 27.5	\$ 3.2

We are required to make payments necessary to pay the interest on the Amended and Restated Bond, currently outstanding in the aggregate principal amount of \$27.8 million. The bond matures on January 1, 2020, and bears interest at the rate of 2% per annum. Included in long-term investments are \$27.8 million of restricted funds, which is a collateral deposit against the principal amount of this bond. We made principal payments of \$1.1 million for the years ended December 31, 2016 and 2015. We anticipate making a principal payment in 2017. At December 31, 2016 and 2015, \$1.0 million of the bond debt was classified as a current liability in accounts payable in the Consolidated Balance Sheets. See Note 9 of Notes to Consolidated Financial Statements for additional information.

Purchase obligations primarily relate to open purchase orders to our contract manufacturers, component suppliers, service partners, and other vendors.

We have committed to invest up to an aggregate of \$7.9 million in two private equity funds, and we have contributed \$8.4 million as of December 31, 2016, of which \$7.7 million has been applied to these commitments. The additional \$0.2 million commitment has been excluded from the table above due to uncertainty of when it will be applied.

We also have obligations related to uncertain income tax positions that have been excluded from the table above due to the uncertainty of when the related expense will be recognized. See Note 10 of Notes to Consolidated Financial Statements for additional information.

Recently Issued Accounting Pronouncements

In May 2014, the Financial Accounting Standards Board (FASB) issued Accounting Standards Update No. 2014-09, *Revenue from Contracts with Customers (Topic 606)* (ASU 2014-09), which supersedes the revenue recognition requirements in Topic 605, *Revenue Recognition*, including most industry-specific revenue recognition guidance throughout the Industry Topics of the Codification. The core principle of ASU 2014-09 is to recognize revenues when promised goods or services are transferred to customers in an amount that reflects the consideration that is expected to be received for those goods or services. In August 2015, the FASB issued ASU 2015-14, which deferred the effective date of ASU 2014-09 to fiscal years beginning after December 31, 2017, and interim periods within those fiscal years, with early adoption permitted for reporting periods beginning after December 15, 2016. Subsequently, the FASB issued ASUs in 2016 containing implementation guidance related to ASU 2014-09, including: ASU 2016-08, *Revenue from Contracts with Customers (Topic 606): Principal versus Agent Considerations (Reporting Revenue Gross versus Net)*, which is intended to improve the operability and understandability of the implementation guidance on principal versus agent considerations; ASU 2016-10, *Revenue from Contracts with Customers (Topic 606): Identifying Performance Obligations and Licensing*, which is intended to clarify two aspects of Topic 606: identifying performance obligations and the licensing implementation guidance; ASU 2016-12, *Revenue from Contracts with Customers (Topic 606): Narrow-Scope Improvements and Practical Expedients*, which contains certain provisions and practical expedients in response to identified implementation issues; and ASU 2016-20, *Technical Corrections and Improvements to Topic 606, Revenue from Contracts with Customers*, which is intended to clarify the Codification or to correct unintended application of guidance. ASU 2014-09 allows for either full retrospective or modified retrospective adoption. We plan to adopt ASU 2014-09 and the related ASUs on January 1, 2018, and we are currently evaluating the transition method that will be elected. We are continuing to evaluate the potential impact of these ASUs, and we believe the most significant potential impact relates to our accounting for software license and installation services revenues. We do not believe there will be a significant impact to product or maintenance revenues.

In July 2015, the FASB issued Accounting Standards Update No. 2015-11, *Inventory (Topic 330): Simplifying the Measurement of Inventory* (ASU 2015-11). Currently, Topic 330, *Inventory*, requires an entity to measure inventory at the lower of cost or market. Market could be replacement cost, net realizable value, or net realizable value less an approximately normal profit margin. ASU 2015-11 does not apply to inventory that is measured using last-in, first-out (LIFO) or the retail inventory method. The amendments apply to all other inventory, which includes inventory that is measured using first-in, first-out (FIFO) or average cost. ASU 2015-11 requires an entity to measure in scope inventory at the lower of cost and net realizable value. Net realizable value is the estimated selling prices in the ordinary course of business, less reasonably predictable costs of completion, disposal, and transportation. ASU 2015-11 is effective for annual reporting periods beginning after December 15, 2016, including interim periods within that reporting period. The amendments should be applied prospectively with earlier application permitted as of the beginning of an interim or annual reporting period. We adopted ASU 2015-05 in the first quarter of 2017, and there was no material impact on our financial position, results of operations and cash flows.

In February 2016, the FASB issued Accounting Standards Update No. 2016-02, *Leases (Topic 842)* (ASU 2016-02). ASU 2016-02 requires an entity to recognize lease assets and lease liabilities on the balance sheet and to disclose key information about the entity's leasing arrangements. ASU 2016-02 is effective for fiscal years beginning after December 15, 2018, and interim periods within those fiscal years. A modified retrospective approach is required. We anticipate the adoption of ASU 2016-02 will have a material impact on our financial position; however, we do not believe adoption will have a material impact on our results of operations. We believe the most significant impact relates to our accounting for operating leases for office space and equipment.

In March 2016, the FASB issued Accounting Standards Update No. 2016-09, *Compensation – Stock Compensation (Topic 718): Improvements to Employee Share-Based Payment Accounting* (ASU 2016-09). ASU 2016-09 simplifies several aspects of accounting for share-based compensation arrangements, including income tax effects, the classification of tax-related cash flows on the statement of cash flows, and accounting for forfeitures. ASU 2016-09 is effective for fiscal years beginning after December 15, 2016, including interim periods within those years. We adopted ASU 2016-09 in the first quarter of 2017, and there was no material impact on our financial position, results of operations and cash flows.

In January 2017, the FASB issued Accounting Standards Update No. 2017-04, *Intangibles – Goodwill and Other (Topic 350): Simplifying the Test for Goodwill Impairment* (ASU 2017-04). ASU 2017-04 simplifies the measurement of goodwill by eliminating step 2 of the goodwill impairment test. Under ASU 2017-04, entities will be required to compare the fair value of a reporting unit to its carrying amount and recognize an impairment charge for the amount by which the carrying amount exceeds the reporting unit's fair value. ASU 2017-04 is effective for annual or interim impairment tests performed in fiscal years beginning after December 15, 2019, with early adoption permitted for annual or interim impairment tests performed on testing dates after January 1, 2017. The amendments should be applied prospectively. We do not expect the adoption of ASU 2017-04 will have a material impact on our financial position, results of operations or cash flows.

During 2016, we adopted the following accounting standards, which had no material effect on our financial position, results of operations or cash flows:

In April 2015, the FASB issued Accounting Standards Update No. 2015-05, *Intangibles – Goodwill and Other – Internal-Use Software (Subtopic 350-40): Customer's Accounting for Fees Paid in a Cloud Computing Arrangement* (ASU 2015-05), which provides guidance on accounting for fees paid by a customer in a cloud computing arrangement. If a cloud computing arrangement includes a software license, then the customer should account for the software license element of the arrangement consistent with the acquisition of other software licenses. If a cloud computing arrangement does not include a software license, the customer should account for the arrangement as a service contract. ASU 2015-05 is effective for annual reporting periods beginning after December 15, 2015, including interim periods within that reporting period. The amendments may be applied either prospectively to all arrangements entered into or materially modified after the effective date or retrospectively. We adopted ASU 2015-05 during the first quarter of 2016 and will apply the new standard prospectively. The adoption of ASU 2015-05 did not have a material impact on our financial position, results of operations and cash flows.

In November 2015, the FASB issued Accounting Standards Update No. 2015-17, *Balance Sheet Classification of Deferred Taxes* (ASU 2015-17). ASU 2015-17 amends the existing guidance on income taxes to require the classification of all deferred tax assets and liabilities as non-current on the balance sheet. ASU 2015-17 is effective for fiscal years beginning after December 15, 2016, including interim periods within those years. Early adoption is permitted. The guidance may be applied either prospectively, for all deferred tax assets and liabilities, or retrospectively to all periods presented. We elected to early adopt ASU 2015-17 during the fourth quarter of 2016, and we applied the guidance retrospectively to all periods presented. As a result, \$17.3 million and \$18.9 million were reclassified from current deferred tax assets to non-current deferred tax assets at December 31, 2016 and 2015, respectively.

Subsequent Events

On January 17, 2017, the Board declared a quarterly cash dividend of \$0.09 per common share to be paid to shareholders of record at the close of business on February 2, 2017. The quarterly dividend payment was \$4.4 million and was paid on February 16, 2017. In July 2003, our Board of Directors elected to begin declaring quarterly dividends on our common stock considering the tax treatment of dividends and adequate levels of Company liquidity.

During the first quarter and as of February 24, 2017, we have repurchased 0.2 million shares of our common stock through open market purchases at an average cost of \$21.46 per share. We currently have the authority to purchase an additional 4.2 million shares of our common stock under the current plan approved by the Board of Directors.

ITEM 7A. QUANTITATIVE AND QUALITATIVE DISCLOSURES ABOUT MARKET RISK

We are exposed to financial market risks, including changes in interest rates, foreign currency rates and prices of marketable equity and fixed-income securities. The primary objective of the large majority of our investment activities is to preserve principal while at the same time achieving appropriate yields without significantly increasing risk. To achieve this objective, a majority of our marketable securities are investment grade, fixed-rate bonds, and municipal money market instruments denominated in U.S. dollars. Our investment policy provides limitations for issuer concentration, which limits, at the time of purchase, the concentration in any one issuer to 5% of the market value of our total investment portfolio.

We maintain depository investments with certain financial institutions. Although these depository investments may exceed government insured depository limits, we have evaluated the credit worthiness of these financial institutions, and determined the risk of material financial loss due to exposure of such credit risk to be minimal. As of December 31, 2016, \$77.9 million of our cash and cash equivalents, primarily certain domestic money market funds and foreign depository accounts, were in excess of government provided insured depository limits.

As of December 31, 2016, approximately \$166.7 million of our cash and investments may be directly affected by changes in interest rates. We have performed a hypothetical sensitivity analysis assuming market interest rates increase or decrease by 50 basis points (bps) for an entire year, while all other variables remain constant. At December 31, 2016, we held \$67.8 million of cash and variable-rate investments where a change in interest rates would impact our interest income. A hypothetical 50 bps decline in interest rates as of December 31, 2016 would reduce annualized interest income on our cash and investments by approximately \$0.3 million. In addition, we held \$98.9 million of fixed-rate bonds whose fair values may be directly affected by a change in interest rates. A hypothetical 50 bps increase in interest rates as of December 31, 2016 would reduce the fair value of our fixed-rate bonds by approximately \$0.6 million.

As of December 31, 2015, interest income on approximately \$169.6 million of our cash and investments was subject to being directly affected by changes in interest rates. We performed a hypothetical sensitivity analysis assuming market interest rates increase or decrease by 50 bps for an entire year, while all other variables remain constant. A hypothetical 50 bps decline in interest rates as of December 31, 2015 would have reduced annualized interest income on our cash, money market instruments, floating rate corporate bonds and municipal variable rate demand notes by approximately \$0.3 million. In addition, a hypothetical 50 bps increase in interest rates as of December 31, 2015 would have reduced the fair value of our municipal and corporate bonds by approximately \$0.8 million.

We are exposed to changes in foreign currency exchange rates to the extent that such changes affect our revenue and gross margin on revenue derived from some international customers, expenses, and assets and liabilities held in non-functional currencies related to our foreign subsidiaries. Our primary exposures to foreign currency exchange rate movements are with our German subsidiary, whose functional currency is the Euro, our Australian subsidiary, whose functional currency is the Australian dollar, and our Mexican subsidiary, whose functional currency is the U.S. dollar. We are exposed to changes in foreign currency exchange rates to the extent of our German subsidiary's use of contract manufacturers and raw material suppliers whom we predominately pay in U.S. dollars. As a result, changes in currency exchange rates could cause variations in gross margin in the products that we sell in the EMEA region.

We have certain international customers who are invoiced or pay in a non-functional currency. Changes in the monetary exchange rates used to invoice such customers versus the functional currency of the entity billing such customers may adversely affect our results of operations and financial condition. To manage the volatility relating to these typical business exposures, we may enter into various derivative transactions, when appropriate. We do not hold or issue derivative instruments for trading or other speculative purposes. All non-functional currencies billed would result in a combined hypothetical gain or loss of \$0.3 million if the U.S. dollar weakened or strengthened 10% against the billing currencies. Any gain or loss would be partially mitigated by these derivative instruments.

As of December 31, 2016, we had no material contracts subject to currency revaluation, other than accounts receivable, accounts payable, and loans to a subsidiary, denominated in foreign currencies. As of December 31, 2016, we had forward contracts outstanding with notional amounts totaling €5.5 million (\$5.8 million), which mature in the first quarter of 2017. The fair value of these forward contracts was a net asset of approximately \$0.2 million as of December 31, 2016.

For further information about the fair value of our available-for-sale investments and our derivative and hedging activities as of December 31, 2016, see Notes 4 and 5 of Notes to Consolidated Financial Statements.

ITEM 8. FINANCIAL STATEMENTS AND SUPPLEMENTARY DATA

The following consolidated financial statements are contained in this report.

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Report of Independent Registered Public Accounting Firm

To Board of Directors and Stockholders of ADTRAN, Inc.:

In our opinion, the consolidated financial statements listed in the accompanying index present fairly, in all material respects, the financial position of ADTRAN, Inc. and its subsidiaries at December 31, 2016 and December 31, 2015 and the results of their operations and their cash flows for each of the three years in the period ended December 31, 2016 in conformity with accounting principles generally accepted in the United States of America. In addition, in our opinion, the financial statement schedule listed in the accompanying index presents fairly, in all material respects, the information set forth therein when read in conjunction with the related consolidated financial statements. Also in our opinion, the Company 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 (2013)* issued by the Committee of Sponsoring Organizations of the Treadway Commission (COSO). The Company's management is responsible for these financial statements and financial statement schedule, 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 Report On Internal Control Over Financial Reporting*. Our responsibility is to express opinions on these financial statements, on the financial statement schedule, and on the Company's internal control over financial reporting based on our integrated 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 audits 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 audits of the 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 audits also included performing such other procedures as we considered necessary in the circumstances. We believe that our audits provide a reasonable basis for our opinions.

As discussed in Note 1 to the consolidated financial statements, the Company changed the manner in which it accounts for deferred income taxes in 2016.

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 (i) pertain to the maintenance of records that, in reasonable detail, accurately and fairly reflect the transactions and dispositions of the assets of the company; (ii) 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 (iii) 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.

/s/PricewaterhouseCoopers LLP
Birmingham, Alabama
February 24, 2017

Financial Statements

ADTRAN, INC.

Consolidated Balance Sheets (In thousands, except per share amounts)

December 31, 2016 and 2015

ASSETS	2016	2015
Current Assets		
Cash and cash equivalents	\$ 79,895	\$ 84,550
Short-term investments	43,188	34,396
Accounts receivable, less allowance for doubtful accounts of \$— and \$19 at December 31, 2016 and 2015, respectively	92,346	71,917
Other receivables	15,137	19,321
Income tax receivable, net	760	—
Inventory, net	105,117	91,533
Prepaid expenses and other current assets	16,459	10,145
Total Current Assets	352,902	311,862
Property, plant and equipment, net	84,469	73,233
Deferred tax assets, net	38,036	37,015
Goodwill	3,492	3,492
Other assets	12,234	9,276
Long-term investments	176,102	198,026
Total Assets	\$ 667,235	\$ 632,904
LIABILITIES AND STOCKHOLDERS' EQUITY		
Current Liabilities		
Accounts payable	\$ 77,342	\$ 48,668
Unearned revenue	16,326	16,615
Accrued expenses	12,434	12,108
Accrued wages and benefits	20,433	12,857
Income tax payable, net	—	2,395
Total Current Liabilities	126,535	92,643
Non-current unearned revenue	6,333	7,965
Other non-current liabilities	28,050	24,236
Bonds payable	26,800	27,900
Total Liabilities	187,718	152,744
Commitments and contingencies (see Note 13)		
Stockholders' Equity		
Common stock, par value \$0.01 per share; 200,000 shares authorized; 79,652 shares issued and 48,472 shares outstanding at December 31, 2016 and 79,652 shares issued and 49,558 shares outstanding at December 31, 2015	797	797
Additional paid-in capital	252,957	246,879
Accumulated other comprehensive loss	(12,188)	(8,969)
Retained earnings	921,942	906,772
Less treasury stock at cost: 31,180 and 30,094 shares at December 31, 2016 and 2015, respectively	(683,991)	(665,319)
Total Stockholders' Equity	479,517	480,160
Total Liabilities and Stockholders' Equity	\$ 667,235	\$ 632,904

See notes to consolidated financial statements.

ADTRAN, INC.**Consolidated Statements of Income (In thousands, except per share amounts)****Years ended December 31, 2016, 2015 and 2014**

	2016	2015	2014
Sales			
Products	\$ 525,502	\$ 527,422	\$ 559,532
Services	111,279	72,642	70,475
Total Sales	636,781	600,064	630,007
Cost of Sales			
Products	270,695	293,843	288,015
Services	74,742	39,324	30,665
Total Cost of Sales	345,437	333,167	318,680
Gross Profit	291,344	266,897	311,327
Selling, general and administrative expenses	131,805	123,542	131,958
Research and development expenses	124,804	129,876	132,258
Operating Income	34,735	13,479	47,111
Interest and dividend income	3,918	3,953	5,019
Interest expense	(572)	(596)	(677)
Net realized investment gain	5,923	10,337	7,278
Other income (expense), net	(651)	(1,465)	1,175
Gain on bargain purchase of a business	3,542	—	—
Income before provision for income taxes	46,895	25,708	59,906
Provision for income taxes	(11,666)	(7,062)	(15,286)
Net Income	\$ 35,229	\$ 18,646	\$ 44,620
Weighted average shares outstanding – basic	48,724	51,145	55,120
Weighted average shares outstanding – diluted	48,949	51,267	55,482
Earnings per common share – basic	\$ 0.72	\$ 0.36	\$ 0.81
Earnings per common share – diluted	\$ 0.72	\$ 0.36	\$ 0.80

See notes to consolidated financial statements.

ADTRAN, INC.

Consolidated Statements of Comprehensive Income (In thousands)

Years ended December 31, 2016, 2015 and 2014

	<u>2016</u>	<u>2015</u>	<u>2014</u>
Net Income	\$ 35,229	\$ 18,646	\$ 44,620
Other Comprehensive Loss, net of tax:			
Net unrealized losses on available-for-sale securities	(1,528)	(7,032)	(1,773)
Defined benefit plan adjustments	(1,122)	1,862	(4,866)
Foreign currency translation	(569)	(3,724)	(4,189)
Other Comprehensive Loss, net of tax	(3,219)	(8,894)	(10,828)
Comprehensive Income, net of tax	\$ 32,010	\$ 9,752	\$ 33,792

See notes to consolidated financial statements.

ADTRAN, INC.
Consolidated Statements of Changes in Stockholders' Equity (In thousands)
Years ended December 31, 2016, 2015 and 2014

	Common Shares	Common Stock	Additional Paid-In Capital	Retained Earnings	Treasury Stock	Accumulated Other Comprehensive Income	Total Stockholders' Equity
Balance, December 31, 2013	79,652	\$ 797	\$ 233,511	\$ 884,451	\$ (524,906)	\$ 10,753	\$ 604,606
Net income				44,620			44,620
Other comprehensive loss, net of tax						(10,828)	(10,828)
Dividend payments				(19,947)			(19,947)
Dividends accrued for unvested restricted stock units				(19)			(19)
Stock options exercised: 147 shares				(558)	3,397		2,839
PSUs and restricted stock vested: 35 shares			(326)	(796)	796		(326)
Purchase of treasury stock: 3,669 shares					(80,576)		(80,576)
Income tax effect of stock compensation arrangements			81				81
Stock-based compensation expense			8,563				8,563
Balance, December 31, 2014	79,652	797	241,829	907,751	(601,289)	(75)	549,013
Net income				18,646			18,646
Other comprehensive loss, net of tax						(8,894)	(8,894)
Dividend payments				(18,449)			(18,449)
Dividends accrued for unvested restricted stock units				(7)			(7)
Stock options exercised: 60 shares				(402)	1,363		961
PSUs and restricted stock vested: 34 shares			(69)	(767)	767		(69)
Purchase of treasury stock: 3,967 shares					(66,160)		(66,160)
Income tax effect of stock compensation arrangements			(1,593)				(1,593)
Stock-based compensation expense			6,712				6,712
Balance, December 31, 2015	79,652	797	246,879	906,772	(665,319)	(8,969)	480,160
Net income				35,229			35,229
Other comprehensive loss, net of tax						(3,219)	(3,219)
Dividend payments				(17,583)			(17,583)
Dividends accrued for unvested restricted stock units				(48)			(48)
Stock options exercised: 283 shares				(1,499)	6,216		4,717
PSUs and restricted stock vested: 42 shares			(142)	(929)	929		(142)
Purchase of treasury stock: 1,411 shares					(25,817)		(25,817)
Income tax effect of stock compensation arrangements			(475)				(475)
Stock-based compensation expense			6,695				6,695
Balance, December 31, 2016	79,652	\$ 797	\$ 252,957	\$ 921,942	\$ (683,991)	\$ (12,188)	\$ 479,517

See notes to consolidated financial statements.

ADTRAN, INC.
Consolidated Statements of Cash Flows (In thousands)
Years ended December 31, 2016, 2015 and 2014

	2016	2015	2014
Cash flows from operating activities			
Net income	\$ 35,229	\$ 18,646	\$ 44,620
Adjustments to reconcile net income to net cash provided by operating activities:			
Depreciation and amortization	14,407	14,245	14,845
Amortization of net premium on available-for-sale investments	643	2,402	4,360
Net realized gain on long-term investments	(5,923)	(10,337)	(7,278)
Net loss on disposal of property, plant and equipment	22	644	142
Gain on bargain purchase of a business	(3,542)	—	—
Stock-based compensation expense	6,695	6,712	8,563
Deferred income taxes	(2,685)	(692)	(5,526)
Tax impact of stock option exercises	—	(40)	81
Excess tax benefits from stock-based compensation arrangements	(2)	(3)	(63)
Change in operating assets and liabilities:			
Accounts receivable, net	(21,302)	14,918	(3,910)
Other receivables	4,101	11,704	(19,298)
Inventory	(10,887)	(6,877)	2,144
Prepaid expenses and other assets	(7,108)	(5,070)	(3,818)
Accounts payable	26,722	(5,826)	9,973
Accrued expenses and other liabilities	8,792	(10,289)	(166)
Income taxes payable, net	(3,162)	(11,590)	11,168
Net cash provided by operating activities	42,000	18,547	55,837
Cash flows from investing activities			
Purchases of property, plant and equipment	(21,441)	(11,753)	(11,256)
Proceeds from disposals of property, plant and equipment	—	183	1
Proceeds from sales and maturities of available-for-sale investments	225,075	280,435	230,019
Purchases of available-for-sale investments	(209,172)	(188,921)	(142,695)
Acquisition of business	(943)	—	—
Net cash provided by (used in) investing activities	(6,481)	79,944	76,069
Cash flows from financing activities			
Proceeds from stock option exercises	4,717	961	2,839
Purchases of treasury stock	(25,817)	(66,160)	(80,576)
Dividend payments	(17,583)	(18,449)	(19,947)
Payments on long-term debt	(1,100)	(1,100)	(16,500)
Excess tax benefits from stock-based compensation arrangements	2	3	63
Net cash used in financing activities	(39,781)	(84,745)	(114,121)
Net increase (decrease) in cash and cash equivalents	(4,262)	13,746	17,785
Effect of exchange rate changes	(393)	(2,635)	(2,644)
Cash and cash equivalents, beginning of year	84,550	73,439	58,298
Cash and cash equivalents, end of year	\$ 79,895	\$ 84,550	\$ 73,439
Supplemental disclosure of cash flow information			
Cash paid during the year for interest	\$ 575	\$ 598	\$ 758
Cash paid during the year for income taxes	\$ 18,689	\$ 20,139	\$ 9,856
Supplemental disclosure of non-cash investing activities			
Purchases of property, plant and equipment included in accounts payable	\$ 2,103	\$ 598	\$ 467

See notes to consolidated financial statements.

Notes to Consolidated Financial Statements

Note 1 – Nature of Business and Summary of Significant Accounting Policies

ADTRAN, Inc. is a leading global provider of networking and communications equipment. Our solutions enable voice, data, video and Internet communications across a variety of network infrastructures. These solutions are deployed by many of the United States' and the world's largest CSPs, distributed enterprises and small and medium-sized businesses, public and private enterprises, and millions of individual users worldwide.

Principles of Consolidation

Our consolidated financial statements include ADTRAN and its wholly owned subsidiaries. All inter-company accounts and transactions have been eliminated in consolidation.

Use of Estimates

The preparation of financial statements in conformity with accounting principles generally accepted in the United States of America requires management to make estimates and assumptions that affect the reported amounts of assets and liabilities, the disclosure of contingent assets and liabilities at the date of the financial statements, and the reported amounts of revenue and expense during the reporting period. Our more significant estimates include the obsolete and excess inventory reserves, warranty reserves, customer rebates, determination of the deferred revenue components of multiple element sales agreements, estimated costs to complete obligations associated with deferred revenues and network installations, estimated income tax provision and income tax contingencies, the fair value of stock-based compensation, impairment of goodwill, valuation and estimated lives of intangible assets, estimated pension liability, fair value of investments, and the evaluation of other-than-temporary declines in the value of investments. Actual amounts could differ significantly from these estimates.

Cash and Cash Equivalents

Cash and cash equivalents represent demand deposits, money market funds, and short-term investments classified as available-for-sale with original maturities of three months or less. We maintain depository investments with certain financial institutions. Although these depository investments may exceed government insured depository limits, we have evaluated the credit worthiness of these applicable financial institutions, and determined the risk of material financial loss due to the exposure of such credit risk to be minimal. As of December 31, 2016, \$77.9 million of our cash and cash equivalents, primarily certain domestic money market funds and foreign depository accounts, were in excess of government provided insured depository limits.

Financial Instruments

The carrying amounts reported in the consolidated balance sheets for cash and cash equivalents, accounts receivable, and accounts payable approximate fair value due to the immediate or short-term maturity of these financial instruments. The carrying amount reported for bonds payable was \$27.8 million, compared to an estimated fair value of \$28.1 million, based on a debt security with a comparable interest rate and maturity and a Standard & Poor's credit rating of AAA.

Investments with contractual maturities beyond one year, such as our variable rate demand notes, may be classified as short-term based on their highly liquid nature and because such marketable securities represent the investment of cash that is available for current operations. Despite the long-term nature of their stated contractual maturities, we routinely buy and sell these securities and we believe we have the ability to quickly sell them to the remarketing agent, tender agent, or issuer at par value plus accrued interest in the event we decide to liquidate our investment in a particular variable rate demand note. All income generated from these investments was recorded as interest income. We have not been required to record any losses relating to variable rate demand notes.

Long-term investments represent a restricted certificate of deposit held at cost, deferred compensation plan assets, corporate bonds, municipal fixed-rate bonds, asset-backed bonds, mortgage/agency backed bonds, U.S. and foreign government bonds, variable rate demand notes, marketable equity securities, and other equity investments. Marketable equity securities are reported at fair value as determined by the most recently traded price of the securities at the balance sheet date, although the securities may not be readily marketable due to the size of the available market. Unrealized gains and losses, net of tax, are reported as a separate component of stockholders' equity. Realized gains and losses on sales of securities are computed under the specific identification method and are included in current income. We review our investment portfolio quarterly for investments considered to have sustained an other-than-temporary decline in value. Impairment charges for other-than-temporary declines in value are recorded as realized losses in the accompanying consolidated statements of income. All of our investments at December 31, 2016 and 2015 are classified as available-for-sale securities. See Note 4 of Notes to Consolidated Financial Statements for additional information.

Accounts Receivable

We record accounts receivable at net realizable value. Prior to establishing payment terms for a new customer, we evaluate the credit risk of the customer. Credit limits and payment terms established for new customers are re-evaluated periodically based on customer collection experience and other financial factors. At December 31, 2016, three customers accounted for 63.3% of our total accounts receivable. At December 31, 2015, three customers accounted for 37.3% of our total accounts receivable.

We maintain an allowance for doubtful accounts for losses resulting from the inability of our customers to make required payments. We regularly review the allowance for doubtful accounts and consider factors such as the age of accounts receivable balances, the current economic conditions that may affect a customer's ability to pay, significant one-time events and our historical experience. If the financial condition of a customer deteriorates, resulting in an impairment of their ability to make payments, we may be required to record an allowance for doubtful accounts. If circumstances change with regard to individual receivable balances that have previously been determined to be uncollectible (and for which a specific reserve has been established), a reduction in our allowance for doubtful accounts may be required. Our allowance for doubtful accounts was nil and \$19 thousand at December 31, 2016 and December 31, 2015, respectively.

Other Receivables

Other receivables are comprised primarily of amounts due from subcontract manufacturers for product component transfers, accrued interest on investments and on a restricted certificate of deposit, amounts due from various jurisdictions for value-added tax, and amounts due from employee stock option exercises.

Inventory

Inventory is carried at the lower of cost or market, with cost being determined using the first-in, first-out method. Standard costs for material, labor and manufacturing overhead are used to value inventory. Standard costs are updated at least quarterly; therefore, inventory costs approximate actual costs at the end of each reporting period. We establish reserves for estimated excess, obsolete or unmarketable inventory equal to the difference between the cost of the inventory and the estimated fair value of the inventory based upon assumptions about future demand, market conditions and age. When we dispose of excess and obsolete inventories, the related disposals are charged against the inventory reserve. See Note 6 of Notes to Consolidated Financial Statements for additional information.

Property, Plant and Equipment

Property, plant and equipment, which is stated at cost, is depreciated using the straight-line method over the estimated useful lives of the assets. We depreciate building and land improvements from five to 39 years, office machinery and equipment from three to seven years, engineering machinery and equipment from three to seven years, and computer software from three to five years. Expenditures for repairs and maintenance are charged to expense as incurred. Betterments that materially prolong the lives of the assets are capitalized. Gains and losses on the disposal of property, plant and equipment are recorded in operating income. See Note 7 of Notes to Consolidated Financial Statements for additional information.

Liability for Warranty

Our products generally include warranties of 90 days to five years for product defects. We accrue for warranty returns at the time revenue is recognized based on our estimate of the cost to repair or replace the defective products. We engage in extensive product quality programs and processes, including actively monitoring and evaluating the quality of our component suppliers. Our products continue to become more complex in both size and functionality as many of our product offerings migrate from line card applications to total systems. The increasing complexity of our products will cause warranty incidences, when they arise, to be more costly. Our estimates regarding future warranty obligations may change due to product failure rates, material usage, and other rework costs incurred in correcting a product failure. In addition, from time to time, specific warranty accruals may be recorded if unforeseen problems arise. Should our actual experience relative to these factors be worse than our estimates, we will be required to record additional warranty expense. Alternatively, if we provide for more reserves than we require, we will reverse a portion of such provisions in future periods. During 2016, we incurred an increase in warranty expense related to a product recall caused by a defect in a part provided by a third party supplier. The liability for warranty obligations totaled \$8.5 million and \$8.7 million at December 31, 2016 and 2015, respectively. These liabilities are included in accrued expenses in the accompanying consolidated balance sheets.

A summary of warranty expense and write-off activity for the years ended December 31, 2016, 2015 and 2014 is as follows:

Year Ended December 31, (In thousands)	2016	2015	2014
Balance at beginning of period	\$ 8,739	\$ 8,415	\$ 8,977
Plus: Amounts charged to cost and expenses	8,561	2,998	3,103
Less: Deductions	(8,752)	(2,674)	(3,665)
Balance at end of period	\$ 8,548	\$ 8,739	\$ 8,415

Pension Benefit Plan Obligations

We maintain a defined benefit pension plan covering employees in certain foreign countries. Pension benefit plan obligations are based on various assumptions used by our actuaries in calculating these amounts. These assumptions include discount rates, compensation rate increases, expected return on plan assets, retirement rates and mortality rates. Actual results that differ from the assumptions and changes in assumptions could affect future expenses and obligations.

Stock-Based Compensation

We have two Board and stockholder approved stock incentive plans from which stock options and other awards are available for grant to employees and directors. All employee and director stock options granted under our stock option plans have an exercise price equal to the fair market value of the award, as defined in the plan, of the underlying common stock on the grant date. There are currently no vesting provisions tied to performance or market conditions for any stock awards. Vesting for all outstanding award grants is based only on continued service as an employee or director of ADTRAN. All of our outstanding stock option awards are classified as equity awards.

Under the provisions of our approved plans, we made grants of performance stock units to certain of our executive officers in 2016, 2015, and 2014. The performance stock units are subject to a market condition based on the relative total shareholder return of ADTRAN against all the companies in the NASDAQ Telecommunications Index and vest at the end of a three-year performance period. The performance stock units are converted into shares of common stock upon vesting. Depending on the relative total shareholder return over the performance period, the executive officers may earn from 0% to 150% of the number of restricted stock units granted. The fair value of the award is based on the market price of our common stock on the date of grant, adjusted for the expected outcome of the impact of market conditions using a Monte Carlo Simulation valuation method. The recipients of the performance stock units also earn dividend credits during the performance period, which are paid in cash upon the issuance of common stock for the restricted stock units.

Stock-based compensation expense recognized in 2016, 2015 and 2014 was approximately \$6.7 million, \$6.7 million and \$8.6 million, respectively. As of December 31, 2016, total compensation cost related to non-vested stock options, restricted stock units, performance stock units and restricted stock not yet recognized was approximately \$16.4 million, which is expected to be recognized over an average remaining recognition period of 2.9 years. See Note 3 of Notes to Consolidated Financial Statements for additional information.

Impairment of Long-Lived Assets

We review long-lived assets used in operations for impairment whenever events or changes in circumstances indicate that the carrying amount of an asset may not be recoverable and the undiscounted cash flows estimated to be generated by the asset are less than the asset's carrying value. An impairment loss would be recognized in the amount by which the recorded value of the asset exceeds the fair value of the asset, measured by the quoted market price of an asset or an estimate based on the best information available in the circumstances. There were no impairment losses recognized during 2016, 2015 or 2014.

Goodwill and Purchased Intangible Assets

We evaluate the carrying value of goodwill during the fourth quarter of each year and between annual evaluations if events occur or circumstances change that would more likely than not reduce the fair value of the reporting unit below its carrying amount. We have elected to first assess the qualitative factors to determine whether it is more likely than not that the fair value of the reporting unit to which the goodwill is assigned is less than its carrying amount as a basis for determining whether it is necessary to perform the two-step impairment test. If we determine that it is more likely than not that its fair value is less than its carrying amount, then the two-step impairment test will be performed. Based on the results of our qualitative assessment in 2016, we concluded that it was not necessary to perform the two-step impairment test. There have been no impairment losses recognized since the acquisition in 2011. Purchased intangible assets with finite lives are carried at cost, less accumulated amortization. Amortization is recorded over the estimated useful lives of the respective assets, which is 9 months to 14 years.

Research and Development Costs

Research and development costs include compensation for engineers and support personnel, outside contracted services, depreciation and material costs associated with new product development, the enhancement of current products, and product cost reductions. We continually evaluate new product opportunities and engage in intensive research and product development efforts. Research and development costs totaled \$124.8 million, \$129.9 million and \$132.3 million for the years ended December 31, 2016, 2015 and 2014, respectively.

Other Comprehensive Income

Other comprehensive income consists of unrealized gains (losses) on available-for-sale securities, reclassification adjustments for amounts included in net income related to impairments of available-for-sale securities and realized gains (losses) on available-for-sale securities, defined benefit plan adjustments and foreign currency translation adjustments.

The following table presents changes in accumulated other comprehensive income, net of tax, by component for the years ended December 31, 2014, 2015 and 2016:

<i>(In thousands)</i>	Unrealized Gains (Losses) on Available- for-Sale Securities	Defined Benefit Plan Adjustments	Foreign Currency Adjustments	Total
Balance at December 31, 2013	\$ 10,737	\$ (891)	\$ 907	\$ 10,753
Other comprehensive income (loss) before reclassifications	2,363	(4,866)	(4,189)	(6,692)
Amounts reclassified from accumulated other comprehensive income	(4,136)	—	—	(4,136)
Balance at December 31, 2014	8,964	(5,757)	(3,282)	(75)
Other comprehensive income (loss) before reclassifications	(844)	1,589	(3,724)	(2,979)
Amounts reclassified from accumulated other comprehensive income	(6,188)	273	—	(5,915)
Balance at December 31, 2015	1,932	(3,895)	(7,006)	(8,969)
Other comprehensive income (loss) before reclassifications	1,515	(1,229)	(569)	(283)
Amounts reclassified from accumulated other comprehensive income	(3,043)	107	—	(2,936)
Balance at December 31, 2016	\$ 404	\$ (5,017)	\$ (7,575)	\$ (12,188)

The following tables present the details of reclassifications out of accumulated other comprehensive income for the years ended December 31, 2016, 2015 and 2014:

(In thousands)

Details about Accumulated Other Comprehensive Income Components	2016	
	Amount Reclassified from Accumulated Other Comprehensive Income	Affected Line Item in the Statement Where Net Income Is Presented
Unrealized gains (losses) on available-for-sale securities:		
Net realized gain on sales of securities	\$ 5,408	Net realized investment gain
Impairment expense	(419)	Net realized investment gain
Defined benefit plan adjustments – actuarial losses	(156)	(1)
Total reclassifications for the period, before tax	4,833	
Tax (expense) benefit	(1,897)	
Total reclassifications for the period, net of tax	\$ 2,936	

(1) Included in the computation of net periodic pension cost. See Note 11 of Notes to Consolidated Financial Statements.

(In thousands)

Details about Accumulated Other Comprehensive Income Components	2015	
	Amount Reclassified from Accumulated Other Comprehensive Income	Affected Line Item in the Statement Where Net Income Is Presented
Unrealized gains (losses) on available-for-sale securities:		
Net realized gain on sales of securities	\$ 10,348	Net realized investment gain
Impairment expense	(203)	Net realized investment gain
Defined benefit plan adjustments – actuarial losses	(396)	(1)
Total reclassifications for the period, before tax	9,749	
Tax (expense) benefit	(3,834)	
Total reclassifications for the period, net of tax	\$ 5,915	

(1) Included in the computation of net periodic pension cost. See Note 11 of Notes to Consolidated Financial Statements.

(In thousands)

Details about Accumulated Other Comprehensive Income Components	2014	
	Amount Reclassified from Accumulated Other Comprehensive Income	Affected Line Item in the Statement Where Net Income Is Presented
Unrealized gains (losses) on available-for-sale securities:		
Net realized gain on sales of securities	\$ 6,895	Net realized investment gain
Impairment expense	(115)	Net realized investment gain
Total reclassifications for the period, before tax	6,780	
Tax (expense) benefit	(2,644)	
Total reclassifications for the period, net of tax	\$ 4,136	

The following tables present the tax effects related to the change in each component of other comprehensive income for the years ended December 31, 2016, 2015 and 2014:

	2016		
	Before-Tax Amount	Tax (Expense) Benefit	Net-of-Tax Amount
<i>(In thousands)</i>			
Unrealized gains (losses) on available-for-sale securities	\$ 2,484	\$ (969)	\$ 1,515
Reclassification adjustment for amounts related to available-for-sale investments included in net income	(4,989)	1,946	(3,043)
Defined benefit plan adjustments	(1,782)	553	(1,229)
Reclassification adjustment for amounts related to defined benefit plan adjustments included in net income	156	(49)	107
Foreign currency translation adjustment	(569)	—	(569)
Total Other Comprehensive Income (Loss)	\$ (4,700)	\$ 1,481	\$ (3,219)
	2015		
	Before-Tax Amount	Tax (Expense) Benefit	Net-of-Tax Amount
<i>(In thousands)</i>			
Unrealized gains (losses) on available-for-sale securities	\$ (1,384)	\$ 540	\$ (844)
Reclassification adjustment for amounts related to available-for-sale investments included in net income	(10,145)	3,957	(6,188)
Defined benefit plan adjustments	2,303	(714)	1,589
Reclassification adjustment for amounts related to defined benefit plan adjustments included in net income	396	(123)	273
Foreign currency translation adjustment	(3,724)	—	(3,724)
Total Other Comprehensive Income (Loss)	\$ (12,554)	\$ 3,660	\$ (8,894)
	2014		
	Before-Tax Amount	Tax (Expense) Benefit	Net-of-Tax Amount
<i>(In thousands)</i>			
Unrealized gains (losses) on available-for-sale securities	\$ 3,874	\$ (1,511)	\$ 2,363
Reclassification adjustment for amounts related to available-for-sale investments included in net income	(6,780)	2,644	(4,136)
Defined benefit plan adjustments	(7,052)	2,186	(4,866)
Foreign currency translation adjustment	(4,189)	—	(4,189)
Total Other Comprehensive Income (Loss)	\$ (14,147)	\$ 3,319	\$ (10,828)

Income Taxes

The provision for income taxes has been determined using the asset and liability approach of accounting for income taxes. Under this approach, deferred taxes represent the future tax consequences expected to occur when the reported amounts of assets and liabilities are recovered or paid. The provision for income taxes represents income taxes paid or payable for the current year plus the change in deferred taxes during the year. Deferred taxes result from the difference between financial and tax bases of our assets and liabilities and are adjusted for changes in tax rates and tax laws when such changes are enacted. Valuation allowances are recorded to reduce deferred tax assets when it is more likely than not that a tax benefit will not be realized.

We establish reserves to remove some or all of the tax benefit of any of our tax positions at the time we determine that the positions become uncertain. We adjust these reserves, including any impact on the related interest and penalties, as facts and circumstances change.

Foreign Currency

We record transactions denominated in foreign currencies on a monthly basis using exchange rates from throughout the year. Assets and liabilities denominated in foreign currencies are translated at the balance sheet dates using the closing rates of exchange between those foreign currencies and the functional currency with any transaction gains or losses reported in other income (expense). Our primary exposures to foreign currency exchange rate movements are with our German subsidiary, whose functional currency is the Euro, our Australian subsidiary, whose functional currency is the Australian dollar, and our Mexican subsidiary, whose functional currency is the U.S. dollar. Adjustments resulting from translating financial statements of international subsidiaries are recorded as a component of accumulated other comprehensive income (loss).

Revenue Recognition

Revenue is generally recognized when persuasive evidence of an arrangement exists, delivery has occurred, the product price is fixed or determinable, collection of the resulting receivable is reasonably assured, and product returns are reasonably estimable. For product sales, revenue is generally recognized upon shipment of the product to our customer in accordance with the title transfer terms of the sales agreement, generally Ex Works, per International Commercial Terms. In the case of consigned inventory, revenue is recognized when the end customer assumes ownership of the product. Contracts that contain multiple deliverables are evaluated to determine the units of accounting, and the consideration from the arrangement is allocated to each unit of accounting based on the relative selling price and corresponding terms of the contract. We use vendor-specific objective evidence of selling price. When this evidence is not available, we are generally not able to determine third-party evidence of selling price because of the extent of customization among competing products or services from other companies. In these instances, we use best estimates to allocate consideration to each respective unit of accounting. These estimates include analysis of respective bills of material and review and analysis of similar product and service offerings. We record revenue associated with installation services when respective contractual obligations are complete. In instances where customer acceptance is required, revenue is deferred until respective acceptance criteria have been met. Contracts that include both installation services and product sales are evaluated for revenue recognition in accordance with contract terms. As a result, installation services may be considered a separate deliverable or may be considered a combined single unit of accounting with the delivered product. Generally, either the purchaser, ADTRAN, or a third party can perform the installation of our products. Shipping fees are recorded as revenue and the related cost is included in cost of sales. Sales taxes invoiced to customers are included in revenues, and represent less than one percent of total revenues. The corresponding sales taxes paid are included in cost of goods sold. Value added taxes collected from customers in international jurisdictions are recorded in accrued expenses as a liability. Revenue is recorded net of discounts. Sales returns are recorded as a reduction of revenue and accrued based on historical sales return experience, which we believe provides a reasonable estimate of future returns.

A portion of our products are sold to a non-exclusive distribution network of major technology distributors in the United States. These large organizations then distribute or provide fulfillment services to an extensive network of VARs and SIs. VARs and SIs may be affiliated with us as a channel partner, or they may purchase from the distributor in an unaffiliated fashion. Additionally, with certain limitations our distributors may return unused and unopened product for stock-balancing purposes when such returns are accompanied by offsetting orders for products of equal or greater value.

We participate in cooperative advertising and market development programs with certain customers. We use these programs to reimburse customers for certain forms of advertising, and in general, to allow our customers credits up to a specified percentage of their net purchases. Our costs associated with these programs are estimated and included in marketing expenses in our consolidated statements of income. We also participate in rebate programs to provide sales incentives for certain products. Our costs associated with these programs are estimated and accrued at the time of sale, and are recorded as a reduction of sales in our consolidated statements of income.

Unearned Revenue

Unearned revenue primarily represents customer billings on our maintenance service programs and unearned revenues relating to multiple element contracts where we still have contractual obligations to our customers. We currently offer maintenance contracts ranging from one to five years. Revenue attributable to maintenance contracts is recognized on a straight-line basis over the related contract term. In addition, we provide software maintenance and a variety of hardware maintenance services to customers under contracts with terms up to ten years. When we defer revenue related to multiple-element contracts where we still have contractual obligations, we also defer the related costs. Deferred costs are included in prepaid expenses and other assets and totaled \$10.7 million and \$5.2 million at December 31, 2016 and 2015, respectively.

Other Income (Expense), Net

Other income (expense), net, is comprised primarily of miscellaneous income and expense, gains and losses on foreign currency transactions, and investment account management fees. For the year ended December 31, 2014, other income (expense), net included a \$2.4 million gain related to the settlement of working capital items from an acquisition transaction that closed in 2012.

Earnings per Share

Earnings per common share, and earnings per common share assuming dilution, are based on the weighted average number of common shares and, when dilutive, common equivalent shares outstanding during the year. See Note 14 of Notes to Consolidated Financial Statements for additional information.

Dividends

During 2016, 2015 and 2014, we paid shareholder dividends totaling \$17.6 million, \$18.4 million and \$19.9 million, respectively. The Board of Directors presently anticipates that it will declare a regular quarterly dividend so long as the present tax treatment of dividends exists and adequate levels of liquidity are maintained. The following table shows dividends paid to our shareholders in each quarter of 2016, 2015 and 2014.

Dividends per Common Share			
	2016	2015	2014
First Quarter	\$ 0.09	\$ 0.09	\$ 0.09
Second Quarter	\$ 0.09	\$ 0.09	\$ 0.09
Third Quarter	\$ 0.09	\$ 0.09	\$ 0.09
Fourth Quarter	\$ 0.09	\$ 0.09	\$ 0.09

On January 17, 2017, the Board of Directors declared a quarterly cash dividend of \$0.09 per common share to be paid to shareholders of record at the close of business on February 2, 2017. The ex-dividend date was January 31, 2017 and the payment date was February 16, 2017. The quarterly dividend payment was \$4.4 million.

Business Combinations

We use the acquisition method to account for business combinations. Under the acquisition method of accounting, we recognize the assets acquired and liabilities assumed at their fair value on the acquisition date. Goodwill is measured as the excess of the consideration transferred over the net assets acquired. Costs incurred to complete the business combination, such as legal, accounting or other professional fees, are charged to general and administrative expenses as they are incurred.

Recently Issued Accounting Standards

In May 2014, the Financial Accounting Standards Board (FASB) issued Accounting Standards Update No. 2014-09, *Revenue from Contracts with Customers (Topic 606)* (ASU 2014-09), which supersedes the revenue recognition requirements in Topic 605, *Revenue Recognition*, including most industry-specific revenue recognition guidance throughout the Industry Topics of the Codification. The core principle of ASU 2014-09 is to recognize revenues when promised goods or services are transferred to customers in an amount that reflects the consideration that is expected to be received for those goods or services. In August 2015, the FASB issued ASU 2015-14, which deferred the effective date of ASU 2014-09 to fiscal years beginning after December 31, 2017, and interim periods within those fiscal years, with early adoption permitted for reporting periods beginning after December 15, 2016. Subsequently, the FASB issued ASUs in 2016 containing implementation guidance related to ASU 2014-09, including: ASU 2016-08, *Revenue from Contracts with Customers (Topic 606): Principal versus Agent Considerations (Reporting Revenue Gross versus Net)*, which is intended to improve the operability and understandability of the implementation guidance on principal versus agent considerations; ASU 2016-10, *Revenue from Contracts with Customers (Topic 606): Identifying Performance Obligations and Licensing*, which is intended to clarify two aspects of Topic 606: identifying performance obligations and the licensing implementation guidance; ASU 2016-12, *Revenue from Contracts with Customers (Topic 606): Narrow-Scope Improvements and Practical Expedients*, which contains certain provisions and practical expedients in response to identified implementation issues; and ASU 2016-20, *Technical Corrections and Improvements to Topic 606, Revenue from Contracts with Customers*, which is intended to clarify the Codification or to correct unintended application of guidance. ASU 2014-09 allows for either full retrospective or modified retrospective adoption. We plan to adopt ASU 2014-09 and the related ASUs on January 1, 2018, and we are currently evaluating the transition method that will be elected. We are continuing to evaluate the potential impact of these ASUs, and we believe the most significant potential impact relates to our accounting for software license and installation services revenues. We do not believe there will be a significant impact to product or maintenance revenues.

In July 2015, the FASB issued Accounting Standards Update No. 2015-11, *Inventory (Topic 330): Simplifying the Measurement of Inventory* (ASU 2015-11). Currently, Topic 330, *Inventory*, requires an entity to measure inventory at the lower of cost or market. Market could be replacement cost, net realizable value, or net realizable value less an approximately normal profit margin. ASU 2015-11 does not apply to inventory that is measured using last-in, first-out (LIFO) or the retail inventory method. The amendments apply to all other inventory, which includes inventory that is measured using first-in, first-out (FIFO) or average cost. ASU 2015-11 requires an entity to measure in scope inventory at the lower of cost and net realizable value. Net realizable value is the estimated selling prices in the ordinary course of business, less reasonably predictable costs of completion, disposal, and transportation. ASU 2015-11 is effective for annual reporting periods beginning after December 15, 2016, including interim periods within that reporting period. The amendments should be applied prospectively with earlier application permitted as of the beginning of an interim or annual reporting period. We adopted ASU 2015-05 in the first quarter of 2017, and there was no material impact on our financial position, results of operations and cash flows.

In February 2016, the FASB issued Accounting Standards Update No. 2016-02, *Leases (Topic 842)* (ASU 2016-02). ASU 2016-02 requires an entity to recognize lease assets and lease liabilities on the balance sheet and to disclose key information about the entity's leasing arrangements. ASU 2016-02 is effective for fiscal years beginning after December 15, 2018, and interim periods within those fiscal years. A modified retrospective approach is required. We anticipate the adoption of ASU 2016-02 will have a material impact on our financial position; however, we do not believe adoption will have a material impact on our results of operations. We believe the most significant impact relates to our accounting for operating leases for office space and equipment.

In March 2016, the FASB issued Accounting Standards Update No. 2016-09, *Compensation – Stock Compensation (Topic 718): Improvements to Employee Share-Based Payment Accounting* (ASU 2016-09). ASU 2016-09 simplifies several aspects of accounting for share-based compensation arrangements, including income tax effects, the classification of tax-related cash flows on the statement of cash flows, and accounting for forfeitures. ASU 2016-09 is effective for fiscal years beginning after December 15, 2016, including interim periods within those years. We adopted ASU 2016-09 in the first quarter of 2017, and there was no material impact on our financial position, results of operations and cash flows.

In January 2017, the FASB issued Accounting Standards Update No. 2017-04, *Intangibles – Goodwill and Other (Topic 350): Simplifying the Test for Goodwill Impairment* (ASU 2017-04). ASU 2017-04 simplifies the measurement of goodwill by eliminating step 2 of the goodwill impairment test. Under ASU 2017-04, entities will be required to compare the fair value of a reporting unit to its carrying amount and recognize an impairment charge for the amount by which the carrying amount exceeds the reporting unit's fair value. ASU 2017-04 is effective for annual or interim impairment tests performed in fiscal years beginning after December 15, 2019, with early adoption permitted for annual or interim impairment tests performed on testing dates after January 1, 2017. The amendments should be applied prospectively. We do not expect the adoption of ASU 2017-04 will have a material impact on our financial position, results of operations or cash flows.

During 2016, we adopted the following accounting standards, which had no material effect on our financial position, results of operations or cash flows:

In April 2015, the FASB issued Accounting Standards Update No. 2015-05, *Intangibles – Goodwill and Other – Internal-Use Software (Subtopic 350-40): Customer's Accounting for Fees Paid in a Cloud Computing Arrangement* (ASU 2015-05), which provides guidance on accounting for fees paid by a customer in a cloud computing arrangement. If a cloud computing arrangement includes a software license, then the customer should account for the software license element of the arrangement consistent with the acquisition of other software licenses. If a cloud computing arrangement does not include a software license, the customer should account for the arrangement as a service contract. ASU 2015-05 is effective for annual reporting periods beginning after December 15, 2015, including interim periods within that reporting period. The amendments may be applied either prospectively to all arrangements entered into or materially modified after the effective date or retrospectively. We adopted ASU 2015-05 during the first quarter of 2016 and will apply the new standard prospectively. The adoption of ASU 2015-05 did not have a material impact on our financial position, results of operations and cash flows.

In November 2015, the FASB issued Accounting Standards Update No. 2015-17, *Balance Sheet Classification of Deferred Taxes* (ASU 2015-17). ASU 2015-17 amends the existing guidance on income taxes to require the classification of all deferred tax assets and liabilities as non-current on the balance sheet. ASU 2015-17 is effective for fiscal years beginning after December 15, 2016, including interim periods within those years. Early adoption is permitted. The guidance may be applied either prospectively, for all deferred tax assets and liabilities, or retrospectively to all periods presented. We elected to early adopt ASU 2015-17 during the fourth quarter of 2016, and we applied the guidance retrospectively to all periods presented. As a result, \$17.3 million and \$18.9 million were reclassified from current deferred tax assets to non-current deferred tax assets at December 31, 2016 and 2015, respectively.

Note 2 – Business Combinations

On September 13, 2016, we acquired key fiber access products, technologies and service relationships from subsidiaries of CommScope, Inc. for \$0.9 million in cash. This acquisition will enhance our solutions for the cable MSO industry and will provide cable operators with the scalable solutions, services and support they require to compete in the multi-gigabit service delivery market. This transaction was accounted for as a business combination. We have included the financial results of this acquisition in our consolidated financial statements since the date of acquisition. These revenues are included in the Network Solutions reportable segment, and in the Access & Aggregation and Customer Devices categories.

We recorded a bargain purchase gain of \$3.5 million, net of income taxes, subject to customary working capital adjustments between the parties. The bargain purchase gain represents the excess fair value of the net assets acquired over the consideration exchanged. We have assessed the recognition and measurement of the assets acquired and liabilities assumed based on historical and pro forma data for future periods and have concluded that our valuation procedures and resulting measures were appropriate. The gain is included in the line item “Gain on bargain purchase of a business” in the 2016 Consolidated Statements of Income.

The allocation of the purchase price to the estimated fair value of the assets acquired and liabilities assumed at the acquisition date, subject to working capital adjustments, is as follows:

<i>(In Thousands)</i>		
Assets		
Inventory	\$	3,131
Property, plant and equipment		352
Intangible assets		4,700
Total assets acquired		8,183
Liabilities		
Accounts payable		(1,250)
Warranty payable		(61)
Accrued wages and benefits		(122)
Deferred income taxes		(2,265)
Total liabilities assumed		(3,698)
Total net assets		4,485
Gain on bargain purchase of a business, net of tax		(3,542)
Total purchase price	\$	943

The details of the acquired intangible assets are as follows:

<i>In thousands</i>	Value	Life (years)
Supply agreement	\$ 1,400	0.8
Customer relationships	1,200	6.0
Developed technology	800	10.0
License	500	1.3
Patent	500	7.3
Non-compete	200	2.3
Trade name	100	2.0
Total	\$ 4,700	

The actual revenue and net loss included in our Consolidated Statements of Income for the period September 13, 2016 to December 31, 2016 are as follows:

<i>(In thousands)</i>	September 13 to December 31, 2016
Revenue	\$ 2,768
Net loss	\$ (805)

The following supplemental unaudited pro forma information presents the financial results as if the acquisition had occurred on January 1, 2015. This supplemental unaudited pro forma information does not purport to be indicative of what would have occurred had the acquisition been completed on January 1, 2015, nor is it indicative of any future results. Aside from revising the 2015 net income for the effect of the bargain purchase gain, there were no material, non-recurring adjustments to this unaudited pro forma information.

<i>(In thousands)</i>	2016	2015
Pro forma revenue	\$ 641,170	\$ 603,923
Pro forma net income	\$ 31,212	\$ 22,945

For the year ended December 31, 2016, we incurred acquisition and integration related expenses and amortization of acquired intangibles of \$1.0 million related to this acquisition.

Note 3 – Stock-Based Compensation

Stock Incentive Program Descriptions

On January 23, 2006, the Board of Directors adopted the ADTRAN, Inc. 2006 Employee Stock Incentive Plan (2006 Plan), which authorized 13.0 million shares of common stock for issuance to certain employees and officers through incentive stock options and non-qualified stock options, stock appreciation rights, restricted stock and restricted stock units (RSUs). The 2006 Plan was adopted by stockholder approval at our annual meeting of stockholders held on May 9, 2006. Options granted under the 2006 Plan typically become exercisable beginning after one year of continued employment, normally pursuant to a four-year vesting schedule beginning on the first anniversary of the grant date, and have a ten-year contractual term. The 2006 Plan was replaced on May 13, 2015 by the ADTRAN, Inc. 2015 Employee Stock Incentive Plan (2015 Plan). Expiration dates of options outstanding at December 31, 2016 under the 2006 Plan range from 2017 to 2024.

Our stockholders approved the 2010 Directors Stock Plan (2010 Directors Plan) on May 5, 2010, under which 0.5 million shares of common stock have been reserved. This plan replaces the 2005 Directors Stock Option Plan. Under the 2010 Directors Plan, the Company may issue stock options, restricted stock and RSUs to our non-employee directors. Stock awards issued under the 2010 Directors Plan normally become vested in full on the first anniversary of the grant date. Options issued under the 2010 Directors Plan have a ten-year contractual term. Expiration dates of options outstanding at December 31, 2016 under the 2010 Directors Plan range from 2017 to 2019.

On January 20, 2015, the Board of Directors adopted the ADTRAN, Inc. 2015 Employee Stock Incentive Plan (2015 Plan), which authorizes 7.7 million shares of common stock for issuance to certain employees and officers through incentive stock options and non-qualified stock options, stock appreciation rights, performance stock units (PSUs), restricted stock and RSUs. The 2015 Plan was adopted by stockholder approval at our annual meeting of stockholders held on May 13, 2015. PSUs, restricted stock and RSUs granted under the 2015 Plan reduce the shares authorized for issuance under the 2015 Plan by 2.5 shares of common stock for each share underlying the award. Options granted under the 2015 Plan typically become exercisable beginning after one year of continued employment, normally pursuant to a four-year vesting schedule beginning on the first anniversary of the grant date, and have a ten-year contractual term. Expiration dates of options outstanding at December 31, 2015 under the 2015 Plan range from 2025 to 2026.

The following table summarizes stock-based compensation expense related to stock options, PSUs, restricted stock and RSUs for the years ended December 31, 2016, 2015 and 2014, which was recognized as follows:

<i>(In thousands)</i>	2016	2015	2014
Stock-based compensation expense included in cost of sales	\$ 389	\$ 280	\$ 479
Selling, general and administrative expense	3,341	3,261	4,185
Research and development expense	2,965	3,171	3,899
Stock-based compensation expense included in operating expenses	6,306	6,432	8,084
Total stock-based compensation expense	6,695	6,712	8,563
Tax benefit for expense associated with non-qualified options	(963)	(862)	(1,157)
Total stock-based compensation expense, net of tax	\$ 5,732	\$ 5,850	\$ 7,406

Stock-based compensation expense recognized in our Consolidated Statements of Income for the years ended December 31, 2016, 2015 and 2014 is based on stock options, PSUs, restricted stock and RSUs ultimately expected to vest, and has been reduced for estimated forfeitures. Estimates for forfeiture rates are based upon historical experience and are evaluated quarterly. We expect our forfeiture rate for stock options and RSUs to be approximately 3.7% annually. We estimated a 0% forfeiture rate for our PSUs and restricted stock due to the limited number of recipients and historical experience for these awards.

Stock Options

The following table is a summary of our stock options outstanding as of December 31, 2015 and 2016 and the changes that occurred during 2016:

<i>(In thousands, except per share amounts)</i>	Number of Options	Weighted Average Exercise Price	Weighted Avg. Remaining Contractual Life in Years	Aggregate Intrinsic Value
Options outstanding, December 31, 2015	7,108	\$ 21.97	6.42	\$ 3,284
Options granted	19	\$ 18.24		
Options exercised	(283)	\$ 16.66		
Options forfeited	(93)	\$ 17.90		
Options expired	(413)	\$ 23.96		
Options outstanding, December 31, 2016	6,338	\$ 22.14	5.63	\$ 16,972
Options vested and expected to vest, December 31, 2016	6,276	\$ 22.20	5.60	\$ 16,606
Options exercisable, December 31, 2016	4,757	\$ 23.67	4.73	\$ 9,137

At December 31, 2016, total compensation cost related to non-vested stock options not yet recognized was approximately \$7.5 million, which is expected to be recognized over an average remaining recognition period of 2.1 years.

All of the options above were issued at exercise prices that approximated fair market value at the date of grant. At December 31, 2016, 5.6 million options were available for grant under the shareholder approved plans.

The aggregate intrinsic values in the table above represent the total pre-tax intrinsic value (the difference between ADTRAN's closing stock price on the last trading day of 2016 and the exercise price, multiplied by the number of in-the-money options) that would have been received by the option holders had all option holders exercised their options on December 31, 2016. The amount of aggregate intrinsic value will change based on the fair market value of ADTRAN's stock.

The total pre-tax intrinsic value of options exercised during 2016, 2015 and 2014 was \$1.1 million, \$0.1 million and \$0.7 million, respectively. The fair value of options fully vesting during 2016, 2015 and 2014 was \$5.7 million, \$6.6 million and \$7.7 million, respectively.

The following table further describes our stock options outstanding as of December 31, 2016:

Range of Exercise Prices	Options Outstanding at 12/31/16 <i>(In thousands)</i>	Options Outstanding Weighted Avg. Remaining Contractual Life in Years	Weighted Average Exercise Price	Options Exercisable at 12/31/16 <i>(In thousands)</i>	Weighted Average Exercise Price
\$14.88 – 18.96	2,101	6.78	\$ 15.82	1,217	\$ 16.14
\$18.97 – 23.45	1,380	5.79	\$ 20.17	881	\$ 20.84
\$23.46 – 30.35	1,491	5.08	\$ 23.89	1,293	\$ 23.92
\$30.36 – 41.92	1,366	4.29	\$ 31.94	1,366	\$ 31.94
	6,338			4,757	

PSUs, restricted stock and RSUs

Under the 2015 Plan, awards other than stock options, including PSUs, restricted stock and RSUs, may be granted to certain employees and officers. Under our PSU program, the number of shares of common stock earned by a recipient pursuant to the PSUs is subject to a market condition based on ADTRAN's relative total shareholder return against all companies in the NASDAQ Telecommunications Index at the end of a three-year performance period. Depending on the relative total shareholder return over the performance period, the recipient may earn from 0% to 150% of the shares underlying the PSUs, with the shares earned distributed upon the vesting of the PSUs at the end of the three-year performance period. The fair value of the award is based on the market price of our common stock on the date of grant, adjusted for the expected outcome of the impact of market conditions using a Monte Carlo Simulation valuation method. A portion of the granted PSUs also vest and the underlying shares become deliverable upon the death or disability of the recipient or upon a change of control of ADTRAN, as defined by the 2015 Plan. The recipients of the PSUs receive dividend credits based on the shares of common stock underlying the PSUs. The dividend credits are vested and earned in the same manner as the PSUs and are paid in cash upon the issuance of common stock for the PSUs. The fair value of restricted stock and RSUs is equal to the closing price of our stock on the business day immediately preceding the grant date. Restricted stock and RSUs vest ratably over one year and four year periods, respectively.

The following table is a summary of our PSUs, restricted stock and RSUs outstanding as of December 31, 2015 and 2016 and the changes that occurred during 2016:

<i>(In thousands, except per share amounts)</i>		Number of shares	Weighted Average Grant Date Fair Value
Unvested PSUs, restricted stock and RSUs outstanding, December 31, 2015		106	\$ 21.09
PSUs, restricted stock and RSUs granted		460	\$ 20.63
PSUs, restricted stock and RSUs vested		(46)	\$ 22.50
PSUs, restricted stock and RSUs forfeited		(1)	\$ 20.00
Unvested RSUs and restricted stock outstanding, December 31, 2016		519	\$ 20.51

At December 31, 2016, total compensation cost related to the non-vested portion of PSUs, restricted stock and RSUs not yet recognized was approximately \$8.9 million, which is expected to be recognized over an average remaining recognition period of 3.6 years.

Valuation and Expense Information

We use the Black-Scholes option pricing model (Black-Scholes Model) for the purpose of determining the estimated fair value of stock option awards on the date of grant. The Black-Scholes Model requires the input of certain assumptions that involve judgment. Because our stock options have characteristics significantly different from those of traded options, and because changes in the input assumptions can materially affect the fair value estimate, existing models may not provide reliable measures of fair value of our stock options. We use a Monte Carlo Simulation valuation method to value our performance-based PSUs. The fair value of RSUs and restricted stock issued is equal to the closing price of our stock on the date of grant. We will continue to assess the assumptions and methodologies used to calculate the estimated fair value of stock-based compensation. If circumstances change, and additional data becomes available over time, we may change our assumptions and methodologies, which may materially impact our fair value determination.

The stock option pricing model requires the use of several assumptions that impact the fair value estimate. These variables include, but are not limited to, the volatility of our stock price and employee exercise behaviors. There were no changes made during 2016 to the methodology used to determine our assumptions.

The weighted-average estimated fair value of stock options granted to employees during the years ended December 31, 2016, 2015 and 2014 was \$5.22 per share, \$4.28 per share and \$6.31 per share, respectively, with the following weighted-average assumptions:

	2016	2015	2014
Expected volatility	34.79%	34.57%	39.05%
Risk-free interest rate	1.36%	1.81%	1.79%
Expected dividend yield	1.98%	2.35%	1.90%
Expected life (in years)	6.25	6.23	6.33

We based our estimate of expected volatility for the years ended December 31, 2016, 2015 and 2014 on the sequential historical daily trading data of our common stock for a period equal to the expected life of the options granted. The selection of the historical volatility method was based on available data indicating our historical volatility is as equally representative of our future stock price trends as is our implied volatility. We have no reason to believe the future volatility of our stock price is likely to differ from its past volatility. The risk-free interest rate assumption is based upon implied yields of U.S. Treasury zero-coupon bonds on the date of grant having a remaining term equal to the expected life of the options granted. The dividend yield is based on our historical and expected dividend payouts. The expected life of our stock options is based upon historical exercise and forfeiture activity of our previous stock-based grants with a ten-year contractual term.

The PSU pricing model also requires the use of several significant assumptions that impact the fair value estimate. The estimated fair value of the PSUs granted to employees during the years ended December 31, 2016, 2015 and 2014 was \$23.50 per share, \$17.64 per share and \$22.11 per share, respectively, with the following assumptions:

	2016	2015	2014
Expected volatility	29.79%	31.34%	36.40%
Risk-free interest rate	1.17%	1.20%	0.96%
Expected dividend yield	1.80%	2.35%	1.89%

Note 4 – Investments

At December 31, 2016, we held the following securities and investments, recorded at either fair value or cost:

(In thousands)	Amortized Cost	Gross Unrealized Gains	Gross Unrealized Losses	Fair Value / Carrying Value
Deferred compensation plan assets	\$ 12,367	\$ 2,271	\$ (42)	\$ 14,596
Corporate bonds	66,522	64	(174)	66,412
Municipal fixed-rate bonds	11,799	12	(37)	11,774
Asset-backed bonds	10,201	19	(14)	10,206
Mortgage/Agency-backed bonds	13,080	15	(91)	13,004
U.S. government bonds	30,022	15	(270)	29,767
Foreign government bonds	3,729	2	(1)	3,730
Variable rate demand notes	11,855	—	—	11,855
Marketable equity securities	30,571	311	(1,503)	29,379
Available-for-sale securities held at fair value	\$ 190,146	\$ 2,709	\$ (2,132)	\$ 190,723
Restricted investment held at cost				27,800
Other investments				767
Total carrying value of available-for-sale investments				\$ 219,290

At December 31, 2015, we held the following securities and investments, recorded at either fair value or cost:

(In thousands)	Amortized Cost	Gross Unrealized Gains	Gross Unrealized Losses	Fair Value / Carrying Value
Deferred compensation plan assets	\$ 11,325	\$ 1,575	\$ (66)	\$ 12,834
Corporate bonds	58,328	20	(734)	57,614
Municipal fixed-rate bonds	26,414	28	(18)	26,424
Asset-backed bonds	19,281	2	(44)	19,239
Mortgage/Agency-backed bonds	15,463	1	(91)	15,373
Government bonds	35,646	—	(248)	35,398
Marketable equity securities	31,643	4,301	(1,693)	34,251
Available-for-sale securities held at fair value	\$ 198,100	\$ 5,927	\$ (2,894)	\$ 201,133
Restricted investment held at cost				30,000
Other investments held at cost				1,289
Total carrying value of available-for-sale investments				\$ 232,422

As of December 31, 2016, corporate bonds, municipal fixed-rate bonds, asset-backed bonds, mortgage/agency-backed bonds, U.S. government bonds, and foreign government bonds had the following contractual maturities:

<i>(In thousands)</i>	Corporate bonds	Municipal fixed-rate bonds	Asset-backed bonds	Mortgage / Agency-backed bonds	U.S. government bonds	Foreign government bonds
Less than one year	\$ 18,912	\$ 8,321	\$ —	\$ —	\$ 1,701	\$ 2,400
One to two years	32,497	1,703	635	976	4,903	1,330
Two to three years	11,486	351	2,415	980	13,072	—
Three to five years	3,517	1,399	5,402	—	10,091	—
Five to ten years	—	—	1,600	2,060	—	—
More than ten years	—	—	154	8,988	—	—
Total	\$ 66,412	\$ 11,774	\$ 10,206	\$ 13,004	\$ 29,767	\$ 3,730

Our investment policy provides limitations for issuer concentration, which limits, at the time of purchase, the concentration in any one issuer to 5% of the market value of our total investment portfolio.

We review our investment portfolio for potential “other-than-temporary” declines in value on an individual investment basis. We assess, on a quarterly basis, significant declines in value which may be considered other-than-temporary and, if necessary, recognize and record the appropriate charge to write-down the carrying value of such investments. In making this assessment, we take into consideration qualitative and quantitative information, including but not limited to the following: the magnitude and duration of historical declines in market prices, credit rating activity, assessments of liquidity, public filings, and statements made by the issuer. We generally begin our identification of potential other-than-temporary impairments by reviewing any security with a fair value that has declined from its original or adjusted cost basis by 25% or more for six or more consecutive months. We then evaluate the individual security based on the previously identified factors to determine the amount of the write-down, if any. For each of the years ended December 31, 2016, 2015 and 2014, we recorded a charge of \$0.8 million, \$0.2 million and \$0.1 million, respectively, related to the other-than-temporary impairment of certain marketable equity securities and our deferred compensation plan assets.

Realized gains and losses on sales of securities are computed under the specific identification method. The following table presents gross realized gains and losses related to our investments for the years ended December 31, 2016, 2015 and 2014:

Year Ended December 31, <i>(In thousands)</i>	2016	2015	2014
Gross realized gains	\$ 7,530	\$ 10,906	\$ 7,586
Gross realized losses	\$ (1,607)	\$ (569)	\$ (308)

The following table presents the breakdown of investments with unrealized losses at December 31, 2016:

<i>(In thousands)</i>	Continuous Unrealized Loss Position for Less than 12 Months		Continuous Unrealized Loss Position for 12 Months or Greater		Total	
	Fair Value	Unrealized Losses	Fair Value	Unrealized Losses	Fair Value	Unrealized Losses
Deferred compensation plan assets	\$ 294	\$ (12)	\$ 245	\$ (30)	\$ 539	\$ (42)
Corporate bonds	32,562	(166)	2,722	(8)	35,284	(174)
Municipal fixed-rate bonds	8,936	(37)	—	—	8,936	(37)
Asset-backed bonds	2,986	(14)	—	—	2,986	(14)
Mortgage/Agency-backed bonds	7,842	(81)	1,239	(10)	9,081	(91)
U.S. government bonds	26,449	(270)	—	—	26,449	(270)
Foreign government bonds	924	(1)	—	—	924	(1)
Marketable equity securities	21,607	(1,200)	1,495	(303)	23,102	(1,503)
Total	\$ 101,600	\$ (1,781)	\$ 5,701	\$ (351)	\$ 107,301	\$ (2,132)

The following table presents the breakdown of investments with unrealized losses at December 31, 2015:

(In thousands)	Continuous Unrealized Loss Position for Less than 12 Months		Continuous Unrealized Loss Position for 12 Months or Greater		Total	
	Fair Value	Unrealized Losses	Fair Value	Unrealized Losses	Fair Value	Unrealized Losses
Deferred compensation plan assets	\$ 1,243	\$ (53)	\$ 92	\$ (13)	\$ 1,335	\$ (66)
Corporate bonds	35,952	(566)	3,042	(168)	38,994	(734)
Municipal fixed-rate bonds	9,160	(18)	—	—	9,160	(18)
Asset-backed bonds	16,857	(44)	—	—	16,857	(44)
Mortgage/Agency-backed bonds	15,216	(91)	—	—	15,216	(91)
Government bonds	35,397	(248)	—	—	35,397	(248)
Marketable equity securities	14,364	(1,564)	374	(129)	14,738	(1,693)
Total	\$ 128,189	\$ (2,584)	\$ 3,508	\$ (310)	\$ 131,697	\$ (2,894)

The decrease in unrealized losses during 2016, as reflected in the table above, results from changes in market positions associated with our fixed income and equity investment portfolio. At December 31, 2016, a total of 293 of our marketable equity securities were in an unrealized loss position.

We have categorized our cash equivalents and our investments held at fair value into a three-level fair value hierarchy based on the priority of the inputs to the valuation technique for the cash equivalents and investments as follows: Level 1 - Values based on unadjusted quoted prices for identical assets or liabilities in an active market; Level 2 - Values based on quoted prices in markets that are not active or model inputs that are observable either directly or indirectly; Level 3 - Values based on prices or valuation techniques that require inputs that are both unobservable and significant to the overall fair value measurement. These inputs could include information supplied by investees.

(In thousands)	Fair Value Measurements at December 31, 2016 Using			
	Fair Value	Quoted Prices in Active Markets for Identical Assets (Level 1)	Significant Other Observable Inputs (Level 2)	Significant Unobservable Inputs (Level 3)
Cash equivalents				
Money market funds	\$ 6,878	\$ 6,878	\$ —	\$ —
Commercial paper	17,222	—	17,222	—
Cash equivalents	24,100	6,878	17,222	—
Available-for-sale securities				
Deferred compensation plan assets	14,596	14,596	—	—
Available-for-sale debt securities				
Corporate bonds	66,412	—	66,412	—
Municipal fixed-rate bonds	11,774	—	11,774	—
Asset-backed bonds	10,206	—	10,206	—
Mortgage/Agency-backed bonds	13,004	—	13,004	—
U.S. government bonds	29,767	29,767	—	—
Foreign government bonds	3,730	—	3,730	—
Variable rate demand notes	11,855	—	11,855	—
Available-for-sale marketable equity securities				
Marketable equity securities – technology industry	3,374	3,374	—	—
Marketable equity securities – other	26,005	26,005	—	—
Available-for-sale securities	190,723	73,742	116,981	—
Total	\$ 214,823	\$ 80,620	\$ 134,203	\$ —

Fair Value Measurements at December 31, 2015 Using				
(In thousands)	Fair Value	Quoted Prices in Active Markets for Identical Assets (Level 1)	Significant Other Observable Inputs (Level 2)	Significant Unobservable Inputs (Level 3)
Cash equivalents				
Money market funds	\$ 1,271	\$ 1,271	\$ —	\$ —
Commercial paper	11,696	—	11,696	—
Cash equivalents	12,967	1,271	11,696	—
Available-for-sale securities				
Deferred compensation plan assets	12,834	12,834	—	—
Available-for-sale debt securities				
Corporate bonds	57,614	—	57,614	—
Municipal fixed-rate bonds	26,424	—	26,424	—
Asset-backed bonds	19,239	—	19,239	—
Mortgage/Agency-backed bonds	15,373	—	15,373	—
Government bonds	35,398	35,398	—	—
Available-for-sale marketable equity securities				
Marketable equity securities – technology industry	5,384	5,384	—	—
Marketable equity securities – other	28,867	28,867	—	—
Available-for-sale securities	201,133	82,483	118,650	—
Total	\$ 214,100	\$ 83,754	\$ 130,346	\$ —

The fair value of our Level 2 securities is calculated using a weighted average market price for each security. Market prices are obtained from a variety of industry standard data providers, security master files from large financial institutions, and other third-party sources. These multiple market prices are used as inputs into a distribution-curve-based algorithm to determine the daily market value of each security.

Our municipal variable rate demand notes have a structure that implies a standard expected market price. The frequent interest rate resets make it reasonable to expect the price to stay at par. These securities are priced at the expected market price.

Note 5 – Derivative Instruments and Hedging Activities

We have certain customers and suppliers who are invoiced or pay in a non-functional currency. Changes in the monetary exchange rates may adversely affect our results of operations and financial condition, as these are remeasured to the functional currency through profit and loss. When appropriate, we enter into various derivative transactions to enhance our ability to manage the volatility relating to these typical business exposures. We do not hold or issue derivative instruments for trading or other speculative purposes. Our derivative instruments are recorded in the Consolidated Balance Sheets at their fair values. Our derivative instruments do not qualify for hedge accounting, and accordingly, all changes in the fair value of the instruments are recognized as other income (expense) in the Consolidated Statements of Income. Our derivative instruments are not subject to master netting arrangements and are not offset in the Consolidated Balance Sheets.

As of December 31, 2016, we had forward contracts outstanding with notional amounts totaling €5.5 million (\$5.8 million), which mature in the first quarter of in 2017.

The fair values of our derivative instruments recorded in the Consolidated Balance Sheet as of December 31, 2016 and 2015 were as follows:

(In thousands)	Balance Sheet Location	2016	2015
Derivatives Not Designated as Hedging Instruments (Level 2):			
Foreign exchange contracts – asset derivatives	Other receivables	\$ 159	\$ —

The change in the fair values of our derivative instruments recorded in the Consolidated Statements of Income during the years ended December 31, 2016, 2015 and 2014 were as follows:

<i>(In thousands)</i>	Income Statement Location	2016	2015	2014
Derivatives Not Designated as Hedging Instruments:				
Foreign exchange contracts	Other income (expense)	\$ 724	\$ 511	\$ 1,852

Note 6 – Inventory

At December 31, 2016 and 2015, inventory was comprised of the following:

<i>(In thousands)</i>	2016	2015
Raw materials	\$ 40,461	\$ 34,223
Work in process	4,003	2,893
Finished goods	60,653	54,417
Total Inventory, net	\$ 105,117	\$ 91,533

We establish reserves for estimated excess, obsolete, or unmarketable inventory equal to the difference between the cost of the inventory and the estimated fair value of the inventory based upon assumptions about future demand and market conditions. At December 31, 2016 and 2015, raw materials reserves totaled \$14.6 million and \$17.5 million, respectively, and finished goods inventory reserves totaled \$10.6 million and \$9.2 million, respectively.

Note 7 – Property, Plant and Equipment

At December 31, 2016 and 2015, property, plant and equipment were comprised of the following:

<i>(In thousands)</i>	2016	2015
Land	\$ 4,575	\$ 4,575
Building and land improvements	29,229	25,667
Building	68,301	68,301
Furniture and fixtures	18,477	17,347
Computer hardware and software	87,655	76,389
Engineering and other equipment	118,746	112,132
Total Property, Plant and Equipment	326,983	304,411
Less accumulated depreciation	(242,514)	(231,178)
Total Property, Plant and Equipment, net	\$ 84,469	\$ 73,233

Depreciation expense was \$12.0 million, \$12.3 million and \$12.5 million in 2016, 2015, and 2014, respectively.

Note 8 – Goodwill and Intangible Assets

Goodwill was \$3.5 million at December 31, 2016 and 2015, and was previously recorded in our Enterprise Networks reportable segment. As a result of our new reporting structure adopted in the first quarter of 2016, which is discussed further in Note 12, we reallocated goodwill from our Enterprise Networks reportable segment to our two, new reportable segments – Network Solutions and Services & Support. As a result, goodwill of \$3.1 million and \$0.4 million was reallocated to our Network Solutions and Services & Support reportable segments, respectively.

We evaluate the carrying value of goodwill during the fourth quarter of each year and between annual evaluations if events occur or circumstances change that would more likely than not reduce the fair value of the reporting unit below its carrying amount. We have elected to first assess the qualitative factors to determine whether it is more likely than not that the fair value of the reporting unit to which the goodwill is assigned is less than its carrying amount as a basis for determining whether it is necessary to perform the two-step impairment test. If we determine that it is more likely than not that its fair value is less than its carrying amount, then the two-step impairment test will be performed. Based on the results of our qualitative assessment in 2016, we concluded that it was not necessary to perform the two-step impairment test. There have been no impairment losses recognized since the acquisition in 2011.

Intangible assets are included in other assets in the accompanying Consolidated Balance Sheets. The following table presents our intangible assets as of December 31, 2016 and 2015:

<i>(In thousands)</i>	2016			2015		
	Gross Value	Accumulated Amortization	Net Value	Gross Value	Accumulated Amortization	Net Value
Customer relationships	\$ 6,899	\$ (3,208)	\$ 3,691	\$ 5,828	\$ (2,627)	\$ 3,201
Developed technology	6,444	(5,061)	1,383	5,720	(4,329)	1,391
Intellectual property	2,340	(2,129)	211	2,340	(1,854)	486
Supply agreement	1,400	(544)	856	—	—	—
License	500	(113)	387	—	—	—
Patent	500	(20)	480	—	—	—
Trade names	370	(285)	85	270	(265)	5
Non-compete	200	(26)	174	11	(11)	—
Total	\$ 18,653	\$ (11,386)	\$ 7,267	\$ 14,169	\$ (9,086)	\$ 5,083

Amortization expense was \$2.5 million, \$1.9 million and \$2.3 million for the years ended December 31, 2016, 2015 and 2014, respectively.

As of December 31, 2016, the estimated future amortization expense of intangible assets is as follows:

<i>(In thousands)</i>	Amount
2017	\$ 2,867
2018	1,168
2019	655
2020	621
2021	568
Thereafter	1,388
Total	\$ 7,267

Note 9 – Alabama State Industrial Development Authority Financing and Economic Incentives

In conjunction with an expansion of our Huntsville, Alabama, facility, we were approved for participation in an incentive program offered by the State of Alabama Industrial Development Authority (the “Authority”). Pursuant to the program, on January 13, 1995, the Authority issued \$20.0 million of its taxable revenue bonds and loaned the proceeds from the sale of the bonds to ADTRAN. The bonds were originally purchased by AmSouth Bank of Alabama, Birmingham, Alabama (the “Bank”). Wachovia Bank, N.A., Nashville, Tennessee (formerly First Union National Bank of Tennessee) (the “Bondholder”), which was acquired by Wells Fargo & Company on December 31, 2008, purchased the original bonds from the Bank and made further advances to the Authority, bringing the total amount outstanding to \$50.0 million. An Amended and Restated Taxable Revenue Bond (“Amended and Restated Bond”) was issued and the original financing agreement was amended. The Amended and Restated Bond bears interest, payable monthly. The interest rate is 2% per annum. The Amended and Restated Bond matures on January 1, 2020, and is currently outstanding in the aggregate principal amount of \$27.8 million. The estimated fair value of the bond using a level 2 valuation technique at December 31, 2016 was approximately \$28.1 million, based on a debt security with a comparable interest rate and maturity and a Standard & Poor’s credit rating of AAA. We are required to make payments to the Authority in amounts necessary to pay the interest on the Amended and Restated Bond. Included in long-term investments at December 31, 2016 is \$27.8 million which is invested in a restricted certificate of deposit. These funds serve as a collateral deposit against the principal of this bond, and we have the right to set-off the balance of the Bond with the collateral deposit in order to reduce the balance of the indebtedness.

In conjunction with this program, we are eligible to receive certain economic incentives from the state of Alabama that reduce the amount of payroll withholdings that we are required to remit to the state for those employment positions that qualify under the program. We realized economic incentives related to payroll withholdings totaling \$1.3 million for each of the years ended December 31, 2016, 2015 and 2014.

We made principal payments of \$1.1 million for the years ended December 31, 2016 and 2015, respectively, and anticipate making a principal payment in 2017. At December 31, 2016, \$1.0 million of the bond debt was classified as a current liability in accounts payable in the Consolidated Balance Sheets.

Note 10 – Income Taxes

A summary of the components of the provision for income taxes for the years ended December 31, 2016, 2015 and 2014 is as follows:

<i>(In thousands)</i>	2016	2015	2014
Current			
Federal	\$ 12,733	\$ 7,504	\$ 7,626
State	1,141	279	599
International	477	(29)	12,587
Total Current	14,351	7,754	20,812
Deferred			
Federal	647	(585)	(1,083)
State	73	(66)	(123)
International	(3,405)	(41)	(4,320)
Total Deferred	(2,685)	(692)	(5,526)
Total Provision for Income Taxes	\$ 11,666	\$ 7,062	\$ 15,286

Our effective income tax rate differs from the federal statutory rate due to the following:

	2016	2015	2014
Tax provision computed at the federal statutory rate	35.00%	35.00%	35.00%
State income tax provision, net of federal benefit	3.93	4.86	2.69
Federal research credits	(8.15)	(12.55)	(4.05)
Foreign taxes	(0.34)	2.10	(7.26)
Tax-exempt income	(0.53)	(1.94)	(1.25)
State tax incentives	(2.77)	(5.04)	(2.21)
Stock-based compensation	2.53	6.91	3.06
Domestic production activity deduction	(2.23)	(3.17)	(1.15)
Bargain purchase	(2.64)	—	—
Other, net	0.08	1.30	0.69
Effective Tax Rate	24.88%	27.47%	25.52%

Income before provision for income taxes for the years ended December 31, 2016, 2015 and 2014 is as follows:

<i>(In thousands)</i>	2016	2015	2014
U.S. entities	\$ 54,077	\$ 27,400	\$ 23,812
International entities	(7,182)	(1,692)	36,094
Total	\$ 46,895	\$ 25,708	\$ 59,906

Income before provision for income taxes for international entities reflects income based on statutory transfer pricing agreements. This amount does not correlate to consolidated international revenues, many of which occur from our U.S. entity.

Deferred income taxes on the balance sheet result from temporary differences between the amount of assets and liabilities recognized for financial reporting and tax purposes. The principal components of our current and non-current deferred taxes are as follows:

<i>(In thousands)</i>	2016	2015
Deferred tax assets		
Accounts receivable	\$ —	\$ 7
Inventory	12,020	12,558
Accrued expenses	5,551	6,359
Investments	1,062	—
Deferred compensation	5,751	5,072
Stock-based compensation	4,724	4,704
Uncertain tax positions related to state taxes and related interest	762	1,026
Pensions	4,273	5,729
Foreign losses	6,486	5,389
State losses and credit carry-forwards	4,021	4,187
Federal loss and research carry-forwards	5,886	5,886
Valuation allowance	(6,149)	(7,250)
Total Deferred Tax Assets	44,387	43,667
Deferred tax liabilities		
Property, plant and equipment	(4,433)	(3,315)
Accrued expenses	—	(2,791)
Intellectual property	(1,918)	(476)
Investments	—	(70)
Total Deferred Tax Liabilities	(6,351)	(6,652)
Net Deferred Tax Assets	\$ 38,036	\$ 37,015

At December 31, 2016 and 2015, non-current deferred taxes related to our investments and our defined benefit pension plan, reflect deferred taxes on the net unrealized gains on available-for-sale investments and deferred taxes on unrealized losses in our pension plan. The net change in non-current deferred taxes associated with these items, a deferred tax benefit of \$1.5 million and \$3.7 million in 2016 and 2015, respectively, is recorded as an adjustment to other comprehensive income, presented in the Consolidated Statements of Comprehensive Income.

Based upon our results of operations in 2016 and expected profitability in future years in a certain international jurisdiction, we concluded that it is more likely than not certain foreign deferred tax assets will be realized. As of December 31, 2016, the remaining valuation allowance primarily relates to deferred tax assets related to state credit carry-forwards from tax credits in excess of our annual tax liability to an individual state where we do not generate sufficient state income to offset the credit and net operating losses in foreign jurisdictions. We believe it is more likely than not that we will not realize the full benefits of the deferred tax assets arising from these losses and credits, and accordingly, we have provided a valuation allowance against these deferred tax assets. The deferred tax assets for foreign and domestic carry-forwards, unamortized research and development costs, and state credit carry-forwards of \$16.4 million will expire between 2017 and 2030. The loss carry-forwards were acquired through acquisitions in 2009 and 2011. We will continue to assess the realization of our deferred tax assets and related valuations allowances. We do not provide for U.S. income tax on undistributed earnings of our foreign operations, whose earnings are intended to be permanently reinvested. These earnings are not required to service debt or fund our U.S. operations. It is impracticable to determine the amount of any unrecognized deferred tax liability for temporary differences related to investments in foreign subsidiaries. The net change in our valuation allowance from December 31, 2015 to December 31, 2016 was \$1.1 million.

As of December 31, 2016 and 2015, respectively, our cash and cash equivalents were \$79.9 million and \$84.6 million and short-term investments were \$43.2 million and \$34.4 million, which provided an available short-term liquidity of \$123.1 million and \$118.9 million. Of these amounts, our foreign subsidiaries held cash of \$42.1 million and \$38.9 million, respectively, representing approximately 34.2% and 32.7% of available short-term liquidity, which is used to fund on-going liquidity needs of these subsidiaries. We intend to permanently reinvest these funds outside the U.S. and our current business plans do not indicate a need to repatriate to fund domestic operations. However, if these funds were repatriated to the U.S. or used for U.S. operations, certain amounts related to the earnings and profits of foreign subsidiaries could be subject to U.S. tax for the incremental amount in excess of the foreign tax paid. Due to the timing and circumstances of repatriation of such earnings, if any, it is not practical to determine the amount of funds subject to repatriation or the associated unrecognized deferred tax liability related to the amount.

During 2016, 2015 and 2014, we recorded an income tax benefit (expense) of nil, \$(40) thousand and \$0.1 million, respectively, as an adjustment to equity. This is calculated on the difference between the exercise price of stock option exercises and the market price of the underlying common stock upon exercise.

The change in the unrecognized income tax benefits for the years ended December 31, 2016, 2015 and 2014 is reconciled below:

<i>(In thousands)</i>	2016	2015	2014
Balance at beginning of period	\$ 2,537	\$ 3,334	\$ 3,240
Increases for tax position related to:			
Prior years	95	—	—
Current year	428	280	522
Decreases for tax positions related to:			
Prior years	—	(29)	—
Settlements with taxing authorities	—	(103)	—
Expiration of applicable statute of limitations	(834)	(945)	(428)
Balance at end of period	\$ 2,226	\$ 2,537	\$ 3,334

As of December 31, 2016, 2015, and 2014, our total liability for unrecognized tax benefits was \$2.2 million, \$2.5 million, and \$3.3 million, respectively, of which \$1.7 million, \$1.8 million, and \$2.6 million, respectively, would reduce our effective tax rate if we were successful in upholding all of the uncertain positions and recognized the amounts recorded. We classify interest and penalties recognized on the liability for unrecognized tax benefits as income tax expense. As of December 31, 2016, 2015 and 2014, the balances of accrued interest and penalties were \$0.8 million, \$0.9 million and \$1.0 million, respectively.

We do not anticipate a single tax position generating a significant increase or decrease in our liability for unrecognized tax benefits within 12 months of this reporting date. We file income tax returns in the U.S. federal and various state jurisdictions and several foreign jurisdictions. We are not currently under audit by the Internal Revenue Service. Generally, we are not subject to changes in income taxes by any taxing jurisdiction for the years prior to 2013.

Note 11 – Employee Benefit Plans

Pension Benefit Plan

We maintain a defined benefit pension plan covering employees in certain foreign countries.

The pension benefit plan obligations and funded status at December 31, 2016 and 2015, are as follows:

<i>(In thousands)</i>	2016	2015
Change in projected benefit obligation:		
Projected benefit obligation at beginning of period	\$ (26,851)	\$ (30,507)
Service cost	(1,211)	(1,314)
Interest cost	(720)	(615)
Actuarial gain (loss) - experience	431	247
Actuarial gain (loss) - assumptions	(2,628)	2,078
Benefit payments	52	81
Effects of foreign currency exchange rate changes	916	3,179
Projected benefit obligation at end of period	(30,011)	(26,851)
Change in plan assets:		
Fair value of plan assets at beginning of period	19,213	20,338
Actual return on plan assets	1,494	988
Effects of foreign currency exchange rate changes	(662)	(2,113)
Fair value of plan assets at end of period	20,045	19,213
Funded (unfunded) status at end of period	\$ (9,966)	\$ (7,638)

The accumulated benefit obligation was \$28.7 million and \$25.1 million at December 31, 2016 and 2015, respectively. The increase in the accumulated benefit obligation and the change in actuarial gain (loss) is primarily attributable to a decrease in the discount rate used in 2016 to determine the accumulated benefit obligation.

The net amounts recognized in the balance sheet for the unfunded pension liability as of December 31, 2016 and 2015 are as follows:

<i>(In thousands)</i>	2016	2015
Current liability	\$ —	\$ —
Non-current liability	(9,966)	(7,638)
Total	\$ (9,966)	\$ (7,638)

The components of net periodic pension cost and amounts recognized in other comprehensive income for the years ended December 31, 2016, 2015 and 2014 are as follows:

<i>(In thousands)</i>	2016	2015	2014
Net periodic benefit cost:			
Service cost	\$ 1,211	\$ 1,314	\$ 1,189
Interest cost	720	615	836
Expected return on plan assets	(1,057)	(1,011)	(1,086)
Amortization of actuarial losses	175	407	—
Net periodic benefit cost	1,049	1,325	939
Other changes in plan assets and benefit obligations recognized in other comprehensive income:			
Net actuarial (gain) loss	1,782	(2,303)	7,052
Amortization of actuarial losses	(156)	(396)	—
Amount recognized in other comprehensive income	1,626	(2,699)	7,052
Total recognized in net periodic benefit cost and other comprehensive income	\$ 2,675	\$ (1,374)	\$ 7,991

The amounts recognized in accumulated other comprehensive income as of December 31, 2016 and 2015 are as follows:

<i>(In thousands)</i>	2016	2015
Net actuarial loss	\$ 6,871	\$ 5,245

The defined benefit pension plan is accounted for on an actuarial basis, which requires the selection of various assumptions, including an expected rate of return on plan assets and a discount rate. The expected return on our German plan assets that is utilized in determining the benefit obligation and net periodic benefit cost is derived from periodic studies, which include a review of asset allocation strategies, anticipated future long-term performance of individual asset classes, risks using standard deviations and correlations of returns among the asset classes that comprise the plans' asset mix. While the studies give appropriate consideration to recent plan performance and historical returns, the assumptions are primarily long-term, prospective rates of return.

Another key assumption in determining net pension expense is the assumed discount rate to be used to discount plan obligations. The discount rate has been derived from the returns of high-quality, corporate bonds denominated in Euro currency with durations close to the duration of our pension obligations.

The weighted-average assumptions that were used to determine the net periodic benefit cost for the years ended December 31, 2016, 2015 and 2014 are as follows:

	2016	2015	2014
Discount rates	2.64%	2.20%	3.70%
Rate of compensation increase	2.00%	2.25%	2.25%
Expected long-term rates of return	5.40%	5.40%	5.40%

The weighted-average assumptions that were used to determine the benefit obligation at December 31, 2016 and 2015:

	2016	2015
Discount rates	1.90%	2.64%
Rate of compensation increase	2.00%	2.25%

Actuarial gains and losses are recorded in accumulated other comprehensive income. To the extent unamortized gains and losses exceed 10% of the higher of the market-related value of assets or the projected benefit obligation, the excess is amortized as a component of net periodic pension cost over the remaining service period of active participants. We estimate that \$0.3 million will be amortized from accumulated other comprehensive income into net periodic pension cost in 2017 for the net actuarial loss.

We do not anticipate making a contribution to this pension plan in 2017. The following pension benefit payments, which reflect expected future service, as appropriate, are expected to be paid to participants:

<i>(In thousands)</i>	
2017	\$ 348
2018	515
2019	699
2020	964
2021	1,079
2022 – 2026	5,156
Total	\$ 8,761

We have categorized our cash equivalents and our investments held at fair value into a three-level fair value hierarchy based on the priority of the inputs to the valuation technique for the cash equivalents and investments as follows: Level 1 - Values based on unadjusted quoted prices for identical assets or liabilities in an active market; Level 2 - Values based on quoted prices in markets that are not active or model inputs that are observable either directly or indirectly; Level 3 - Values based on prices or valuation techniques that require inputs that are both unobservable and significant to the overall fair value measurement. These inputs include information supplied by investees.

<i>(In thousands)</i>	Fair Value Measurements at December 31, 2016 Using			
	Fair Value	Quoted Prices in Active Markets for Identical Assets (Level 1)	Significant Other Observable Inputs (Level 2)	Significant Unobservable Inputs (Level 3)
Cash and cash equivalents	\$ 6	\$ 6	\$ —	\$ —
Available-for-sale securities				
Bond funds:				
Corporate bonds	12,546	12,546	—	—
Government bonds	2,037	2,037	—	—
Equity funds:				
Large cap blend	4,462	4,462	—	—
Large cap value	249	249	—	—
Balanced fund	745	745	—	—
Available-for-sale securities	20,039	20,039	—	—
Total	\$ 20,045	\$ 20,045	\$ —	\$ —

	Fair Value Measurements at December 31, 2015 Using			
	Fair Value	Quoted Prices in Active Markets for Identical Assets (Level 1)	Significant Other Observable Inputs (Level 2)	Significant Unobservable Inputs (Level 3)
<i>(In thousands)</i>				
Cash and cash equivalents	\$ 3	\$ 3	\$ —	\$ —
Available-for-sale securities				
Bond funds:				
Corporate bonds	11,633	11,633	—	—
Government bonds	1,960	1,960	—	—
Equity funds:				
Large cap blend	4,604	4,604	—	—
Large cap value	258	258	—	—
Balanced fund	755	755	—	—
Available-for-sale securities	19,210	19,210	—	—
Total	\$ 19,213	\$ 19,213	\$ —	\$ —

Our investment policy includes various guidelines and procedures designed to ensure assets are invested in a manner necessary to meet expected future benefits earned by participants, and consider a broad range of economic conditions. Central to the policy are target allocation ranges by asset class, which is currently 75% for bond funds and 25% for equity funds.

The objectives of the target allocations are to maintain investment portfolios that diversify risk through prudent asset allocation parameters, achieve asset returns that meet or exceed the plans' actuarial assumptions, and achieve asset returns that are competitive with like institutions employing similar investment strategies.

The investment policy is periodically reviewed by us and a designated third-party fiduciary for investment matters. The policy is established and administered in a manner that is compliant at all times with applicable government regulations.

401(k) Savings Plan

We maintain the ADTRAN, Inc. 401(k) Retirement Plan (Savings Plan) for the benefit of our eligible employees. The Savings Plan is intended to qualify under Sections 401(a) and 401(k) of the Internal Revenue Code of 1986, as amended (Code), and is intended to be a "safe harbor" 401(k) plan under Code Section 401(k)(12). The Savings Plan allows employees to save for retirement by contributing part of their compensation to the plan on a tax-deferred basis. The Savings Plan also requires us to contribute a "safe harbor" amount each year. We match up to 4% of employee contributions (100% of an employee's first 3% of contributions and 50% of their next 2% of contributions), beginning on the employee's one year anniversary date. In calculating our matching contribution, we only use compensation up to the statutory maximum under the Code (\$265 thousand for 2016). All contributions under the Savings Plan are 100% vested. Expenses recorded for employer contributions and plan administration costs for the Savings Plan amounted to approximately \$4.1 million, \$4.7 million and \$4.5 million in 2016, 2015 and 2014, respectively.

Deferred Compensation Plans

We maintain four deferred compensation programs for certain executive management employees and our Board of Directors.

For our executive management employees, the ADTRAN, Inc. Deferred Compensation Program for Employees is offered as a supplement to our tax-qualified 401(k) plan and is available to certain executive management employees who have been designated by our Board of Directors. This deferred compensation plan allows participants to defer all or a portion of certain specified bonuses and up to 25% of remaining cash compensation, and permits us to make matching contributions on a discretionary basis, without the limitations that apply to the 401(k) plan. To date, we have not made any matching contributions under this plan. We also maintain the ADTRAN, Inc. Equity Deferral Program for Employees. Under this plan, participants may elect to defer all or a portion of their vested PSUs to the Plan. Such deferrals shall continue to be held and deemed to be invested in shares of ADTRAN stock unless and until the amounts are distributed or such deferrals are moved to another deemed investment pursuant to an election made by the Participant.

For our Board of Directors, we maintain the ADTRAN, Inc. Deferred Compensation Program for Directors. This program allows our Board of Directors to defer all or a portion of monetary remuneration paid to the Director, including, but not limited to, meeting fees and annual retainers. We also maintain the ADTRAN, Inc. Equity Deferral Program for Directors. Under this plan, participants may elect to defer all or a portion of their vested restricted stock awards. Such deferrals shall continue to be held and deemed to be invested in shares of ADTRAN stock unless and until the amounts are distributed or such deferrals are moved to another deemed investment pursuant to an election made by the Director.

We have set aside the plan assets for all plans in a rabbi trust (Trust) and all contributions are credited to bookkeeping accounts for the participants. The Trust assets are subject to the claims of our creditors in the event of bankruptcy or insolvency. The assets of the Trust are deemed to be invested in pre-approved mutual funds as directed by each participant, and the participant's bookkeeping account is credited with the earnings and losses attributable to those investments. Benefits are scheduled to be distributed six months after termination of employment in a single lump sum payment or annual installments paid over a three or ten year term. Distributions will be made on a pro rata basis from each of the hypothetical investments of the Participant's account in cash. Any whole shares of ADTRAN, Inc. common stock that are distributed will be distributed in-kind.

Assets of the Trust are deemed invested in mutual funds that cover an investment spectrum ranging from equities to money market instruments. These mutual funds are publicly quoted and reported at fair value. The fair value of the assets held by the Trust and the amounts payable to the plan participants at December 31, 2016 and 2015 are as follows:

<i>(In thousands)</i>	2016	2015
Fair Value of Plan Assets		
Long-term Investments	\$ 14,596	\$ 12,834
Total Fair Value of Plan Assets	\$ 14,596	\$ 12,834
Amounts Payable to Plan Participants		
Non-current Liabilities	\$ 14,596	\$ 12,834
Total Amounts Payable to Plan Participants	\$ 14,596	\$ 12,834

Interest and dividend income of the Trust have been included in interest and dividend income in the accompanying 2016, 2015 and 2014 Consolidated Statements of Income. Changes in the fair value of the plan assets held by the Trust have been included in accumulated other comprehensive income in the accompanying 2016 and 2015 Consolidated Balance Sheets. Changes in the fair value of the deferred compensation liability are included as selling, general and administrative expense in the accompanying 2016, 2015 and 2014 Consolidated Statements of Income. Based on the changes in the total fair value of the Trust's assets, we recorded deferred compensation income (expense) in 2016, 2015 and 2014 of \$(1.3) million, \$0.3 million and \$(0.7) million, respectively.

Retiree Medical Coverage

We provide medical, dental and prescription drug coverage to one retired former officer and his spouse, for his life, on the same terms as provided to our active officers, and to the spouse of a former deceased officer for up to 30 years. At December 31, 2016 and 2015, this liability totaled \$0.2 million.

Note 12 – Segment Information and Major Customers

In 2015, we realigned our organizational structure to better match our market opportunities, technological development initiatives, and improve efficiencies. During the first quarter of 2016, our chief operating decision maker requested changes in the information that he regularly reviews for purposes of allocating resources and assessing performance. As a result, beginning with the quarter ended March 31, 2016, we began reporting our financial performance based on two, new reportable segments – Network Solutions and Services & Support. Network Solutions includes hardware products and next-generation virtualized solutions used in service provider or business networks, as well as prior-generation products. Services & Support includes our suite of ProCloud managed services, network installation, engineering and maintenance services, and fee-based technical support and equipment repair/replacement plans.

We evaluate the performance of our new segments based on gross profit; therefore, selling, general and administrative expenses, research and development expenses, interest and dividend income, interest expense, net realized investment gain/loss, other income/expense and provision for taxes are reported on a company-wide, functional basis only. Historical financial information by reportable segment and category, as discussed below, has been recast to conform to our new reporting structure. There are no inter-segment revenues.

The following table presents information about the reported sales and gross profit of our reportable segments for each of the years ended December 31, 2016, 2015 and 2014. Asset information by reportable segment is not reported, since we do not produce such information internally.

Sales and Gross Profit by Market Segment
(In thousands)

	2016		2015		2014	
	Sales	Gross Profit	Sales	Gross Profit	Sales	Gross Profit
Network Solutions	\$ 525,502	\$ 254,807	\$ 527,422	\$ 233,579	\$ 559,532	\$ 271,517
Services & Support	111,279	36,537	72,642	33,318	70,475	39,810
Total	\$ 636,781	\$ 291,344	\$ 600,064	\$ 266,897	\$ 630,007	\$ 311,327

Sales by Category

In addition to our new reporting segments, we will also report revenue for the following three categories – Access & Aggregation, Customer Devices, and Traditional & Other Products.

The table below presents sales information by product category for the years ended December 31, 2016, 2015 and 2014:

(In thousands)	2016	2015	2014
Access & Aggregation	\$ 436,372	\$ 405,698	\$ 401,769
Customer Devices	137,608	125,565	138,051
Traditional & Other Products	62,801	68,801	90,187
Total	\$ 636,781	\$ 600,064	\$ 630,007

The following table presents sales information by geographic area for the years ended December 31, 2016, 2015 and 2014. International sales correlate to shipments with a non-U.S. destination.

(In thousands)	2016	2015	2014
United States	\$ 501,337	\$ 419,366	\$ 381,382
Germany	85,780	111,666	150,987
Other international	49,664	69,032	97,638
Total	\$ 636,781	\$ 600,064	\$ 630,007

Customers comprising more than 10% of revenue can change from year to year. Single customers comprising more than 10% of our revenue in 2016 included three customers at 24%, 19% and 12%. Single customers comprising more than 10% of our revenue in 2015 included three customers at 20%, 17% and 14%. Single customers comprising more than 10% of our revenue in 2014 included two customers at 21% and 14%. No other customer accounted for 10% or more of our sales in 2016, 2015 or 2014. Our five largest customers, other than those with more than 10 percent of revenues disclosed above, can change from year to year. These customers represented 13%, 14%, and 22% of total revenue in 2016, 2015 and 2014, respectively. Revenues in this disclosure do not include distributor agents, who predominately provide fulfillment services to end users. In such cases where known, that revenue is associated with the end user.

Additional Segment Information

As of December 31, 2016, long-lived assets, net totaled \$84.5 million, which includes \$79.9 million held in the United States and \$4.6 million held outside the United States. As of December 31, 2015, long-lived assets, net totaled \$73.2 million, which includes \$68.8 million held in the United States and \$4.4 million held outside the United States.

Note 13 – Commitments and Contingencies

In the ordinary course of business, we may be subject to various legal proceedings and claims, including employment disputes, patent claims, disputes over contract agreements and other commercial disputes. In some cases, claimants seek damages or other relief, such as royalty payments related to patents, which, if granted, could require significant expenditures. Although the outcome of any claim or litigation can never be certain, it is our opinion that the outcome of all contingencies of which we are currently aware will not materially affect our business, operations, financial condition or cash flows.

We have committed to invest up to an aggregate of \$7.9 million in two private equity funds, and we have contributed \$8.4 million as of December 31, 2016, of which \$7.7 million has been applied to these commitments.

We lease office space and equipment under operating leases which expire at various dates through 2025. As of December 31, 2016, future minimum rental payments under non-cancelable operating leases with original maturities of greater than 12 months are as follows:

<i>(In thousands)</i>		
2017	\$	3,788
2018		2,043
2019		847
2020		741
Thereafter		3,243
Total	\$	10,662

Rental expense was \$4.2 million, \$4.9 million and \$4.7 million for the years ended December 31, 2016, 2015 and 2014, respectively.

Note 14 – Earnings per Share

A summary of the calculation of basic and diluted earnings per share (EPS) for the years ended December 31, 2016, 2015 and 2014 is as follows:

<i>(In thousands, except for per share amounts)</i>	2016	2015	2014
Numerator			
Net Income	\$ 35,229	\$ 18,646	\$ 44,620
Denominator			
Weighted average number of shares – basic	48,724	51,145	55,120
Effect of dilutive securities:			
Stock options	170	81	304
Restricted stock and restricted stock units	55	41	58
Weighted average number of shares – diluted	\$ 48,949	\$ 51,267	\$ 55,482
Net income per share – basic	\$ 0.72	\$ 0.36	\$ 0.81
Net income per share – diluted	\$ 0.72	\$ 0.36	\$ 0.80

For each of the years ended December 31, 2016, 2015 and 2014, 4.6 million, 6.1 million and 4.4 million stock options were outstanding but were not included in the computation of that year's diluted EPS because the options' exercise prices were greater than the average market price of the common shares, therefore making them anti-dilutive under the treasury stock method.

Note 15 – Summarized Quarterly Financial Data (Unaudited)

The following table presents unaudited quarterly operating results for each of our last eight fiscal quarters. This information has been prepared on a basis consistent with our audited financial statements and includes all adjustments, consisting only of normal recurring adjustments, considered necessary for a fair presentation of the data.

Unaudited Quarterly Operating Results

(In thousands, except for per share amounts)

Three Months Ended	March 31, 2016	June 30, 2016	September 30, 2016	December 31, 2016
Net sales	\$ 142,204	\$ 162,701	\$ 168,890	\$ 162,986
Gross profit	\$ 65,794	\$ 78,955	\$ 75,808	\$ 70,787
Operating income	\$ 5,521	\$ 14,812	\$ 10,130	\$ 4,272
Net income	\$ 5,014	\$ 10,228	\$ 12,415	\$ 7,572
Earnings per common share	\$ 0.10	\$ 0.21	\$ 0.26	\$ 0.16
Earnings per common share assuming dilution ⁽¹⁾	\$ 0.10	\$ 0.21	\$ 0.26	\$ 0.16

Three Months Ended	March 31, 2015	June 30, 2015	September 30, 2015	December 31, 2015
Net sales	\$ 142,835	\$ 160,138	\$ 158,078	\$ 139,013
Gross profit	\$ 65,563	\$ 68,246	\$ 70,649	\$ 62,439
Operating income	\$ 1,963	\$ 644	\$ 8,072	\$ 2,800
Net income	\$ 3,317	\$ 2,544	\$ 7,067	\$ 5,718
Earnings per common share	\$ 0.06	\$ 0.05	\$ 0.14	\$ 0.12
Earnings per common share assuming dilution ⁽¹⁾	\$ 0.06	\$ 0.05	\$ 0.14	\$ 0.12

(1) Assumes exercise of dilutive stock options calculated under the treasury stock method.

Note 16 – Related Party Transactions

We employed the law firm of our director emeritus for legal services. All bills for services rendered by this firm were reviewed and approved by our Chief Financial Officer. We believe that the fees for such services are comparable to those charged by other firms for services rendered to us. The services of our director emeritus ended with his death on September 7, 2014. For the year ended 2014, we incurred fees of \$0.1 million for these legal services.

Note 17 – Subsequent Events

On January 17, 2017, the Board declared a quarterly cash dividend of \$0.09 per common share to be paid to shareholders of record at the close of business on February 2, 2017. The quarterly dividend payment was \$4.4 million and was paid on February 16, 2017. In July 2003, our Board of Directors elected to begin declaring quarterly dividends on our common stock considering the tax treatment of dividends and adequate levels of Company liquidity.

During the first quarter and as of February 24, 2017, we have repurchased 0.2 million shares of our common stock through open market purchases at an average cost of \$21.46 per share. We currently have the authority to purchase an additional 4.2 million shares of our common stock under the current plan approved by the Board of Directors.

ITEM 9. CHANGES IN AND DISAGREEMENTS WITH ACCOUNTANTS ON ACCOUNTING AND FINANCIAL DISCLOSURE

None.

ITEM 9A. CONTROLS AND PROCEDURES

- (a) *Internal control over financial reporting.* Section 404 of the Sarbanes-Oxley Act of 2002 requires management to include in this Annual Report on Form 10-K a report on management's assessment of the effectiveness of our internal control over financial reporting, as well as a report from our independent registered public accounting firm on the effectiveness of internal control over financial reporting. Management's report on internal control over financial reporting is included below and the related report from our independent registered public accounting firm is located in Item 8 "Financial Statements and Supplementary Data" of this report.
- (b) *Evaluation of disclosure controls and procedures.* Our Chief Executive Officer and Chief Financial Officer are responsible for establishing and maintaining "disclosure controls and procedures" (as defined in the Securities Exchange Act of 1934 Rules 13a-15(e) and 15d-15(e)) for the company. Our Chief Executive Officer and Chief Financial Officer, after evaluating the effectiveness of our disclosure controls and procedures as of the end of the period covered by this annual report, have concluded that our disclosure controls and procedures are effective.
- (c) *Changes in internal control over financial reporting.* There were no changes in our internal control over financial reporting that occurred during our most recent fiscal quarter that have materially affected, or are reasonably likely to materially affect, our internal control over financial reporting.

MANAGEMENT'S REPORT ON INTERNAL CONTROL OVER FINANCIAL REPORTING

Management of ADTRAN, Inc. is responsible for establishing and maintaining adequate internal control over financial reporting as defined in Rules 13a-15(f) and 15d-15(f) under the Securities Exchange Act of 1934, as amended. ADTRAN's 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. ADTRAN's internal control over financial reporting includes those policies and procedures that:

- pertain to the maintenance of records that, in reasonable detail, accurately and fairly reflect the transactions and dispositions of the assets of ADTRAN;
- 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 ADTRAN are being made only in accordance with authorizations of management and directors of ADTRAN; and
- provide reasonable assurance regarding prevention or timely detection of unauthorized acquisition, use or disposition of ADTRAN'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.

Management assessed the effectiveness of ADTRAN's internal control over financial reporting as of December 31, 2016. In making this assessment, management used the criteria set forth by the Committee of Sponsoring Organizations of the Treadway Commission (COSO) in *Internal Control-Integrated Framework (2013)*.

Based on our assessment and those criteria, management has concluded that ADTRAN maintained effective internal control over financial reporting as of December 31, 2016.

The effectiveness of our internal control over financial reporting has been audited by PricewaterhouseCoopers LLP, an independent registered public accounting firm, as stated in their report which appears herein.

ITEM 9B. OTHER INFORMATION

None.

PART III

ITEM 10. DIRECTORS, EXECUTIVE OFFICERS AND CORPORATE GOVERNANCE

Information relating to nominees for director of ADTRAN and compliance with Section 16(a) of the Securities Exchange Act of 1934 is set forth under the captions "Proposal 1—Election of Directors," "Section 16(a) Beneficial Ownership Reporting Compliance" and "Corporate Governance," respectively, in the Proxy Statement for the Annual Meeting of Stockholders to be held on May 10, 2017. Such information is incorporated herein by reference. The definitive Proxy Statement will be filed with the Securities and Exchange Commission no later than 120 days after December 31, 2016. Information relating to the executive officers of ADTRAN, pursuant to Instruction 3 of Item 401(b) of Regulation S-K and General Instruction G(3) of Form 10-K, is set forth at Part I, Item 4A of this report under the caption "Executive Officers of the Registrant." This information is incorporated herein by reference.

Code of Ethics

We have adopted the ADTRAN, Inc. Code of Conduct, which applies to all employees, officers and directors of ADTRAN. The Code of Conduct 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 (who is both our principal financial and principal accounting officer), as well as all other employees, as indicated above. The Code of Conduct also meets the requirements of a code of conduct under NASDAQ listing standards. The Code of Conduct is posted on our website at www.adtran.com under the links "Investor Relations – Corporate Governance – Code of Conduct." We intend to disclose any amendments to the Code of Conduct, as well as any waivers for executive officers or directors, on our website at www.adtran.com.

ITEM 11. EXECUTIVE COMPENSATION

Information required by this Item 11 relating to executive compensation and other matters is set forth under the captions "Executive Compensation," "Director Compensation" and "Corporate Governance" in the Proxy Statement referred to in Item 10. This information is incorporated herein by reference.

ITEM 12. SECURITY OWNERSHIP OF CERTAIN BENEFICIAL OWNERS AND MANAGEMENT AND RELATED STOCKHOLDER MATTERS

Information relating to ownership of common stock of ADTRAN by certain persons is set forth under the caption "Share Ownership of Principal Stockholders and Management" in the Proxy Statement referred to in Item 10 above. Such information is incorporated herein by reference. Information regarding securities authorized for issuance under equity compensation plans of ADTRAN is set forth under the caption "Equity Compensation Plan Information" in the Proxy Statement referred to in Item 10. This information is incorporated herein by reference.

ITEM 13. CERTAIN RELATIONSHIPS AND RELATED TRANSACTIONS AND DIRECTOR INDEPENDENCE

Information relating to existing or proposed relationships or transactions between ADTRAN and any affiliate of ADTRAN is set forth under the captions "Certain Relationships and Related Transactions" and "Corporate Governance" in the Proxy Statement referred to in Item 10. This information is incorporated herein by reference.

ITEM 14. PRINCIPAL ACCOUNTANT FEES AND SERVICES

Information relating to ADTRAN's principal accountant's fees and services is set forth under the caption "Principal Accountant Fees and Services" in the Proxy Statement referred to in Item 10. This information is incorporated herein by reference.

PART IV

ITEM 15. EXHIBITS AND FINANCIAL STATEMENT SCHEDULES

Documents Filed as Part of This Report.

1. Consolidated Financial Statements

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

Consolidated Balance Sheets as of December 31, 2016 and 2015

Consolidated Statements of Income for the years ended December 31, 2016, 2015 and 2014

Consolidated Statements of Comprehensive Income for the years ended December 31, 2016, 2015 and 2014

Consolidated Statements of Changes in Stockholders' Equity for the years ended December 31, 2016, 2015 and 2014

Consolidated Statements of Cash Flows for the years ended December 31, 2016, 2015 and 2014

Notes to Consolidated Financial Statements

2. Consolidated Financial Statement Schedule

Schedule II - Valuation and Qualifying Accounts

3. Exhibits

The following exhibits 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: ADTRAN, Inc., Attn: Investor Relations, 901 Explorer Boulevard, Huntsville, Alabama 35806. There is a charge of \$0.50 per page to cover expenses for copying and mailing.

<u>Exhibit Number</u>	<u>Description</u>
2.1	Asset Sale and Purchase Agreement dated 11 December 2011 Regarding the Sale and Purchase of the NSN DSLAM, GPON and ACI Products and the Related Services Businesses (Exhibit 2.1 to ADTRAN's Form 10-K/A filed July 6, 2012).
3.1	Certificate of Incorporation, as amended (Exhibit 3.1 to ADTRAN's Registration Statement on Form S-1, No. 33-81062 (the "Form S-1 Registration Statement")).
3.2	Bylaws, as amended (Exhibit 3.1 to ADTRAN's Current Report on Form 8-K filed October 13, 2011).
10.1	Documents relative to the \$50,000,000 Taxable Revenue Bond, Series 1995 (ADTRAN, Inc. Project) issued by the Alabama State Industrial Development Authority, consisting of the following: (a) First Amended and Restated Financing Agreement dated April 25, 1997, among the State Industrial Development Authority, a public corporation organized under the laws of the State of Alabama (the "Authority"), ADTRAN and First Union National Bank of Tennessee, a national banking corporation (the "Bondholder") (Exhibit 10.1(a) to ADTRAN's Quarterly Report on Form 10-Q for the quarter ended March 31, 1997 (the "1997 Form 10-Q")). (b) First Amended and Restated Loan Agreement dated April 25, 1997, between the Authority and ADTRAN (Exhibit 10.1(b) to the 1997 Form 10-Q). (c) First Amended and Restated Specimen Taxable Revenue Bond, Series 1995 (ADTRAN, Inc. Project) (Exhibit 10.1(c) to the 1997 Form 10-Q). (d) First Amended and Restated Specimen Note from ADTRAN to the Bondholder, dated April 25, 1997 (Exhibit 10.1(d) to the 1997 Form 10-Q). (e) Amended and Restated Investment Agreement dated January 3, 2002 between ADTRAN and First Union National Bank (successor-in-interest to First Union National Bank of Tennessee (the "Successor Bondholder")) (Exhibit 10.1(e) to ADTRAN's Annual Report on Form 10-K for the year ended December 31, 2002 (the "2002 Form 10-K")).

<u>Exhibit Number</u>	<u>Description</u>
	(f) Resolution of the Authority authorizing the amendment of certain documents, dated April 25, 1997, relating to the \$50,000,000 Taxable Revenue Bond, Series 1995 (ADTRAN, Inc. Project) (Exhibit 10.1(f) to the 1997 Form 10-Q).
	(g) Resolution of ADTRAN authorizing the First Amended and Restated Financing Agreement, the First Amended and Restated Loan Agreement, the First Amended and Restated Note, and the Investment Agreement (Exhibit 10.1(g) to the 1997 Form 10-Q).
	(h) Amendment to First Amended and Restated Financing Agreement and First Amended and Restated Loan Agreement dated January 3, 2002 between ADTRAN and the Successor Bondholder (Exhibit 10.1(h) to the 2002 Form 10-K).
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	(b) Amended and Restated 1995 Directors Stock Option Plan, as amended by the First and Second Amendments thereto (Exhibit 10.3(b) to the 2002 Form 10-K).
	(c) Third Amendment to the Amended and Restated 1995 Directors Stock Option Plan (Exhibit 10.3(c) to ADTRAN's Annual Report on Form 10-K for the year ended December 31, 2003 (the "2003 Form 10-K")).
	(d) ADTRAN, Inc. Management Incentive Bonus Plan (Exhibit 10.1 to ADTRAN's Form 8-K on February 3, 2006).
	(e) ADTRAN, Inc. 2006 Employee Stock Incentive Plan (Exhibit 4.1 to ADTRAN's Registration Statement on Form S-8 (File No. 333-133927) filed on May 9, 2006).
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	(k) Summary of Non-Employee Director Compensation (Exhibit 10.3(k) to ADTRAN's Form 10-K filed on February 28, 2007).
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	(o) ADTRAN, Inc. Deferred Compensation Program for Directors, as amended and restated as of June 1, 2010 (Exhibit 10.3(o) to ADTRAN's Form 10-K filed on February 24, 2016).
	(p) ADTRAN, Inc. Equity Deferral Program for Employees, as amended and restated as of October 1, 2011 (Exhibit 10.3(p) to ADTRAN's Form 10-K filed on February 24, 2016).
	(q) ADTRAN, Inc. Equity Deferral Program for Directors, as amended and restated as of October 1, 2011 (Exhibit 10.3(q) to ADTRAN's Form 10-K filed on February 24, 2016).

**Exhibit
Number**

Description

	(r) Employment Agreement, dated October 29, 2015, between Roger Shannon and ADTRAN, Inc. (Exhibit 10.3(r) to ADTRAN's Form 10-K filed on February 24, 2016).
	(s) ADTRAN, Inc. 2015 Employee Stock Incentive Plan (Exhibit 10.1 to ADTRAN's Form 8-K filed on May 15, 2015).
21*	Subsidiaries of ADTRAN.
23*	Consent of PricewaterhouseCoopers LLP.
24*	Powers of Attorney.
31*	Rule 13a-14(a)/15d-14(a) Certifications.
32*	Section 1350 Certifications.
101.INS	XBRL Instance Document
101.SCH	XBRL Taxonomy Extension Schema Document
101.CAL	XBRL Taxonomy Extension Calculation Linkbase Document
101.LAB	XBRL Taxonomy Extension Labels Linkbase Document
101.PRE	XBRL Taxonomy Extension Presentation Linkbase Document
101.DEF	XBRL Taxonomy Extension Definition Linkbase Document

* Filed herewith

ITEM 16. FORM 10-K SUMMARY

None.

SIGNATURES

Pursuant to the requirements of Section 13 or 15(d) of the Securities Exchange Act of 1934, the Registrant has duly caused this report to be signed on its behalf by the undersigned, thereunto duly authorized on February 24, 2017.

ADTRAN, Inc.
(Registrant)

By: /s/ Roger D. Shannon
Roger D. Shannon
Senior Vice President of Finance,
Chief Financial Officer, Corporate Secretary and Treasurer
(Principal Accounting Officer)

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 24, 2017.

<u>Signature</u>	<u>Title</u>
<u>/s/ Thomas R. Stanton</u> Thomas R. Stanton	Chief Executive Officer and Chairman of the Board
<u>/s/ H. Fenwick Huss*</u> H. Fenwick Huss	Director
<u>/s/ William L. Marks*</u> William L. Marks	Director
<u>/s/ Anthony Melone*</u> Anthony Melone	Director
<u>/s/ Balan Nair*</u> Balan Nair	Director
<u>/s/ Jacqueline H. Rice *</u> Jacqueline H. Rice	Director
<u>/s/ Kathryn A. Walker*</u> Kathryn A. Walker	Director

*By: /s/ Roger D. Shannon
Roger D. Shannon as Attorney in Fact

ADTRAN, INC.
SCHEDULE II
VALUATION AND QUALIFYING ACCOUNTS

<u>Column A</u>	<u>Column B</u>	<u>Column C</u>	<u>Column D</u>	<u>Column E</u>
	Balance at Beginning of Period	Charged to Costs & Expenses	Deductions	Balance at End of Period
<i>(In thousands)</i>				
<i>Year ended December 31, 2016</i>				
Allowance for Doubtful Accounts	\$ 19	—	19	\$ —
Inventory Reserve	\$ 26,675	3,303	4,729	\$ 25,249
Warranty Liability	\$ 8,739	8,561	8,752	\$ 8,548
Deferred Tax Asset Valuation Allowance	\$ 7,250	69	1,170	\$ 6,149
<i>Year ended December 31, 2015</i>				
Allowance for Doubtful Accounts	\$ 136	19	136	\$ 19
Inventory Reserve	\$ 24,682	2,225	232	\$ 26,675
Warranty Liability	\$ 8,415	2,998	2,674	\$ 8,739
Deferred Tax Asset Valuation Allowance	\$ 7,463	81	294	\$ 7,250
<i>Year ended December 31, 2014</i>				
Allowance for Doubtful Accounts	\$ 130	23	17	\$ 136
Inventory Reserve	\$ 22,993	2,549	860	\$ 24,682
Warranty Liability	\$ 8,977	3,103	3,665	\$ 8,415
Deferred Tax Asset Valuation Allowance	\$ 8,842	283	1,662	\$ 7,463

ADTRAN, INC.
INDEX OF EXHIBITS

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- (s) ADTRAN, Inc. 2015 Employee Stock Incentive Plan (Exhibit 10.1 to ADTRAN's Form 8-K filed on May 15, 2015).

21* Subsidiaries of ADTRAN.

23* Consent of PricewaterhouseCoopers LLP.

24* Powers of Attorney.

31* Rule 13a-14(a)/15d-14(a) Certifications.

32* Section 1350 Certifications

101.INS XBRL Instance Document

101.SCH XBRL Taxonomy Extension Schema Document

101.CAL XBRL Taxonomy Extension Calculation Linkbase Document

101.LAB XBRL Taxonomy Extension Labels Linkbase Document

101.PRE XBRL Taxonomy Extension Presentation Linkbase Document

101.DEF XBRL Taxonomy Extension Definition Linkbase Document

* Filed herewith

Exhibit 21**SUBSIDIARIES OF ADTRAN, INC.**

December 31, 2016

<u>Name of Subsidiary</u>	<u>Country or State of Incorporation</u>
ADTRAN Networks Pty. Ltd	Australia
ADTRAN Networks Comunicações Ltda.	Brazil
ADTRAN Canada, Inc.	Canada
ADTRAN Networks Canada, Inc.	Canada
ADTRAN d.o.o.	Croatia
ADTRAN International, Inc.	Delaware
ADTRAN Networks Worldwide, Inc.	Delaware
ADTRAN Networks, LLC	Delaware
Bluesocket, Inc.	Delaware
ADTRAN Oy	Finland
ADTRAN GmbH	Germany
ADTRAN Networks M.E.P.E.	Greece
ADTRAN Networks Hong Kong Limited	Hong Kong
ADTRAN Networks India Private Limited	India
ADTRAN Holdings Ltd.	Israel
ADTRAN S.R.L.	Italy
ADTRAN K.K.	Japan
ADTRAN Networks Sdn Bhd	Malaysia
ADTRAN Networks S.A. de C.V.	Mexico
ADTRAN Networks & Services, S. de R.L. de C.V.	Mexico
ADTRAN Peru S.R.L.	Peru
ADTRAN Sp. z.o.o.	Poland
ADTRAN, Unipessoal Lda.	Portugal
ADTRAN LLC	Russia
ADTRAN International, Inc. - Saudi Arabia branch	Saudi Arabia
ADTRAN Singapore Pte. Ltd.	Singapore
ADTRAN s.r.o.	Slovakia
ADTRAN Proprietary Ltd.	South Africa
ADTRAN Switzerland GmbH	Switzerland
ADTRAN Europe Limited	United Kingdom

Exhibit 23

CONSENT OF INDEPENDENT REGISTERED PUBLIC ACCOUNTING FIRM

We hereby consent to the incorporation by reference in the Registration Statements on Form S-8 (Nos. 333-215218, 333-168419, 333-133927, 333-126734, 333-66000, 333-41458, 333-78417, 333-30375, 333-29899, 333-4808) of ADTRAN, Inc. of our report dated February 24, 2017 relating to the financial statements, financial statement schedule and the effectiveness of internal control over financial reporting, which appears in this Form 10-K.

/s/ PricewaterhouseCoopers LLP

Birmingham, Alabama

February 24, 2017

Exhibit 24

POWER OF ATTORNEY

KNOW ALL MEN BY THESE PRESENTS, that the undersigned constitutes and appoints Thomas R. Stanton and Roger D. Shannon, and each of them, his true and lawful attorneys-in-fact and agents, with full power of substitution, for him and in his name, place and stead, in any and all capacities, to sign the Annual Report on Form 10-K of ADTRAN, Inc. for the fiscal year ended December 31, 2016 and any and all amendments thereto, and other documents in connection therewith and to file the same, with all exhibits thereto and other documents in connection therewith, with the Securities and Exchange Commission and the NASDAQ Global Select Market, Inc., 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 requisite or necessary to be done, as fully to all intents and purposes as he might or could do in person, hereby 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 hereof.

This 24th day of February 2017

/s/ H. Fenwick Huss

H. Fenwick Huss

Director

/s/ William L. Marks

William L. Marks

Director

/s/ Anthony Melone

Anthony Melone

Director

/s/ Balan Nair

Balan Nair

Director

/s/ Jacqueline H. Rice

Jacqueline H. Rice

Director

/s/ Kathryn A. Walker

Kathryn A. Walker

Director

CERTIFICATIONS

I, Thomas R. Stanton, certify that:

1. I have reviewed this Annual Report on Form 10-K of ADTRAN, Inc.;
2. Based on my knowledge, this report does not contain any untrue statement of a material fact or omit to state a material fact necessary to make the statements made, in light of the circumstances under which such statements were made, not misleading with respect to the period covered by this report;
3. Based on my knowledge, the financial statements, and other financial information included in this report, fairly present in all material respects the financial condition, results of operations and cash flows of the registrant as of, and for, the periods presented in this report;
4. The registrant's other certifying officer 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; and
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 24, 2017

/s/ Thomas R. Stanton

Thomas R. Stanton

Chief Executive Officer and Chairman of the Board

I, Roger D. Shannon, certify that:

1. I have reviewed this Annual Report on Form 10-K of ADTRAN, Inc.;
2. Based on my knowledge, this report does not contain any untrue statement of a material fact or omit to state a material fact necessary to make the statements made, in light of the circumstances under which such statements were made, not misleading with respect to the period covered by this report;
3. Based on my knowledge, the financial statements, and other financial information included in this report, fairly present in all material respects the financial condition, results of operations and cash flows of the registrant as of, and for, the periods presented in this report;
4. The registrant's other certifying officer 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; and
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 24, 2017

/s/ Roger D. Shannon
Roger D. Shannon
Senior Vice President of Finance,
Chief Financial Officer,
Corporate Secretary and Treasurer

**CERTIFICATION PURSUANT TO
18 U.S.C. SECTION 1350
AS ADOPTED PURSUANT TO
SECTION 906 OF THE SARBANES-OXLEY ACT OF 2002**

In connection with the Annual Report of ADTRAN, Inc. (the "Company") on Form 10-K for the period ended December 31, 2016 as filed with the Securities and Exchange Commission on the date hereof (the "Report"), I, Thomas R. Stanton, Chief Executive Officer and Chairman of the Board of the Company, certify, pursuant to 18 U.S.C. § 1350, as adopted pursuant to § 906 of the Sarbanes-Oxley Act of 2002, that, to the best of my knowledge:

- (1) The Report fully complies with the requirements of Section 13(a) or 15(d) of the Securities Exchange Act of 1934; and
- (2) The information contained in the Report fairly presents, in all material respects, the financial condition and results of operations of the Company.

/s/ Thomas R. Stanton

Thomas R. Stanton

Chief Executive Officer and Chairman of the Board

Date: February 24, 2017

**CERTIFICATION PURSUANT TO
18 U.S.C. SECTION 1350
AS ADOPTED PURSUANT TO
SECTION 906 OF THE SARBANES-OXLEY ACT OF 2002**

In connection with the Annual Report of ADTRAN, Inc. (the "Company") on Form 10-K for the period ended December 31, 2016 as filed with the Securities and Exchange Commission on the date hereof (the "Report"), I, Roger D. Shannon, Senior Vice President of Finance, Chief Financial Officer, Corporate Secretary and Treasurer of the Company, certify, pursuant to 18 U.S.C. § 1350, as adopted pursuant to § 906 of the Sarbanes-Oxley Act of 2002, that, to the best of my knowledge:

- (1) The Report fully complies with the requirements of Section 13(a) or 15(d) of the Securities Exchange Act of 1934; and
- (2) The information contained in the Report fairly presents, in all material respects, the financial condition and results of operations of the Company.

/s/ Roger D. Shannon

Roger D. Shannon
Senior Vice President of Finance,
Chief Financial Officer,
Corporate Secretary and Treasurer
Date: February 24, 2017

