

JUNIPER NETWORKS INC
Form 10-K
February 22, 2019

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

FORM 10-K
(Mark One)

ANNUAL REPORT PURSUANT TO SECTION 13 OR 15(d) OF THE SECURITIES EXCHANGE ACT OF 1934
For the fiscal year ended December 31, 2018

or
 TRANSITION REPORT PURSUANT TO SECTION 13 OR 15(d) OF THE SECURITIES EXCHANGE ACT OF 1934
For the transition period from _____ to _____

Commission file number 001-34501
JUNIPER NETWORKS, INC.

(Exact name of registrant as specified in its charter)

Delaware 77-0422528
(State or other jurisdiction of incorporation or organization) (I.R.S. Employer Identification No.)

1133 Innovation Way
Sunnyvale, California 94089
(Address of principal executive offices) (Zip code)

(408) 745-2000
(Registrant's telephone number, including area code)

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

Title of each class	Name of each exchange on which registered
Common Stock, par value \$0.00001 per share	New York Stock Exchange

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

Indicate by check mark if the registrant is a well-known seasoned issuer, as defined in Rule 405 of the Securities Act.
Yes No

Indicate by check mark if the registrant is not required to file reports pursuant to Section 13 or Section 15(d) of the Act. Yes No

Indicate by check mark whether the registrant (1) has filed all reports required to be filed by Section 13 or 15(d) of the Securities Exchange Act of 1934 during the preceding 12 months (or for such shorter period that the registrant was required to file such reports), and (2) has been subject to such filings requirements for the past 90 days. Yes No
Indicate by check mark whether the registrant has submitted electronically every Interactive Data File required to be submitted pursuant to Rule 405 of Regulation S-T (§ 232.405 of this chapter) during the preceding 12 months (or for such shorter period that the registrant was required to submit such files). Yes No

Indicate by check mark if disclosure of delinquent filers pursuant to Item 405 of Regulation S-K (§ 229.405 of this chapter) is not contained herein, and will not be contained, to the best of 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, a smaller reporting company, or an emerging growth company. See the definitions of "large accelerated filer," "accelerated filer," "smaller reporting company", and "emerging growth company" in Rule 12b-2 of the Exchange Act.

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Large accelerated filer Accelerated filer Non-accelerated filer Smaller reporting company Emerging growth company

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

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

The aggregate market value of voting common stock held by non-affiliates of the registrant was approximately \$9,483,000,000 as of June 29, 2018, the last business day of the registrant's most recently completed second fiscal quarter (based on the closing sales price for the common stock on the New York Stock Exchange on such date). As of February 15, 2019, there were 347,922,460 shares of the registrant's common stock outstanding.

DOCUMENTS INCORPORATED BY REFERENCE

As noted herein, the information called for by Part III is incorporated by reference to specified portions of the registrant's definitive proxy statement to be filed in conjunction with the registrant's 2019 Annual Meeting of Stockholders, which is expected to be filed not later than 120 days after the registrant's fiscal year ended December 31, 2018.

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Forward-Looking Statements

This Annual Report on Form 10-K, which we refer to as the Report, including “Management’s Discussion and Analysis of Financial Condition and Results of Operations,” contains forward-looking statements within the meaning of the Private Securities Litigation Reform Act of 1995 regarding future events and the future results of Juniper Networks, Inc., which we refer to as “we,” “us,” or the “Company,” that are based on our current expectations, estimates, forecasts, and projections about our business, our results of operations, the expected impact of the Tax Cuts and Jobs Act, the industry in which we operate and the beliefs and assumptions of our management. All statements other than statement of historical facts are statements that could be deemed to be forward-looking statements. Words such as “expects,” “anticipates,” “targets,” “goals,” “projects,” “will,” “would,” “could,” “intends,” “plans,” “believes,” “seeks,” “estimates,” “varies,” and similar expressions are intended to identify such forward-looking statements. Forward-looking statements by their nature address matters that are, to different degrees, uncertain, and these forward-looking statements are only predictions and are subject to risks, uncertainties, and assumptions that are difficult to predict. Therefore, actual results may differ materially and adversely from those expressed in any forward-looking statements. Factors that might cause or contribute to such differences include, but are not limited to, those discussed in this Report under the section entitled “Risk Factors” in Item 1A of Part I and elsewhere, and in other reports we file with the U.S. Securities and Exchange Commission, or the SEC. While forward-looking statements are based on reasonable expectations of our management at the time that they are made, you should not rely on them. We undertake no obligation to revise or update publicly any forward-looking statements for any reason, except as required by applicable law.

PART I

ITEM 1. Business

Overview

Juniper Networks designs, develops and sells products and services for high-performance networks to enable customers to build scalable, reliable, secure and cost-effective networks for their businesses, while achieving agility and improved operating efficiency through automation. We sell our products in more than 150 countries in three geographic regions: Americas; Europe, Middle East, and Africa, which we refer to as EMEA; and Asia Pacific, which we refer to as APAC. We sell our high-performance network products and service offerings across routing, switching, and security technologies. In addition to our products, we offer our customers services, including maintenance and support, professional services, and education and training programs.

Our products and services address high-performance network requirements for our customers within our verticals: Cloud, Service Provider, and Enterprise who view the network as critical to their success. We believe our silicon, systems, and software represent innovations that transform the economics and experience of networking, helping our customers achieve superior performance, greater choice, and flexibility, while reducing overall total cost of ownership.

We were incorporated in California in 1996 and reincorporated in Delaware in 1998. Our corporate headquarters are located in Sunnyvale, California. Our website address is www.juniper.net.

Strategy

We deliver highly scalable, reliable, secure and cost-effective networks, while transforming the network's agility, efficiency, and value through automation.

We believe the network needs for our customers in our Cloud, Service Provider, and Enterprise verticals are converging as these customers recognize the need for high-performance networks and are adopting cloud architectures for their infrastructure and service delivery, such as large public and private data centers and service provider edge data centers, for improved agility and greater levels of operating efficiency. We believe this industry trend presents an opportunity for Juniper Networks, and we have focused our strategy on enabling our customers' transition to cloud architectures through the following strategic priorities:

Power Public and Private Cloud Data Centers

We are focused on continuing to power public and private cloud data centers with high performance infrastructure. These data centers are the core of cloud transformation by enabling service delivery in a multicloud environment, which is a combination of public cloud, private cloud, and Software-as-a-Service, or SaaS delivery. We believe we are a recognized leader in networking innovation in both software and hardware. Our Junos Operating System, or Junos OS, application-specific integrated circuits, or ASIC, technology, and management and automation software investments across routing, switching, and security will continue

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to be key elements to maintaining our technology leadership and transforming the economics and experience of our public and private cloud customers.

Connect Users and Devices Securely to the Cloud and to Each Other

In developing our solutions, we strive to design and build best-in-class products and solutions for core, edge, and metro networking infrastructure for connecting user and devices securely to the cloud and to each other. Cloud providers and Service Providers have deployed our product offerings in their wide area networks, or WAN, such as our highly efficient IP transport PTX product which can cost effectively manage incredible capacity from their end users to the data centers from which they deliver the value to those customers. We are committed to continued investment in cost effective and high-performance IP transport platforms and automation software, which forms the basis of these high-performance networks.

Build and Manage Distributed Clouds

Our Service Provider customers are increasingly investing in the build-out of high-performance networks and the transformation of existing legacy infrastructure to distributed cloud environments, which resides in multiple, distributed data centers in order to place applications and services closer to end users, such as enabling managed security and low-latency applications. We are committed to this transformation as our Service Provider customers rearchitect their infrastructure to enable next generation mobile network build-outs, or 5G, and Internet of Things, or IoT, service delivery close to their end users. We believe our history of experience in both cloud and WAN architecture positions us well to partner with our Service Provider customers in their strategic transformation initiatives.

Cloud-Delivered Enterprise

Enterprises are consuming more value-as-a-service, where value is delivered in the form of cloud-based software and services. We have introduced cloud management and security products which enable enterprises to consume cloud infrastructure and services securely. We believe the transition to SaaS presents an opportunity for Juniper to come to market with innovative network and security solutions for our Enterprise customers which facilitate their transition to cloud architectures.

We believe our understanding of high performance networking technology and cloud architecture, and our strategy, position us to capitalize on the industry transition to more automated, cost-efficient, scalable networks.

Customer Verticals

We sell our high-performance network products and service offerings through direct sales; distributors; value-added resellers, or VARs; and original equipment manufacturers, or OEMs, to end-users in the following verticals: Cloud, Service Provider, and Enterprise. In 2018, we revised the naming convention of our key customer verticals as follows and a summary of the types of customers included in our verticals is discussed below.

☐ Telecom/Cable is now referred to as ‘Service Provider’

☐ Strategic Enterprise is now referred to as ‘Enterprise’

☐ Cloud remains unchanged

Further, we believe our networking infrastructure offerings benefit our key customers by:

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Reducing capital and operational costs by running multiple services over the same network using our secure, high density, highly automated, and highly reliable platforms;

• Creating new or additional revenue opportunities by enabling new services to be offered to new market segments, which includes existing customers and new customers, based on our product capabilities;

• Increasing customer satisfaction, while lowering costs, by enabling customers to self-select automatically provisioned service packages that provide the quality, speed, and pricing they desire;

• Providing increased asset longevity and higher return on investment as our customers' networks can scale to higher throughput based on the capabilities of our platforms;

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Offering network security across every environment—from the data center to campus and branch environments to assist in the protection and recovery of services and applications; and

Offering operational improvements that enable cost reductions, including lower administrative, training, customer care, and labor costs.

The following is an overview of the trends affecting the market in which we operate by each of our customer verticals. We believe the networking needs for each of our customers will eventually result in cloud-based network architectures for improved agility and greater levels of operating efficiency.

Cloud

Our Cloud vertical includes companies that are heavily reliant on the cloud for their business model's success. Customers in the Cloud vertical can include cloud service providers such as the largest public cloud providers, which we refer to as hyperscalers, and Tier-2 cloud providers, as well as enterprises that provide SaaS; infrastructure-as-a-service; or platform-as-a-service.

Cloud providers continue to grow as more organizations take advantage of public infrastructure to run their business. As their businesses grow, we expect they will continue to invest in their networks, which dictates the quality and experience of the products and the services they deliver to their end-customers. Further, as cloud providers begin to early adopt new network technologies, such as the transition to 400-gig Ethernet, this will present further opportunities for Juniper across our portfolio as our cloud customers value high-performance, highly compact, power efficient infrastructures which we support and continue to develop.

In addition, SaaS continues to be an important factor for cloud providers as their customers, such as enterprises, prefer to consume and procure product and service offerings via SaaS models. As a result, we believe that SaaS providers will invest in high performance infrastructure because the quality of experience has proven just as important competitively as software features and functions. Lastly, as a result of new regulations and the need for lower latency and high-performance networking, cloud providers are transitioning to regional network build-outs or distributed cloud environments to address the increasing demand for services, data privacy, data protection, and consumer rights.

As Cloud customers are pushing the envelope in networking, our focus on collaboration combined with networking innovation around automation has made us a strategic partner with these customers, helping them develop high-performance and lower total cost of ownership networking solutions to support their business.

Service Provider

Our Service Provider vertical includes wireline and wireless carriers and cable operators, and we support most of the major carrier and operator networks in the world with our high performance network infrastructure offerings. In recent years, we have seen increased convergence of these different types of customers through acquisitions, mergers, and partnerships.

Service Provider customers recognize the need for high-performance networks and leveraging the cloud to reduce costs from their network operations. This is dictating a change in business models and their underlying infrastructure, which we believe requires investment in the build-out of high-performance networks and the transformation of existing legacy infrastructure to distributed cloud environments in order to satisfy the growth in mobile traffic and video as a result of the increase in mobile device usage including smartphones, tablets, and connected devices of various kinds.

We expect that Network Function Virtualization, or NFV, and software-defined networking, or SDN, will be critical elements to enable our Service Provider customers the flexibility to support enhanced mobile video and dynamic new service deployments. We are engaging with these customers to transition their operations to essentially next-generation cloud operations as the need for a highly efficient infrastructure to handle large amounts of data along with low latency, or minimal delay, plays into the need to have a high performance, scalable infrastructure in combination with the automation and flexibility required to drive down operational costs and rapidly provision applications. We consistently deliver leading technologies that transform the economics and experience of networking-significantly improving customer economics by lowering the capital expenditures required to build networks and the operating expenses required to manage and maintain them.

In addition to reducing operating costs, Service Providers are seeking to create new or additional revenue opportunities to support their evolving business models. These customers are preparing for 5G, which we expect to begin to occur over the next few years, and IoT, which we believe will give rise to new services like connected cars, smart cities, robotic manufacturing, and agricultural transformation. 5G and IoT will require a highly distributed cloud data center architecture from which services are delivered to the end users and will involve a great degree of analytics and embedded security. We expect this trend will present further

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opportunities for Juniper with our focus on delivering a strong portfolio of network virtualization and software-based orchestration solutions, which position us to deliver on the automation and agility requirements needs of Service Providers.

Enterprise

Our high-performance network infrastructure offerings are designed to meet the performance, reliability, and security requirements of the world's most demanding enterprises. We offer enterprise solutions and services for data centers as well as branch and campus applications. Our Enterprise vertical includes enterprises not included in the Cloud vertical. In particular, they are industries with high performance, high agility requirements, including financial services; national, federal, state, and local governments; as well as research and educational institutions. We believe that our Enterprise customers are able to deploy our solutions as a powerful component in delivering the advanced network capabilities needed for their leading-edge applications.

We believe that as our Enterprise customers continue to transition their workloads to the cloud, they continue to seek greater flexibility in how they consume networking and security services, such as pay-per-use models. Additionally, Enterprises are deploying multicloud architectures which require end-to-end solutions for managing, orchestrating, and securing distributed cloud resources as a single pool of resources. Also, we are increasingly seeing a convergence of networking and security, resulting in security becoming an embedded capability in each and every solution that we offer to our customers.

High-performance enterprises require IP networks that are global, distributed, and always available. We are innovating in key technology areas to meet the needs of our Enterprise customers whether they plan to move to a public cloud architecture or hybrid cloud architecture (which is a mix of public and private cloud, as well as a growing number of SaaS applications). In 2018, 2017, and 2016, no single customer accounted for 10% or more of our net revenues.

Products, Services, and Technology

Early in our history, we developed, marketed, and sold the first commercially available purpose-built IP backbone router optimized for the specific high-performance requirements of telecom and cable operators. As the need for core bandwidth continued to increase, the need for service-rich platforms at the edge of the network was created.

We have expanded our portfolio to address multiple domains in the network: core; edge; access and aggregation; data centers; and campus and branch. We have systematically focused on how we innovate in silicon, systems, and software (including our Junos OS and virtual network functions, or VNF) such as firewall, network orchestration, and automation to provide a range of hardware and software solutions in high-performance, secure networking.

Further, our intent is to expand our software business by introducing new software solutions to our product portfolio that simplify the operation of networks, and allow our customers across our key verticals, flexibility in consumption and deployment. Our software offerings include subscription arrangements and perpetual licenses. We believe our software revenues as a percentage of total revenues will increase over time as we introduce new software product offerings and business models designed to better monetize the value of our software offerings.

We conduct business globally and are managed, operated, and organized by major functional departments that operate on a consolidated basis. As a result, we operate in one reportable segment. The following is an overview of our principal product families and service offerings in 2018:

Routing Products

ACX Series: Our ACX Series Universal Access Routers cost-effectively address current operator challenges to rapidly deploy new high-bandwidth services. The ACX Series is well positioned to address the growing metro Ethernet and mobile backhaul needs of our customers, as we expect 5G mobile network build-outs to begin to occur over the next few years. The platforms deliver the necessary scale and performance needed to support multi-generation wireless technologies.

MX Series: Our MX Series is a family of high-performance, SDN-ready, Ethernet routers that function as a Universal Edge platform with high system capacity, density, and performance. The MX Series platforms utilize our custom silicon and provide carrier-class performance, scale, and reliability to support large-scale Ethernet deployments. We also offer the vMX, a virtual version of the MX router, which is a fully featured MX Series 3D Universal Edge Router optimized to run as software on x86 servers.

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PTX Series: Our PTX Series Packet Transport Routers deliver high throughput at a low cost per bit, optimized for the Service Provider core as well as the scale-out architectures of Cloud Providers. The PTX Series is built on our custom silicon and utilizes a forwarding architecture that is focused on optimizing IP/multi-protocol label switching, or MPLS, and Ethernet. This ensures high density and scalability, high availability, and network simplification.

Cloud Customer Premises Equipment, or CPE, Solution: Our Cloud CPE is a fully automated, end-to-end NFV solution that builds on Juniper Networks Contrail Networking and supports cloud-based and premises-based VNFs. This solution includes Contrail Service Orchestration, a comprehensive management and orchestration platform that delivers and manages virtualized network services such as virtual security, and the NFX security family, a network services platform that can operate as a secure, on-premises device running software defined wide area network, or SD-WAN, and multiple virtual services, from Juniper and third parties, simultaneously.

NorthStar Controller: Our wide-area network SDN controller automates the creation of traffic-engineering paths across the network, increasing network utilization and enabling a customized programmable networking experience.

Switching Products

EX Series: Our EX Series Ethernet switches address the access, aggregation, and core layer switching requirements of micro branch, branch office, and campus environments, providing a foundation for the fast, secure, and reliable delivery of applications able to support strategic business processes. Our EX switches can also serve as security enforcement points as part of our Unified Cybersecurity Platform.

QFX Series: Our QFX Series of core, spine and top-of-rack data center switches offer a revolutionary approach to switching that are designed to deliver dramatic improvements in data center performance, operating costs, and business agility for enterprises, high-performance computing networks, and cloud providers. Our QFX switches can also serve as security enforcement points as part of our Unified Cybersecurity Platform.

Security Products

SRX Series Services Gateways for the Data Center and Network Backbone: Our mid-range, high-end and virtual SRX Series platforms provide high-performance, scalability, and service integration, which are ideally suited for medium to large enterprise, data centers and large campus environments where scalability, high performance, and concurrent services, are essential. Our high-end SRX5800 platform is suited for service provider, large enterprise, and public sector networks. The upgrade to our high-end SRX firewall offering with our Services Process Card 3, or SPC3, with our Advanced Security Acceleration line card enhances the SRX5800 to deliver power for demanding use cases, including high-end data centers, IoT, and 5G.

Branch SRX, Security Policy and Management: The Branch SRX family provides an integrated firewall and next-generation firewall, or NGFW, capabilities. Security Director is a network security management product that offers efficient, highly scalable, and comprehensive network security policy management. These solutions are designed to enable organizations to securely, reliably, and economically deliver powerful new services and applications to all locations and users with superior service quality.

Virtual Firewall: Our vSRX Firewall delivers all of the features of our physical firewalls, including NGFW functionality, advanced security, and automated lifecycle management capabilities. The vSRX provides scalable, secure protection across private, public, and hybrid clouds. We also offer the cSRX which has been designed and optimized for container and cloud environments.

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Advanced Malware Protection: Our Advanced Threat Prevention portfolio consists of Sky ATP, a cloud-based service and Juniper ATP, or JATP, a premises-based solution. These products are designed to use both static and dynamic analysis with machine learning to find unknown threat signatures (zero-day attacks).

Services

In addition to our products, we offer maintenance and support, professional, and educational services. We utilize a multi-tiered support model to deliver services that leverage the capabilities of our own direct resources, channels partners, and other third-party organizations.

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We also train our channel partners in the delivery of support, professional, and educational services to ensure these services can be locally delivered.

As of December 31, 2018, we employed 1,818 people in our worldwide customer service and support organization. We believe that a broad range of services is essential to the successful customer deployment and ongoing support of our products, and we employ remote technical support engineers, on-site resident engineers, spare parts planning and logistics staff, professional services consultants and educators with proven network experience to provide those services.

Platform Strategy

In addition to our major product families and services, our software portfolio has been a key technology element in our goal to be a leader in high-performance networking.

Our Junos Platform enables our customers to expand network software into the application space, deploy software clients to control delivery, and accelerate the pace of innovation with an ecosystem of developers. At the heart of the Junos Platform is Junos OS. We believe Junos OS is fundamentally differentiated from other network operating systems not only in its design, but also in its development capabilities. The advantages of Junos OS include:

- One modular operating system with common base of code and a single, consistent implementation for each control plane feature;

- A highly disciplined and firmly scheduled development process; and

- One common modular software architecture that scales across all Junos-based platforms.

Junos OS is designed to improve the availability, performance, and security of business applications running across the network. Junos OS helps to automate network operations by providing a single consistent implementation of features across the network in a single release train that seeks to minimize the complexity, cost, and risk associated with implementing network features and upgrades.

Orchestration and Monitoring

As many of our customers are moving to a hybrid, multicloud environment, managing, orchestrating, and securing that complex environment can be a challenge. We are committed to providing solutions to simplify networking operations to help our customers to optimize their infrastructure and workload placement across their hybrid, multicloud environment with the following offerings:

Contrail: Our Contrail Networking and Contrail Cloud Platform offer an open-source, standards-based platform for SDN and NFV. This platform enables our customers to address their key problems in the area of network automation, agility, and time-to-service deployment by providing a mechanism to virtualize the network over any physical network and automating the provisioning and management of networking services (such as security and load balancing). Contrail Enterprise Multicloud and Contrail Edge Cloud provide packaged solutions designed for Enterprise multicloud and Service Provider Edge environments, respectively. Contrail's approach is to support multiple cloud and hardware vendors, various types of workloads, and both existing and new deployments. In late 2018, we completed the acquisition of HTBase Corporation ("HTBase"), a company that has developed a unique and disruptive platform for software-defined enterprise multicloud, which we expect will accelerate our leadership in multicloud and function with the compute orchestration capabilities of Contrail Enterprise Multicloud.

AppFormix: AppFormix is an optimization and management software platform for public, private, and hybrid clouds. This intent-driven software manages automated operations, visibility, and reporting in cloud and NFV use cases. It features machine learning-based policy and smart monitors, application and software-defined infrastructure analytics, and alarms to provide comprehensive visualization, smart analytics, and the ability to manage automatic remediation for service assurance.

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Significant Product Development Projects and Solutions

In 2018, we continued to execute on our product and solutions strategy and announced several new innovations that we expect to bring to market over the next few quarters, including the industry's first 400-gig optimized routing platform; a new high-performance MX Series 5G Universal Routing Platform with new programmable silicon; and our multi-cloud orchestration and telemetry platform, including Contrail Edge Cloud and Contrail Enterprise Multicloud, each of which, we believe, will help strengthen our position across our core markets.

We also announced new initiatives under an existing partnership with Nutanix, which we expect will help strengthen our ability to capitalize on multicloud with our Contrail Enterprise Multicloud integration with Nutanix's application programming interface, or APIs providing enhanced network visibility. Further, we entered into a new partnership with Ericsson to accelerate 5G initiatives by leveraging each company's complementary portfolios to drive our competitive advantage in the marketplace.

Research and Development

We have assembled a team of skilled engineers with extensive experience in the fields of high-end computing, network system design, ASIC design, security, routing protocols, software applications and platforms, and embedded operating systems. As of December 31, 2018, we employed 3,692 people in our worldwide R&D organization.

We believe that strong product development capabilities are essential to our strategy of enhancing our core technology, developing additional applications, integrating that technology, and maintaining the competitiveness and innovation of our product and service offerings. In our products, we are leveraging our software, ASIC and systems technology, developing additional network interfaces targeted to our customers' applications, and continuing to develop technology to support the build-out of secure high-performance networks and cloud environments. We continue to expand the functionality of our products to improve performance, reliability and scalability, and to provide an enhanced user interface.

Our R&D process is driven by our corporate strategy and the availability of new technology, market demand, and customer feedback. We have invested significant time and resources in creating a structured process for all product development projects. Following an assessment of market demand, our R&D team develops a full set of comprehensive functional product specifications based on inputs from the product management and sales organizations. This process is designed to provide a framework for defining and addressing the steps, tasks, and activities required to bring product concepts and development projects to market.

Sales and Marketing

As of December 31, 2018, we employed 2,425 people in our worldwide sales and marketing organization. These sales and marketing employees operate in different locations around the world in support of our customers.

Our sales organization, with its structure of sales professionals, business development teams, systems engineers, marketing teams, channel teams, and an operational infrastructure team are generally distributed between vertical markets. Within each team, sales team members serve the following three geographic regions: (i) Americas (including United States, Canada, Mexico, Caribbean and Central and South America), (ii) EMEA, and (iii) APAC. Within each region, there are regional and country teams, as well as vertical market focused teams, to ensure we operate close to our customers.

Our sales teams operate in their respective regions and generally either engage customers directly or manage customer opportunities through our distribution and reseller relationships as described below.

We sell to a number of Cloud and Service Provider customers directly. Otherwise, we sell to all of our key customer verticals primarily through distributors and resellers.

In 2019, we transitioned our sales organization to better align our sales strategy to each of our customer verticals. We believe the alignment of our sales leadership and product management teams across our customer verticals will position us for improved sales force productivity in late 2019 and position Juniper to better capitalize on our end market opportunities in the long-term.

Direct Sales Structure

The terms and conditions of direct sales arrangements are governed either by customer purchase orders and our order acknowledgment terms for those orders or by purchase contracts. The direct contracts with these customers set forth only general terms of sale and generally do not require customers to purchase specified quantities of our products. We directly receive and process customer purchase orders.

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Channel Sales Structure

A critical part of our sales and marketing efforts are our channel partners through which we conduct the majority of our sales. We utilize various channel partners, including, but not limited to the following:

A global network of strategic distributor relationships, as well as region-specific or country-specific distributors who in turn sell to local VARs who sell to end-user customers. Our distribution channel partners resell routing, switching, and security products and services, which are purchased by all of our key customer verticals. These distributors tend to focus on particular regions or countries within regions. For example, we have substantial distribution relationships with Ingram Micro in the Americas and Hitachi in Japan. Our agreements with these distributors are generally non-exclusive, limited by region, and provide product and service discounts and other ordinary terms of sale. These agreements do not require our distributors to purchase specified quantities of our products or services. Further, most of our distributors sell our competitors' products and services, and some sell their own competing products and services.

VARs and Direct value-added resellers, including our strategic worldwide alliance partners referenced below, resell our products to end-users around the world. These channel partners either buy our products and services through distributors, or directly from us, and have expertise in designing, selling, implementing, and supporting complex networking solutions in their respective markets. Our agreements with these channel partners are generally non-exclusive, limited by region, and provide product and service discounts and other ordinary terms of sale. These agreements do not require these channel partners to purchase specified quantities of our products or services. Increasingly, our Cloud and Service Provider customers also resell our products or services to their customers or purchase our products or services for the purpose of providing managed or cloud-based services to their customers.

Strategic worldwide reseller relationships with established Juniper alliances, comprised of Dimension Data Holdings, or Dimension Data; Ericsson Telecom A.B., or Ericsson; International Business Machines, or IBM; and NEC Corporation. These companies each offer services and products that complement our own product and service offerings and act as a reseller, and in some instances as an integration partner for our products. Our arrangements with these partners allow them to resell our products and services on a non-exclusive and generally global basis, provide for product and service discounts, and specify other general terms of sale. These agreements do not require these partners to purchase specified quantities of our products or services.

Manufacturing and Operations

As of December 31, 2018, we employed 340 people in worldwide manufacturing and operations who manage our supply chain including relationships with our contract manufacturers, original design manufacturers, component suppliers, warehousing and logistics service providers.

Our manufacturing is primarily conducted through contract manufacturers and original design manufacturers in the United States, or U.S., China, Malaysia, Mexico, and Taiwan. As of December 31, 2018, we utilized Celestica Incorporated, Flextronics International Ltd., Accton Technology Corporation, and Alpha Networks Inc. for the majority of our manufacturing activity. Our contract manufacturers and original design manufacturers are responsible for all phases of manufacturing from prototypes to full production including activities such as material procurement, surface mount assembly, final assembly, test, control, shipment to our customers, and repairs. Together with our contract manufacturers and original design manufacturers, we design, specify, and monitor the tests that are required to ensure that our products meet internal and external quality standards. We believe that these arrangements provide us with the following benefits:

• We can quickly ramp up and deliver products to customers with turnkey manufacturing;

• We gain economies of scale by leveraging our buying power with our contract manufacturers and original design manufacturers when we manufacture large quantities of products;

• We operate with a minimum amount of dedicated space and employees for manufacturing operations; and

• We can reduce our costs by reducing what would normally be fixed overhead expenses.

Our contract manufacturers and original design manufacturers build our products based on our rolling product demand forecasts. Each contract manufacturer procures components necessary to assemble the products in our forecast and tests the products according to agreed-upon specifications. Products are then shipped to our distributors, VARs, or end-users. Generally, we do not own the components. Title to the finished goods is generally transferred from the contract manufacturers to us when the products leave the

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contract manufacturer's or original design manufacturer's location. Customers take title to the products upon delivery at a specified destination. If the product or components remain unused or the products remain unsold for a specified period, we may incur carrying charges or charges for excess or obsolete materials.

Our contracts with our contract manufacturers and original design manufacturers set forth a framework within which the contract manufacturer and original design manufacturer, as applicable, may accept purchase orders from us. These contracts do not represent long-term commitments.

We also purchase and hold inventory for strategic reasons and to mitigate the risk of shortages of certain critical components; the majority of this inventory is production components. As a result, we may incur additional holding costs and obsolescence charges, particularly resulting from uncertainties in future product demand.

Some of our custom components, such as ASICs, are manufactured primarily by sole or limited sources, each of which is responsible for all aspects of production using our proprietary designs. To ensure the security and integrity of Juniper products during manufacture, assembly and distribution, we have implemented a supply chain risk management framework as part of our overall Brand Integrity Management System. This framework encompasses all aspects of the supply chain as well as enhanced elements specific to security issues applicable to Juniper products and our customers.

By working collaboratively with our suppliers, we endeavor to promote socially responsible business practices beyond our company and throughout our worldwide supply chain. To this end, we have adopted a business partner code of conduct and promote compliance with such code of conduct to our suppliers. Our business partner code of conduct expresses support for and is aligned with the Ten Principles of the United Nations Global Compact and the Responsible Business Alliance Code of Conduct. The Responsible Business Alliance, a coalition of electronics, retail, auto and toy companies, provides guidelines and resources to drive performance and compliance with critical corporate social responsibility policies. Its goals are to promote ethical business practices, to ensure that working conditions in the electronic industry supply chain are safe, that workers are treated with respect and dignity, and that manufacturing processes are environmentally responsible. By using standard audit and assessment protocols and tools, we measure and monitor manufacturing partners' and direct material suppliers' compliance to the codes of conduct, including but not limited to: onsite audits; risk assessments; CDP climate change and water requests; and conflict minerals surveys. CDP is a global standardized mechanism by which companies can report their environmental performance on climate change and water and forest programs to institutional investors and customers. Our Corporate Citizenship and Sustainability Report and Business Partner Code of Conduct are available on our website.

Backlog

Our sales are made primarily pursuant to purchase orders under framework agreements either with our distributors, resellers, or end-customers. At any given time, we have backlog orders for products that have not shipped. Because customers may cancel purchase orders or change delivery schedules without significant penalty, we believe that our backlog at any given date may not be a reliable indicator of future operating results. As of December 31, 2018 and December 31, 2017, our total product backlog was approximately \$344.3 million and \$400.7 million^(*), respectively. Our product backlog consists of confirmed orders for products scheduled to be shipped to our distributors, resellers, or end-customers, generally within the next six months. Backlog excludes certain future revenue adjustments for items such as product revenue deferrals, sales return reserves, service revenue allocations, and early payment discounts.

^(*) Prior to January 1, 2018, our product backlog consisted of confirmed orders for products scheduled to be shipped to customers, generally within the next six months, and excluded orders from distributors as we recognized product revenue on sales made through distributors upon sell-through to end-users. Backlog also excluded certain future revenue adjustments for items such as product revenue deferrals, rebates, stock rotation reserves, sales return

reserves, service revenue allocations, and early payment discounts.

Seasonality

We, as do many companies in our industry, experience seasonal fluctuations in customer spending patterns. Historically, we have experienced stronger customer demand in the fourth quarter and weaker demand in the first quarter. This historical pattern should not be considered a reliable indicator of our future net revenues or financial performance.

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Competition

We compete in the network infrastructure markets. These markets are characterized by rapid change, converging technologies, and a migration to solutions that combine high performance networking with cloud technologies. In the network infrastructure business, Cisco Systems, Inc., or Cisco, has historically been the dominant player. However, our principal competitors also include Arista Networks, Inc., or Arista; Dell Inc., or Dell; Hewlett Packard Enterprise Co., or HPE; Huawei Technologies Co., Ltd., or Huawei; and Nokia Corporation, or Nokia.

Many of our current and potential competitors, such as Cisco, Nokia, HPE, and Huawei, among others, have broader portfolios which enable them to bundle their networking products with other networking and information technology products in a manner that may discourage customers from purchasing our products. Many of our current and potential competitors have greater name recognition, marketing budgets, and more extensive customer bases that they may leverage to compete more effectively. Increased competition could result in price reductions, fewer customer orders, reduced gross margins, and loss of market share, negatively affecting our operating results.

In addition, there are a number of other competitors in the security network infrastructure space, including Palo Alto Networks, Inc., or Palo Alto Networks; Check Point Software Technologies, Ltd., or Check Point; F5 Networks, Inc., or F5 Networks; and Fortinet, Inc., or Fortinet; among others, who tend to be focused specifically on security solutions and, therefore, may be considered specialized compared to our broader product line.

We expect that over time, large companies with significant resources, technical expertise, market experience, customer relationships, and broad product lines, such as Cisco, Nokia, and Huawei, will introduce new products designed to compete more effectively in the market. There are also several other companies that aim to build products with greater capabilities to compete with our products. Further, there has been significant consolidation in the networking industry, with smaller companies being acquired by larger, established suppliers of network infrastructure products. We believe this trend is likely to continue which may increase the competitive pressure faced by us due to their increased size and breadth of their product portfolios.

In addition to established competitors, a number of public and private companies have announced plans for new products to address the same needs that our products address. We believe that our ability to compete depends upon our ability to demonstrate that our products are superior and cost effective in meeting the needs of our current and potential customers.

As a result, we expect to face increased competition in the future from larger companies with significantly more resources than we have and also from emerging companies that are developing new technologies. Although we believe that our technology and the purpose-built features of our products make them unique and will enable us to compete effectively with these companies, there can be no assurance that new products, enhancements or business strategies will achieve widespread market acceptance.

Environment

We are committed to maintaining compliance with all environmental laws applicable to our operations, products and services and to reducing our environmental impact across our business and supply chain. Our operations and many of our products are subject to various federal, state, local and foreign regulations that have been adopted with respect to the environment, such as the Waste Electrical and Electronic Equipment, or WEEE, Directive; Directive on the Restriction of the Use of Certain Hazardous Substances in Electrical and Electronic Equipment, or RoHS; and Registration, Evaluation, Authorization, and Restriction of Chemicals, or REACH, regulations adopted by the European Union, or EU, and China. To date, compliance with federal, state, local, and foreign laws enacted for the protection of the environment has had no material effect on our capital expenditures, earnings, or competitive position.

However, see the risk factor entitled "Regulation of our industry in general and the telecommunications industry in particular could harm our operating results and future prospects" in the section entitled Risk Factors in Item 1A of Part I of this Report for additional information concerning regulatory compliance.

Juniper's greatest impact on the environment is through our products and services. Juniper has an environmental program, based on our new product introduction process that supports a circular economy model for environmental sustainability and focuses on energy efficiency, materials innovation, and recyclability. We consider opportunities to minimize resource impacts and improve efficiencies over a product's life cycle, from the materials we use and a product's energy footprint, to packaging and end-of-life, or EOL, activities such as reuse, refurbishment, and recycling.

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We are committed to the environment through our efforts to improve the energy efficiency per gigabit of throughput of key elements in our high-performance network product offerings. Our products are independently tested by third parties for energy efficiency compliance. As an example, our MX10008 and MX10016 products redefine per-slot economics, enabling customers to do more with less while simplifying network design and reducing operating expenses, by consuming 0.6W per Gigabit of throughput. Additionally, we have redesigned packaging in ways that optimizes costs while minimizing resource impacts.

We are also voluntarily participating in CDP climate change and water disclosures and encourage our direct material suppliers to do the same. Additionally, we are a member of the Responsible Business Alliance, or RBA, and have adopted and promote the adoption by our suppliers of the practices of the RBA Code of Conduct, as discussed above in the section entitled Manufacturing and Operations. We continue to invest in the infrastructure and systems required to execute on, monitor and drive environmental improvements in our global operations and within our supply chain.

Intellectual Property

Our success and ability to compete are substantially dependent upon our internally developed technology and expertise, as well as our ability to obtain and protect necessary intellectual property rights. While we rely on patent, copyright, trade secret, and trademark law, as well as confidentiality agreements, to protect our technology, we also believe that factors such as the technological and creative skills of our personnel, new product developments, frequent product enhancements, and reliable product maintenance are essential to establishing and maintaining a technology leadership position. There can be no assurance that others will not develop technologies that are similar or superior to our technology.

In addition, we integrate licensed third-party technology into certain of our products and, from time to time, we need to renegotiate these licenses or license additional technology from third parties to develop new products or product enhancements or to facilitate new business models. There can be no assurance that third-party licenses will be available or continue to be available to us on commercially reasonable terms or at all. Our inability to maintain or re-license any third-party licenses required in our products or our inability to obtain third-party licenses necessary to develop new products and product enhancements could require us to obtain substitute technology of lower quality or performance standards or at a greater cost, any of which could harm our business, financial condition, and results of operations.

As of December 31, 2018, we had over 3,100 patents worldwide and numerous patent applications are pending. Patents generally have a term of twenty years from filing. As our patent portfolio has been built over time, the remaining terms on the individual patents vary. We cannot be certain that patents will be issued on the patent applications that we have filed, that we will be able to obtain the necessary intellectual property rights, or that other parties will not contest our intellectual property rights.

Employees

As of December 31, 2018, we had 9,283 full-time employees. We have not experienced any work stoppages, and we consider our relations with our employees to be good. Competition for qualified personnel in our industry is intense. We believe that our future success depends in part on our continued ability to hire, motivate, and retain qualified personnel. We believe that we have been successful in recruiting qualified employees, but there is no assurance that we will continue to be successful in the future.

Our future performance depends significantly upon the continued service of our key technical, sales, and senior management personnel, none of whom are bound by an employment agreement requiring service for any defined period of time. The loss of one or more of our key employees could have a material adverse effect on our business,

financial condition, and results of operations.

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Executive Officers of the Registrant

The following sets forth certain information regarding our executive officers as of the filing of this Report:

Name Position

Rami
48 Chief Executive Officer and Director
Rahim

Anand
55 Executive Vice President, Chief Development Officer
Athreya

Bikash
45 Executive Vice President, Chief Technology Officer
Koley

Manoj
49 Executive Vice President, Chief Product Officer
Leelanivas

Brian
57 Senior Vice President, General Counsel and Secretary
Martin

Kenneth
48 Executive Vice President, Chief Financial Officer

Miller

Terrance

50 Vice President, Corporate Controller and Chief Accounting Officer

Spidell

RAMI RAHIM joined Juniper in January 1997 and became Chief Executive Officer of Juniper, and a member of the Board of Directors, in November 2014. From March 2014 until he became Chief Executive Officer, Mr. Rahim served as Executive Vice President and General Manager of Juniper Development and Innovation, or JDI. His responsibilities included driving strategy, development and business growth for routing, switching, security, silicon technology, and the Junos operating system. Previously, Mr. Rahim served Juniper in a number of roles, including Executive Vice President, Platform Systems Division, Senior Vice President and General Manager, Edge and Aggregation Business Unit, or EABU, and Vice President, Product Management for EABU. Prior to that, Mr. Rahim spent the majority of his time at Juniper in the development organization where he helped with the architecture, design and implementation of many Juniper core, edge, and carrier Ethernet products. Mr. Rahim holds a Bachelor of Science degree in Electrical Engineering from the University of Toronto and a Master of Science degree in Electrical Engineering from Stanford University.

ANAND ATHREYA joined Juniper in August 2004 and became Executive Vice President and Chief Development Officer in August 2017. In this role, he is responsible for Juniper's Engineering organization. Since joining Juniper, Mr. Athreya has held various leadership positions within Engineering, including most recently serving as Senior Vice President of Engineering from May 2014 through August 2017, and Corporate Vice President of Engineering from February 2011 through May 2014. Mr. Athreya joined Juniper from Procket Networks, a maker of routers and routing technology, where he served as Director of Software Engineering. Prior to that, he was Vice President of Engineering at Malibu Networks, a supplier of fixed wireless networking based broadband solutions, Assistant Vice President of Product Management and Strategy at Tiara Networks, a provider of broadband access systems, and held engineering roles at Novell, a software and services company. Mr. Athreya received his Bachelor degree in Electrical Engineering from Bangalore University, a master's degree in Computer Science and Engineering from Osmania University, and an MBA from National University. He is also a graduate of the Advanced Management Program at Harvard Business School.

BIKASH KOLEY joined Juniper in September 2017 as Executive Vice President, Chief Technology Officer. From January 2008 to August 2017, Mr. Koley worked at Google, Inc. ("Google"), a global technology company, where he served most recently as a Distinguished Engineer and the Head of Network Architecture, Engineering and Planning from November 2015 through August 2017. In this role, he helped to design, build and operate Google's production

network infrastructure. In addition, from May 2012 through October 2015 Mr. Koley served as a Principal Architect and Director, Network Architecture and Engineering at Google. Prior to Google, Mr. Koley was the CTO of Qstreams Networks, a company he co-founded. He also spent several years at Ciena Corporation, a network strategy and technology company, in various technical roles. Mr. Koley received his Bachelor of Technology degree in Electronics and Communications Engineering from the Indian Institute of Technology, Kharagpur, India and M.S. and Ph.D. degrees in Electrical and Computer Engineering from the University of Maryland at College Park.

MANOJ LEELANIVAS joined Juniper in March 2018 as Executive Vice President, Chief Product Officer. In this role, Mr. Leelanivas leads all aspects of product strategy and direction for Juniper and helps to align products with our go-to-market strategies and execution, including marketing operations. From June 2013 to September 2017, Mr. Leelanivas was President and CEO of Cyphort, an innovator in scale-out security analytics technology, that was acquired by Juniper in September 2017. From March 1999 to May 2013, he held several key product management positions at Juniper, including Executive Vice President of Advanced Technologies Sales for data center. Mr. Leelanivas holds a Bachelor of Technology in Computer Engineering from the National Institute of Technology Karnataka, an M.S. in Computer Science from the University of Kentucky, and is a graduate of the Stanford University Executive Business Program.

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BRIAN MARTIN joined Juniper in October 2015 as Senior Vice President, General Counsel and Secretary. In January 2018, Mr. Martin also assumed the role of interim Chief Human Resources Officer ("CHRO") until October 2018, while the Company continued its search for a full-time CHRO. From April 2007 to September 2015, Mr. Martin served as Executive Vice President, General Counsel and Corporate Secretary of KLA-Tencor Corporation ("KLA-Tencor"), a provider of process control and yield management solutions. Prior to joining KLA-Tencor, Mr. Martin spent ten years in senior legal positions at Sun Microsystems, Inc. ("Sun"), a manufacturer of computer workstations, servers, software, and services for networks, most recently as Vice President, Corporate Law Group, responsible for legal requirements associated with Sun's corporate securities, mergers, acquisitions and alliances, corporate governance and Sarbanes-Oxley compliance, and litigation management. Prior to joining Sun, Mr. Martin was in private practice where he had extensive experience in antitrust and intellectual property litigation. Mr. Martin holds a bachelor's degree in economics from the University of Rochester and a J.D. from the State University of New York at Buffalo Law School.

KENNETH B. MILLER joined Juniper in June 1999 and has served as our Executive Vice President, Chief Financial Officer since February 2016. Mr. Miller will assume the role of Interim Chief Accounting Officer while the Company continues to search for a full-time Chief Accounting Officer following Mr. Spidell's resignation, as described in Mr. Spidell's biography below. From April 2014 to February 2016, Mr. Miller served as our Senior Vice President, Finance, where he was responsible for the finance organization across the Company, as well as our treasury, tax and global business services functions. Previously, Mr. Miller served as our Vice President, Go-To-Market Finance; Vice President, Platform Systems Division; Vice President, SLT Business Group Controller and in other positions in our Finance and Accounting organizations. Mr. Miller holds a Bachelor of Science degree in Accounting from Santa Clara University.

TERRANCE F. SPIDELL joined Juniper in August 2011 as Vice President, Assistant Corporate Controller, and has served as Vice President, Corporate Controller since November 2012. In 2013, Mr. Spidell assumed the position of our Chief Accounting Officer. Before joining Juniper, Mr. Spidell was at VeriSign, Inc., a provider of Internet infrastructure services, as Vice President, Corporate Controller, from June 2009 through July 2011 and as Vice President, Accounting Operations, from March 2008 through June 2009. Prior to VeriSign, Mr. Spidell held various positions, most recently Senior Manager, at PricewaterhouseCoopers, a registered public accounting firm. Mr. Spidell is a Certified Public Accountant and holds a Bachelor of Business Administration degrees in Finance and Accounting, from Boise State University.

Mr. Spidell's full-time employment with Juniper will end on the business day immediately following the date that Juniper's Annual Report on Form 10-K for the fiscal year 2018 is filed with the SEC.

Available Information

We file our annual reports on Form 10-K, quarterly reports on Form 10-Q, and current reports on Form 8-K pursuant to Section 13(a) or 15(d) of the Securities Exchange Act of 1934, as amended, with the SEC electronically. The SEC maintains a website that contains reports, proxy and information statements, and other information regarding issuers, including Juniper Networks that file electronically with the SEC. The address of that website is <https://www.sec.gov>.

You may obtain a free copy of our annual reports on Form 10-K, quarterly reports on Form 10-Q, current reports on Form 8-K, and amendments to those reports on our website at <http://www.juniper.net> or by sending an e-mail message to Juniper Networks Investor Relations at investorrelations@juniper.net. Such reports and other information are available on our website as soon as reasonably practicable after they are electronically filed with, or furnished to, the SEC. Our Corporate Governance Standards, the charters of our Audit Committee, Compensation Committee, and Nominating and Corporate Governance Committee, as well as our Worldwide Code of Business Conduct are also available on our website. Information on our website is not, and will not be deemed, a part of this report or incorporated into any other filings the Company makes with the SEC.

Investors and others should note that we announce material financial and operational information to our investors using our Investor Relations website (<http://investor.juniper.net>), press releases, SEC filings and public conference calls and webcasts. We also use the Twitter accounts @JuniperNetworks and the Company's blogs as a means of disclosing information about the Company and for complying with our disclosure obligations under Regulation FD. The social media channels that we use as a means of disclosing information described above may be updated from time to time as listed on our Investor Relations website.

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Item 1A. Risk Factors

Factors That May Affect Future Results

Investments in our securities involve significant risks. Even small changes in investor expectations for our future growth and earnings, whether as a result of actual or rumored financial or operating results, changes in the mix of the products and services sold, acquisitions, industry changes, or other factors, could trigger, and have triggered in the past, significant fluctuations in the market price of our common stock. Investors in our securities should carefully consider all of the relevant factors disclosed by us, including, but not limited to, the following factors, that could affect our business, operating results, and stock price.

Our quarterly results are unpredictable and subject to substantial fluctuations; as a result, we may fail to meet the expectations of securities analysts and investors, which could adversely affect the trading price of our common stock.

Our revenues and operating results may vary significantly from quarter-to-quarter due to a number of factors, many of which are outside of our control and any of which may cause our stock price to fluctuate.

The factors that may cause our quarterly results to vary quarter by quarter and be unpredictable include, but are not limited to:

- unpredictable ordering patterns and limited or reduced visibility into our customers' spending plans and associated revenue;
- changes in customer mix;
- changes in the demand for our products and services;
- changes in the mix of products and services sold;
- changes in the mix of geographies in which our products and services are sold;
- changing market and economic conditions;
- current and potential customer, partner and supplier consolidation and concentration;
- price and product competition;
- long sales, qualification and implementation cycles;
- success in new and evolving markets and emerging technologies;
- how well we execute on our strategy and operating plans and the impact of changes in our business model that could result in significant restructuring charges;
- ability of our customers, channel partners, contract manufacturers and suppliers to purchase, market, sell, manufacture or supply our products (or components of our products) and services;
- financial stability of our customers, including the solvency of private sector customers and statutory authority for government customers to purchase goods and services;
- our ability to achieve targeted cost reductions;
- changes in tax laws or accounting rules, or interpretations thereof;
- changes in the amount and frequency of share repurchases or dividends;
- regional economic and political conditions; and
- seasonality.

For example, we, and many companies in our industry, experience adverse seasonal fluctuations in customer spending, particularly in the first quarter. In addition, while we may have backlog orders for products that have not shipped, we believe that our backlog may not be a reliable indicator of future operating results for a number of reasons, including project delays, changes in project scope and the fact that our customers may cancel purchase orders or change delivery schedules without significant penalty. Furthermore, market trends, competitive pressures,

commoditization of products, rebates and discounting, increased component or logistics costs, issues with product quality, regulatory impacts and other factors may result in reductions in revenue or pressure on gross margins in a given period, which may necessitate adjustments to our operations. Such adjustments may be difficult or impossible to execute in the short or medium term.

As a result of the factors described above, as well as other variables affecting our operating results, we believe that quarter-to-quarter comparisons of operating results are not necessarily a good indication of what our future performance will be. In the past, our operating results have been below our guidance, our long-term financial model or the expectations of securities analysts or investors, and this may happen in the future, in which case the price of our common stock may decline and has declined in the past. Such a decline could also occur, and has occurred in the past, even when we have met our publicly stated revenues and/or earnings guidance.

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We expect our gross margins and operating margins to vary over time.

We expect our product and service gross margins to vary, both in the near-term and in the long-term, and may be adversely affected in the future by numerous factors, some of which have occurred and may occur in the future, including customer, vertical, product and geographic mix shifts, an increase or decrease in our software sales or services we provide, increased price competition in one or more of the markets in which we compete, changes in the actions of our competitors or their pricing strategies, which may be difficult to predict and respond to, modifications to our pricing strategy in order to gain footprint in certain markets or with certain customers, currency fluctuations that impact our costs or the cost of our products and services to our customers, increases in material, labor, logistics, warranty costs, or inventory carrying costs, excess product component or obsolescence charges from our contract manufacturers, issues with manufacturing or component availability, quality or efficiencies, increased costs due to changes in component pricing or charges incurred due to inaccurately forecasting product demand, warranty related issues, or our introduction of new products and enhancements or entry into new markets with different pricing and cost structures. For example, in fiscal year 2018, our margins decreased as compared to fiscal year 2017, primarily due to lower net revenues and product mix. In fiscal year 2017, our margins decreased as compared to fiscal year 2016, primarily due to lower product net revenues and product mix, resulting from the year-over-year decline in routing revenues, our customers' architectural shifts, and higher costs of certain memory components. In fiscal year 2016, our margins decreased compared to fiscal year 2015, primarily due to elevated pricing pressure and product mix. Failure to sustain or improve our gross margins reduces our profitability and may have a material adverse effect on our business and stock price.

Further, while we will continue to remain diligent in our long-term financial objective to increase revenue and operating margins and manage our operating expenses as a percentage of revenue. We expect that our margins will vary with our ability to achieve these goals. We can provide no assurance that we will be able to achieve all or any of the goals of these plans or meet our announced expectations, in whole or in part, or that our plans will have the intended effect of improving our margins on the expected timeline, or at all.

A limited number of our customers comprise a material portion of our revenues and any changes in the way they purchase products and services from us could affect our business. In addition, there is an ongoing trend toward consolidation in the industry in which our customers and partners operate. Any decrease in revenues from our customers or partners could have an adverse effect on our net revenues and operating results.

A material portion of our net revenues, across each customer vertical, depends on sales to a limited number of customers and distribution partners. Changes in the business requirements or focus, vendor selection, project prioritization, financial prospects, capital resources, and expenditures, or purchasing behavior (including product mix purchased or delays in deployment) of our key customers could significantly decrease our sales to such customers or could lead to delays or cancellations of planned purchases of our products or services, which increases the risk of quarterly fluctuations in our revenues and operating results. Any of these factors could adversely affect our business, financial condition, and results of operations.

In addition, in recent years, there has been movement towards consolidation in the telecommunications industry (for example, CenturyLink, Inc.'s acquisition of Level 3 Communications, Inc., Vodafone India's acquisition of Idea Cellular Ltd. and T-Mobile US, Inc.'s proposed acquisition of Sprint Corp.) and that consolidation trend has continued. Certain telecommunications companies have also moved towards vertical consolidation through acquisitions of media and content companies, such as Verizon's acquisition of Yahoo, AT&T's acquisition of Time Warner, and Comcast's acquisition of Sky. If our customers or partners are parties to consolidation transactions they may delay, suspend or indefinitely reduce or cancel their purchases of our products or other direct or indirect unforeseen consequences could harm our business, financial condition, and results of operations.

Fluctuating economic conditions make it difficult to predict revenues and gross margin for a particular period and a shortfall in revenues or increase in costs of production may harm our operating results.

Our revenues and gross margin depend significantly on general economic conditions and the demand for products in the markets in which we compete. Economic weakness or uncertainty, customer financial difficulties, and constrained spending on network expansion and enterprise infrastructure have in the past resulted in, and may in the future result in, decreased revenues and earnings. Such factors could make it difficult to accurately forecast revenues and operating results and could negatively affect our ability to provide accurate forecasts to our contract manufacturers and manage our contract manufacturer relationships and other expenses. In addition, economic instability or uncertainty, as well as continued turmoil in the geopolitical environment in many parts of the world, have, and may continue to, put pressure on economic conditions, which has led and could lead, to reduced demand for our products, to delays or reductions in network expansions or infrastructure projects, and/or higher costs of production. More generally-speaking, economic weakness may also lead to longer collection cycles for payments due from our customers, an increase in customer bad debt, restructuring initiatives and associated expenses, and impairment of investments. Furthermore, instability in the global markets may adversely impact the ability of our customers to adequately fund their expected expenditures, which could

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lead to delays or cancellations of planned purchases of our products or services. Our operating expenses are largely based on anticipated revenue trends and a high percentage of our expenses is, and will continue to be, fixed in the short and medium term. Uncertainty about future economic conditions also makes it difficult to forecast operating results and to make decisions about future investments. Future or continued economic weakness, failure of our customers and markets to recover from such weakness, customer financial difficulties, increases in costs of production, and reductions in spending on network maintenance and expansion could result in price concessions in certain markets or have a material adverse effect on demand for our products and consequently on our business, financial condition, and results of operations.

Our success depends upon our ability to effectively plan and manage our resources and restructure our business through rapidly fluctuating economic and market conditions, and such actions may have an adverse effect on our financial and operating results.

Our ability to successfully offer our products and services in a rapidly evolving market requires an effective planning, forecasting, and management process to enable us to effectively scale and adjust our business and business models in response to fluctuating market opportunities and conditions.

From time to time, we have increased investment in our business by, for example, increasing headcount, acquiring companies, and increasing our investment in R&D, sales and marketing, and other parts of our business. Conversely, in 2017, 2018, and 2019, we initiated restructuring plans to realign our workforce as a result of organizational and leadership changes, align our execution priorities, increase operational efficiencies, and to consolidate facilities which resulted in restructuring charges in each of these years. Some of our expenses related to such efforts are fixed costs that cannot be rapidly or easily adjusted in response to fluctuations in our business or numbers of employees. Rapid changes in the size, alignment or organization of our workforce, including sales account coverage, could adversely affect our ability to develop and deliver products and services as planned or impair our ability to realize our current or future business and financial objectives. Our ability to achieve the anticipated cost savings and other benefits from our restructuring initiatives within the expected time frame is subject to many estimates and assumptions, which are subject to significant economic, competitive and other uncertainties, some of which are beyond our control. If these estimates and assumptions are incorrect, if we are unsuccessful at implementing changes, or if other unforeseen events occur, our business and results of operations could be adversely affected.

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

Competition is intense in the markets that we serve. The routing and switching markets have historically been dominated by Cisco, with competition coming from other companies such as Nokia Corporation, Arista, HPE, and Huawei. In the security market, we face intense competition from Cisco and Palo Alto Networks, as well as companies such as Check Point, F5 Networks, and Fortinet. Further, a number of other small public and private companies have products or have announced plans for new products to address the same challenges and markets that our products address.

In addition, actual or speculated consolidation among competitors, or the acquisition by, or of, our partners and/or resellers by competitors can increase the competitive pressures faced by us as customers may delay spending decisions or not purchase our products at all. A number of our competitors have substantially greater resources and can offer a wider range of products and services for the overall network equipment market than we do. In addition, some of our competitors have become more integrated, including through consolidation and vertical integration, and offer a broader range of products and services, which could make their solutions more attractive to our customers. Many of our competitors sell networking products as bundled solutions with other IT products, such as compute and storage systems. If we are unable to compete successfully against existing and future competitors on the basis of product offerings or price, we could experience a loss in market share and revenues and/or be required to reduce

prices, which could reduce our gross margins, and which could materially and adversely affect our business, financial condition, and results of operations. Our partners and resellers generally sell or resell competing products on a non-exclusive basis and consolidation could delay spending or require us to increase discounts to compete, which could also adversely affect our business.

The long sales and implementation cycles for our products, as well as our expectation that some customers will sporadically place large orders with short lead times, may cause our revenues and operating results to vary significantly from quarter-to-quarter.

A customer's decision to purchase certain of our products, particularly new products, involves a significant commitment of its resources and a lengthy evaluation and product qualification process. As a result, the sales cycle may be lengthy. In particular, customers making critical decisions regarding the design and implementation of large network deployments may engage in very lengthy procurement processes that may delay or impact expected future orders. Throughout the sales cycle, we may spend considerable time educating and providing information to prospective customers regarding the use and benefits of our products. Even after making the decision to purchase, customers may deploy our products slowly and deliberately. Timing of deployment

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can vary widely and depends on the skill set of the customer, the size of the network deployment, the complexity of the customer's network environment, and the degree of hardware and operating system configuration necessary to deploy the products. Customers with large networks usually expand their networks in large increments on a periodic basis. Accordingly, we may receive purchase orders for significant dollar amounts on an irregular basis. These long cycles, as well as our expectation that customers will tend to sporadically place large orders with short lead times, both of which may be exacerbated by the impact of global economic weakness, may cause revenues and operating results to vary significantly and unexpectedly from quarter-to-quarter.

The timing of product orders and/or our reliance on revenue from sales of certain software or subscriptions and professional, support and maintenance services may cause us to recognize revenue in a different period than the one in which a transaction takes place.

Due to the cost, complexity and custom nature of configurations required by our customers, we generally build our network equipment products as orders are received. The volume of orders received late in any given fiscal quarter remains unpredictable. If orders for certain products are received late in any quarter, we may not be able to recognize revenue for these orders in the same period, which could adversely affect our ability to meet our expected revenues for such quarter.

In addition, services revenue accounts for a significant portion of our revenue, comprising 33%, 31%, and 29% of total revenue in fiscal year 2018, 2017, and 2016, respectively. Sales of new or renewal professional services, support and maintenance contracts may decline and/or fluctuate as a result of a number of factors, including end-customers' level of satisfaction with our products and services, the prices of our products and services or those offered by our competitors, and reductions in our end-customers' spending levels. We recognize professional services, support and maintenance revenue periodically over the term of the relevant service period.

The introduction of new software products and services is part of our intended strategy to expand our software business, and certain software revenues may be recognized periodically over the term of the relevant use period or subscription period. As a result, certain software, subscription and support and maintenance revenue we report each fiscal quarter is the recognition of deferred revenue from contracts entered into during previous fiscal quarters. Consequently, a decline in such new or renewed contracts in any one fiscal quarter will not be fully or immediately reflected in revenue in that fiscal quarter but will negatively affect our revenue in future fiscal quarters. Accordingly, the effect of significant downturns in new or renewed sales of certain software products, subscriptions or support and maintenance is not reflected in full in our operating results until future periods. Also, it is difficult for us to rapidly increase such software or services revenue through additional sales in any period, as revenue from those software, subscription and support and maintenance contracts must be recognized over the applicable period.

Additionally, we determine our operating expenses largely on the basis of anticipated revenues and technology roadmap and a high percentage of our expenses are fixed in the short and medium term. As a result, a failure or delay in generating or recognizing revenue could cause significant variations in our operating results and operating margin from quarter-to-quarter.

We sell our products to customers that use those products to build networks and IP infrastructure, and if the demand for network and IP systems does not continue to grow, our business, financial condition, and results of operations could be adversely affected.

A substantial portion of our business and revenues depends on the growth of secure IP infrastructure and customers that depend on the continued growth of IP services to deploy our products in their networks and IP infrastructures. As a result of changes in the economy, capital spending or the building of network capacity in excess of demand (all of which, have in the past, particularly affected telecommunications service providers), spending on IP infrastructure can

vary, which could have a material adverse effect on our business, financial condition, and results of operations. In addition, a number of our existing customers are evaluating the build-out of their next generation networks. During the decision-making period when our customers are determining the design of those networks and the selection of the software and equipment they will use in those networks, such customers may greatly reduce or suspend their spending on secure IP infrastructure. For example, in recent years, our switching and routing results were adversely affected by spending delays from our largest Cloud customers, who we believe are in the process of implementing a networking architectural shift. The duration of the delay is difficult to predict, in part because each Cloud customer will migrate their network architecture based on their own constraints. Such delays in purchases can make it more difficult to predict revenues from customers, can cause fluctuations in the level of spending by customers and, even where our products are ultimately selected, can have a material adverse effect on our business, financial condition, and results of operations.

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If we do not successfully anticipate technological shifts, market needs and opportunities, and develop products, product enhancements and business strategies that meet those technological shifts, needs and opportunities, or if those products are not made available or strategies are not executed in a timely manner or do not gain market acceptance, we may not be able to compete effectively and our ability to generate revenues will suffer.

The markets for our products are characterized by rapid technological change, frequent new product introductions, changes in customer requirements, continuous pricing pressures and a constantly evolving industry. We may not be able to anticipate future technological shifts, market needs and opportunities or be able to develop new products, product enhancements or business strategies to meet such technological shifts, needs or opportunities in a timely manner or at all. For example, the move from traditional wide area network, or WAN, infrastructures towards software-defined WAN, or SD-WAN, has been receiving considerable attention. In our view, it will take several years to see the full impact of SD-WAN, and we believe the successful products and solutions in this market will combine hardware and software elements. If we fail to anticipate market requirements or opportunities or fail to develop and introduce new products, product enhancements or business strategies to meet those requirements or opportunities in a timely manner, it could cause us to lose customers, and such failure could substantially decrease or delay market acceptance and sales of our present and future products and services, which would significantly harm our business, financial condition, and results of operations. In addition, if we invest time, energy and resources in developing products for a market that doesn't develop, it could likewise significantly harm our business, financial condition, and results of operations. Even if we are able to anticipate, develop, and commercially introduce new products, enhancements or business strategies, there can be no assurance that new products, enhancements or business strategies will achieve widespread market acceptance.

In recent years, we have announced a number of new products and enhancements to our hardware and software products across routing, switching and security. The success of our new products depends on several factors, including, but not limited to, component costs, timely completion and introduction of these products, prompt resolution of any defects or bugs in these products, our ability to support these products, differentiation of new products from those of our competitors and market acceptance of these products.

The introduction of new software products is part of our intended strategy to expand our software business. We have also begun to disaggregate certain software from certain hardware products, such that customers would be able to purchase or license our hardware and software products independently, which we expect could in time enable our hardware to be deployed with third- party networking applications and services and our software to be used with third-party hardware. The success of our strategy to expand our software business, including our strategy to disaggregate software from certain hardware products, is subject to a number of risks and uncertainties, including:

- the additional development efforts and costs required to create new software products and/or to make our disaggregated products compatible with multiple technologies;

- the possibility that our new software products or disaggregated products may not achieve widespread customer adoption;

- the possibility that our strategy could erode our revenue and gross margins;

- the impact on our financial results of longer periods of revenue recognition for certain types of software products and changes in tax treatment associated with software sales;

- the additional costs associated with regulatory compliance and changes we need to make to our distribution chain in connection with increased software sales;

the ability of our disaggregated hardware and software products to operate independently and/or to integrate with current and future third-party products; and

issues with third-party technologies used with our disaggregated products may be attributed to us.

If any of our new products or business strategies do not gain market acceptance or meet our expectations for growth, our ability to meet future financial targets may be adversely affected and our competitive position and our business and financial results could be harmed.

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We are dependent on contract manufacturers with whom we do not have long-term supply contracts, and changes to or disruptions in those relationships or manufacturing processes, expected or unexpected, may result in delays that could cause us to lose revenues and damage our customer relationships.

We depend on independent contract manufacturers (each of which is a third-party manufacturer for numerous companies) to manufacture our products. Although we have contracts with our contract manufacturers, these contracts do not require them to manufacture our products on a long-term basis in any specific quantity or at any specific price. In addition, it is time-consuming and costly to qualify and implement additional contract manufacturer relationships. Therefore, if we fail to effectively manage our contract manufacturer relationships, which could include failing to provide accurate forecasts of our requirements, or if one or more of them experiences delays, disruptions, or quality control problems in their manufacturing operations, or if we had to change or add additional contract manufacturers or contract manufacturing sites, our ability to ship products to our customers could be delayed. We have experienced in the past and may experience in the future an increase in the expected time required to manufacture our products or ship products. Such delays could result in supply shortfalls that damage our ability to meet customer demand for those products and could cause our customers to purchase alternative products from our competitors. Also, the addition of manufacturing locations or contract manufacturers or the introduction of new products by us would increase the complexity of our supply chain management. Moreover, a significant portion of our manufacturing is performed in China and other foreign countries and is therefore subject to risks associated with doing business outside of the United States, including import tariffs or regional conflicts. For example, the United States recently imposed a tariff on networking products imported from China; this includes certain products that we import into and sell within the United States. If we cannot mitigate the impact of the tariffs, the increased cost could translate into higher prices for our customers, reduced customer demand or increased cost of goods sold. In addition, increased costs of production or delays in production caused by any relocation of contract manufacturing facilities could impact the global competitiveness of our products. Each of these factors could adversely affect our business, financial condition and results of operations.

We are dependent on sole source and limited source suppliers, including for key components, which makes us susceptible to shortages, quality issues or price fluctuations in our supply chain, and we may face increased challenges in supply chain management in the future.

We rely on single or limited sources for many of our components. During periods of high demand for electronic products, component shortages are possible, and the predictability of the availability of such components may be limited. For example, we have recently experienced industry-wide supply constraints related to power management components. In addition, some components used in our networking solutions have in the past and may in the future experience extended lead times and higher pricing, given the demand in the market. Any future spike in growth in our business, the use of certain components we share in common with other companies, in IT spending or the economy in general, is likely to create greater short-term pressures on us and our suppliers to accurately forecast overall component demand and to establish optimal component inventories. If shortages or delays persist, we may not be able to secure enough components at reasonable prices or of acceptable quality to build and deliver products in a timely manner, and our revenues, gross margins and customer relationships could suffer. Additionally, if certain components that we receive from our suppliers have defects or other quality issues, we may have to replace or repair such components, and we could be subject to claims based on warranty, product liability, epidemic or delivery failures that could lead to significant expenses. We maintain product liability insurance, but there is no guarantee that such insurance will be available or adequate to protect against all such claims. We have experienced, and from time-to-time may experience, component shortages or quality issues that resulted, or could result, in delays of product shipments, revenue charges that impact our gross margins, and/or warranty or other claims or costs. We also currently purchase numerous key components, including ASICs and other semiconductor chips, from single or limited sources and many of our component suppliers are concentrated in China and Korea. In addition, there has been consolidation among certain suppliers of our components. For example, GLOBALFOUNDRIES acquired IBM's semiconductor

manufacturing business, Avago Technologies Limited acquired Broadcom Corporation and Intel Corporation acquired Altera Corporation. Consolidation among suppliers can result in the reduction of the number of independent suppliers of components available to us, which could negatively impact our ability to access certain component parts or the prices we have to pay for such parts. In addition, our suppliers may determine not to continue a business relationship with us for other reasons that may be beyond our control. Any disruptions to our supply chain could decrease our sales, earnings and liquidity or otherwise adversely affect our business and result in increased costs. Such a disruption could occur as a result of any number of events, including, but not limited to, increases in wages that drive up prices, the imposition of regulations, quotas or embargoes on components, labor stoppages, transportation failures affecting the supply chain and shipment of materials and finished goods, third-party interference in the integrity of the products sourced through the supply chain, the unavailability of raw materials, severe weather conditions, natural disasters, civil unrest, military conflicts, geopolitical developments, war or terrorism and disruptions in utility and other services.

The development of alternate sources for components is time-consuming, difficult, and costly. In addition, the lead times associated with certain components are lengthy and preclude rapid changes in quantities and delivery schedules. Also, long-term supply and maintenance obligations to customers increase the duration for which specific components are required, which may further increase

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the risk of component shortages or the cost of carrying inventory. In the event of a component shortage or supply interruption from these suppliers, we may not be able to develop alternate or second sources in a timely manner. If we are unable to buy these components in quantities sufficient to meet our requirements on a timely basis, we will not be able to deliver products and services to our customers, which would seriously affect present and future sales, which would, in turn, adversely affect our business, financial condition, and results of operations.

In addition, the development, licensing, or acquisition of new products in the future may increase the complexity of supply chain management. Failure to effectively manage the supply of components and products would adversely affect our business.

If we fail to accurately predict our manufacturing requirements, we could incur additional costs or experience manufacturing delays, which would harm our business.

We provide demand forecasts for our products to our contract manufacturers and original design manufacturers, who order components and plan capacity based on these forecasts. If we overestimate our requirements, our original design or contract manufacturers may assess charges, or we may have liabilities for excess inventory, each of which could negatively affect our gross margins. For example, in certain prior quarters, our gross margins were reduced as a result of an inventory charge resulting from inventory we held in excess of forecasted demand. In addition, some optical modules we use are experiencing faster product transitions than our other products, which increases the risk that we could have excess inventory of those modules. Conversely, lead times for required materials and components vary significantly and depend on factors such as the specific supplier, contract terms, and the demand for each component at a given time. Given that our contract manufacturers are third-party manufacturers for numerous other companies, if we underestimate our requirements, as we have in certain prior quarters with respect to certain products, our contract manufacturers may have inadequate time, materials, and/or components required to produce our products. This could increase costs or delay or interrupt manufacturing of our products, resulting in delays in shipments and deferral or loss of revenues and could negatively impact customer satisfaction.

System security risks, data protection breaches, and cyber-attacks could compromise our and our customers' proprietary information, disrupt our internal operations and harm public perception of our products, which could cause our business and reputation to suffer and adversely affect our stock price.

In the ordinary course of business, we store sensitive data, including intellectual property, personal data, our proprietary business information and that of our customers, suppliers and business partners on our networks. In addition, we store sensitive data through cloud-based services that may be hosted by third parties and in data center infrastructure maintained by third parties. The secure maintenance of this information is critical to our operations and business strategy. The growing cyber risk environment means that individuals, companies, and organizations of all sizes, including Juniper, have been and are increasingly subject to the threat of intrusions on their networks and systems by a wide range of actors, including but not limited to nation states, criminal enterprises, and terrorist organizations, on an ongoing and regular basis. Despite our security measures, and those of our third-party vendors, our information technology and infrastructure has experienced breaches and may be vulnerable in the future to breach or attacks by computer programmers, hackers or sophisticated nation-state and nation-state supported actors or breached due to employee error or wrongful conduct, malfeasance, or other disruptions. If any breach or attack compromises our networks, creates system disruptions or slowdowns or exploits security vulnerabilities of our products, the information stored on our networks or those of our customers could be accessed and modified, publicly disclosed, lost or stolen, and we may be subject to liability to our customers, suppliers, business partners and others, and suffer reputational and financial harm. In addition, hardware, components and operating system software and applications that we produce or procure from third parties may contain defects in design or manufacture, including "bugs", vulnerabilities and other problems that could unexpectedly interfere with the operation of our networks or expose us or our products to cyber attacks. This can be true even for "legacy" products that have been determined to

have reached an end of life engineering status but will continue to operate for a limited amount of time. Furthermore, third parties may attempt to exfiltrate data through the introduction into the Information and Communications Technology supply chain of malicious products and components that are designed to defeat or circumvent encryption and other cybersecurity measures, and if successful, such actions could diminish customer trust in our products, harm our business reputation, and adversely affect our business and financial condition.

When vulnerabilities are discovered, we evaluate the risk, apply patches or take other remediation actions as required and notify customers and suppliers when appropriate. All of this requires significant time and attention from management and our employees.

As a result of any actual or perceived breach of network security that occurs in our network or in the network of a customer of our products, regardless of whether the breach is attributable to our products, the market perception of the effectiveness of our products and our overall reputation could be harmed. As a large, well known provider of networking products, cyber attackers may specifically target our products or attempt to imitate us or our products in order to compromise a network. Because the techniques used by attackers, many of whom are highly sophisticated and well-funded, to access or sabotage networks change

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frequently and generally are not recognized until after they are used, we may be unable to anticipate or immediately detect these techniques or the vulnerabilities they have caused. This could impede our sales, manufacturing, distribution or other critical functions, which could have an adverse impact on our financial results. The economic costs to us to eliminate or alleviate cyber or other security problems, bugs, viruses, worms, malicious software systems and security vulnerabilities could be significant and may be difficult to anticipate or measure, because the damage may differ based on the identity and motive of the attacker, which are often difficult to pinpoint. Additionally, we could be subject to regulatory investigations, potential fines and litigation in connection with a security breach or related issue and be liable to third parties for these types of breaches.

We rely on value-added and other resellers, as well as distribution partners, to sell our products, and disruptions to, or our failure to effectively develop and manage, our distribution channel and the processes and procedures that support it could adversely affect our ability to generate revenues from the sale of our products.

Our future success is highly dependent upon establishing and maintaining successful relationships with a variety of value-added and other reseller and distribution partners, including our worldwide strategic partners such as Ericsson, IBM, Dimension Data and NEC Corporation. The majority of our revenues are derived through value-added resellers and distributors, most of which also sell our competitors' products, and some of which sell their own competing products. Our revenues depend in part on the performance of these partners. The loss of or reduction in sales to our resellers or distributors could materially reduce our revenues. Our competitors may in some cases be effective in leveraging their market share positions or in providing incentives to current or potential resellers and distributors to favor their products or to prevent or reduce sales of our products. If we fail to develop and maintain relationships with our partners, fail to develop new relationships with value-added resellers and distributors in new markets, fail to expand the number of distributors and resellers in existing markets, fail to manage, train or motivate existing value-added resellers and distributors effectively, determine that we cannot continue to do business with these partners for any reason or if these partners are not successful in their sales efforts, sales of our products may decrease, and our business, financial condition, and results of operations would suffer.

In addition, we recognize a portion of our revenues at the time we sell products to our distributors. If these sales are made based on inaccurate or untimely information, the amount or timing of our revenues could be adversely impacted. Further, our distributors may increase orders during periods of product shortages, cancel orders if their inventory is too high, or delay orders in anticipation of new products. They also may adjust their orders in response to the supply of our products and the products of our competitors that are available to them, and in response to seasonal fluctuations in end-user demand.

We are also vulnerable to third parties who illegally distribute or sell counterfeit, stolen or unfit versions of our products, which has happened in the past and could happen in the future. Such sales could have a negative impact on our reputation and business.

Further, in order to develop and expand our distribution channel, we must continue to offer attractive channel programs to potential partners and scale and improve our processes and procedures that support the channel. As a result, our programs, processes and procedures may become increasingly complex and inherently difficult to manage. We have previously entered into OEM agreements with partners pursuant to which they rebrand and resell our products as part of their product portfolios. These types of relationships are complex and require additional processes and procedures that may be challenging and costly to implement, maintain and manage. Our failure to successfully manage and develop our distribution channel and the programs, processes and procedures that support it could adversely affect our ability to generate revenues from the sale of our products. We also depend on our global channel partners to comply with applicable legal and regulatory requirements. To the extent that they fail to do so, that could have a material adverse effect on our business, operating results, and financial condition.

Our ability to process orders and ship products in a timely manner is dependent in part on our business systems and performance of the systems and processes of third parties as well as the interfaces between our systems and the systems of such third parties. Dependence on outsourced information technology and other administrative functions may impair our ability to operate effectively.

Some of our business processes depend upon our IT systems, the systems and processes of third parties, and the interfaces between the two. For example, we are in the process of further consolidating our on-site data centers to the cloud and to off-site facilities that are hosted and controlled by third parties. In addition, on December 31, 2018, we entered into a Master Services Agreement and certain Statements of Work with IBM pursuant to which we will outsource significant portions of our IT and other administrative functions following a transition period. These cloud providers, third party providers, and off-site facilities are vulnerable to damage, interruption or performance problems from earthquakes, hurricanes, floods, fires, power loss, telecommunications failures, equipment failure, adverse events caused by operator error, cybersecurity attacks and similar events. In addition, because we lease our cloud storage space and off-site data center facilities, we cannot be assured that we will be able to expand our data center infrastructure to meet user demand in a timely manner, or on favorable economic terms. If we have issues receiving and processing

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data, this may delay our ability to provide products and services to our customers and damage our business. We also rely upon the performance of the systems and processes of our contract manufacturers to build and ship our products. If those systems and processes experience interruption or delay, our ability to build and ship our products in a timely manner may be harmed. Since IT is critical to our operations, any failure to perform on the part of our IT providers could impair our ability to operate effectively. In addition to the risks outlined above, problems with any of the third parties we rely on for our IT systems could result in lower revenue and unexecuted efficiencies, and impact our results of operations and our stock price.

Integration of acquisitions could disrupt our business and harm our financial condition and stock price and may dilute the ownership of our stockholders.

We have made, and may continue to make, acquisitions in order to enhance our business. For example, we acquired HTBase in 2018 and Cyphort in 2017. Acquisitions involve numerous risks, including, but not limited to, problems combining the purchased operations, technologies or products, unanticipated costs, liabilities, litigation, and diversion of management's attention from our core businesses, adverse effects on existing business relationships with suppliers and customers, risks associated with entering markets in which we have no or limited prior experience, and where competitors in such markets have stronger market positions, initial dependence on unfamiliar supply chains or relatively small supply partners, and the potential loss of key employees, customers, distributors, vendors and other business partners of the companies we acquire. There can be no assurance that we will be able to integrate successfully any businesses, products, technologies, or personnel that we might acquire. The integration of businesses that we may acquire is likely to be a complex, time-consuming, and expensive process and we may not realize the anticipated revenues or other benefits associated with our acquisitions. If we fail to successfully manage, operate or integrate any acquired business or if we are unable to efficiently operate as a combined organization utilizing common information and communication systems, operating procedures, financial controls, and human resources practices, our business, financial condition, and results of operations may be adversely affected.

In connection with certain acquisitions, we may agree to issue common stock, or assume equity awards, that dilute the ownership of our current stockholders, use a substantial portion of our cash resources, assume liabilities (both known and unknown), record goodwill and amortizable intangible assets that will be subject to impairment testing on a regular basis and potential periodic impairment charges, incur amortization expenses related to certain intangible assets, and incur large and immediate write-offs and restructuring and other related expenses, all of which could harm our financial condition and results of operations.

We are a party to lawsuits, investigations, proceedings, and other disputes, which are costly to defend and, if determined adversely to us, could require us to pay fines or damages, undertake remedial measures or prevent us from taking certain actions, any or all of which could harm our business, results of operations, financial condition or cash flows.

We, and certain of our current and former officers and current and former members of our Board of Directors, have been or are subject to various lawsuits. We have been served with lawsuits related to employment matters, commercial transactions and patent infringement, as well as securities laws. The U.S. Securities and Exchange Commission, or the SEC, is conducting, and the U.S. Department of Justice, or the DOJ, was previously conducting investigations into possible violations by the Company of the U.S. Foreign Corrupt Practices Act, or the FCPA, in a number of countries. The Company's Audit Committee, with the assistance of independent advisors, conducted a thorough internal review of possible violations of the FCPA, and the Company made improvements in its internal controls and carried out a number of disciplinary actions. The Company is continuing to fully cooperate with the SEC's ongoing investigation, and based on the recent communications with the Staff of the SEC, the Company believes it is likely that the Staff of the SEC will seek to bring an enforcement action against the Company. The Company believes it is probable that it could incur a loss and has established an estimated legal reserve of \$12.0 million related to the ongoing SEC

investigation. Litigation and investigations are inherently uncertain. We therefore cannot predict the duration, scope, outcome or consequences of litigation and government investigations. In connection with any government investigations, including those in which we are currently involved as described above, if the government takes action against us or we agree to settle the matter, we may be required to pay substantial fines and incur other sanctions, which may be material, and suffer reputational harm. The lawsuits and investigations are expensive and time-consuming to defend, settle, and/or resolve, and may require us to implement certain remedial measures that could prove costly or disruptive to our business and operations. The unfavorable resolution of one or more of these matters could have a material adverse effect on our business, results of operations, financial condition or cash flows.

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We are a party to litigation and claims regarding intellectual property rights, resolution of which may be time-consuming and expensive, as well as require a significant amount of resources to prosecute, defend, or make our products non-infringing.

Our industry is characterized by the existence of a large number of patents and frequent claims and related litigation regarding patent and other intellectual property rights. We expect that infringement claims may increase as the number of products and competitors in our market increases and overlaps occur. Third parties have asserted and may in the future assert claims or initiate litigation related to patent, copyright, trademark, and other intellectual property rights to technologies and related standards that are relevant to our products. The asserted claims and/or initiated litigation may include claims against us or our manufacturers, suppliers, partners, or customers, alleging that our products or services infringe proprietary rights. In addition, increased patent litigation brought by non-practicing entities in recent years may result, and in some cases has resulted, in our customers requesting or requiring us to absorb a portion of the costs of such litigation or providing broader indemnification for litigation, each of which could increase our expenses and negatively affect our business, financial condition and results of operations. Regardless of the merit of these claims, they have been and can be time-consuming, result in costly litigation, and may require us to develop non-infringing technologies, enter into license agreements, or cease engaging in certain activities or offering certain products or services. Furthermore, because of the potential for high awards of damages or injunctive relief that are not necessarily predictable, even arguably unmeritorious claims may be settled for significant amounts of money. If any infringement or other intellectual property claim made against us or anyone we are required to indemnify by any third-party is successful, if we are required to settle litigation for significant amounts of money, if we fail to develop non-infringing technology, if we incorporate infringing technology in our products or if we license required proprietary rights at material expense, our business, financial condition, and results of operations could be materially and adversely affected.

As we seek to sell more products to telecommunications, cable and cloud service provider companies and other large customers, we may be required to agree to terms and conditions that could have an adverse effect on our business or impact the amount of revenues to be recognized.

Telecommunications, cable and cloud service provider companies, which comprise a significant portion of our customer base, and other large companies, generally have greater purchasing power than smaller entities and, accordingly, often request and receive more favorable terms from suppliers. For example, our customers France Telecom-Orange and Deutsche Telekom AG have formed a company for the purpose of purchasing products from, and negotiating more favorable contractual terms with, suppliers. As we seek to sell more products to this class of customer, we may be required to agree to such terms and conditions, which may include terms that affect the timing of our ability to recognize revenue, increase our costs and have an adverse effect on our business, financial condition, and results of operations. Consolidation among such large customers can further increase their buying power and ability to require onerous terms.

In addition, service providers have purchased products from other vendors who promised but failed to deliver certain functionality and/or had products that caused problems or outages in the networks of these customers. As a result, these customers may request additional features from us and require substantial penalties for failure to deliver such features or may require substantial penalties for any network outages that may be caused by our products. These additional requests and penalties, if we are required to agree to them, may impact the amount of revenue recognition from such sales, which may negatively affect our business, financial condition and results of operations. In addition, increased patent litigation brought against customers by non-practicing entities in recent years, may result, and in some cases has resulted, in customers requesting or requiring vendors to absorb a portion of the costs of such litigation or providing broader indemnification for litigation, each of which could increase our expenses and negatively affect our business, financial condition and results of operations.

Regulation of our industry in general and the telecommunications industry in particular could harm our operating results and future prospects.

We are subject to laws and regulations affecting the sale of our products in a number of areas. For example, some governments have regulations prohibiting government entities from purchasing security products that do not meet country-specific safety, conformance or security certification criteria or in-country test requirements. Other regulations that may negatively impact our business include local content or local manufacturing requirements most commonly applicable for government, state-owned enterprise or regulated industry procurements. These types of regulations are in effect or under consideration in several jurisdictions where we do business.

The Dodd-Frank Wall Street Reform and Consumer Protection Act includes disclosure requirements applicable to public companies regarding the use of “conflict minerals” mined from the Democratic Republic of Congo and adjoining countries, which we refer to collectively as the DRC, and procedures regarding a manufacturer's efforts to prevent the sourcing of such “conflict minerals.” These minerals are present in our products. In addition, the European Union reached agreement in late 2016 on a EU-wide conflict minerals rule under which most EU importers of tin, tungsten, tantalum, gold and their ores will have to conduct due diligence to

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ensure the minerals do not originate from conflict zones and do not fund armed conflicts. Large manufacturers also will have to disclose how they plan to monitor their sources to comply with the rules. The regulation was adopted in 2017 with compliance required by 2021.

In addition, environmental laws and regulations relevant to electronic equipment manufacturing or operations, including laws and regulations governing the hazardous material content of our products and laws relating to the collection of and recycling of electrical and electronic equipment, may adversely impact our business and financial condition. These laws and regulations include, among others, the European Union, or EU, Restriction on the Use of Certain Hazardous Substances Directive, or RoHS. The EU RoHS and the similar laws of other jurisdictions limit the content of certain hazardous materials, such as lead, mercury, and cadmium, in electronic equipment, including our products. Currently, our products comply with the EU RoHS requirements. However, certain exemptions are scheduled to lapse. The lapse of any exemption, further changes to this or other laws, or passage of similar laws in the EU or other jurisdictions, would require us to cease selling non-compliant products and to reengineer our products to use components compatible with these regulations. This reengineering and component substitution could result in additional costs to us, disrupt our operations or logistics, and result in an adverse impact on our operating results. In addition, in validating the compliance of our products with applicable hazardous materials restrictions, we rely substantially on affirmations by our component suppliers as to the compliance of their products with respect to those same restrictions. Failure by our component suppliers to furnish accurate and timely information could subject us to penalties or liability for violation of such hazardous materials restrictions, interrupt our supply of products to the EU, and result in our customers refusing or being unable to purchase our products. Additionally, the EU and a number of other jurisdictions have adopted regulations requiring producers of electrical and electronic equipment to assume certain responsibilities for collecting, treating, recycling and disposing of products when they have reached the end of their useful life. Finally, the EU REACH regulations regulate the handling of certain chemical substances that may be used in our products.

In addition, as a contractor and subcontractor to U.S. government departments and agencies, we are subject to federal regulations pertaining to our IT systems. For instance, as a subcontractor to the U.S. Department of Defense, or DOD, the Defense Federal Acquisition Regulation Supplement, or DFARS, required that our IT systems comply with the security and privacy controls described in National Institute of Standards and Technology Special Publication 800-171, or NIST SP 800-171. The DFARS also requires that we flow the security control requirement down to certain of our own subcontractors. Failure to comply with these requirements could result in a loss of federal government business, subject us to claims or other remedies for non-compliance and negatively impact our business, financial condition, and results of operations.

The telecommunications industry is highly regulated, and our business and financial condition could be adversely affected by changes in regulations relating to the Internet telecommunications industry. Similarly, while there are currently few laws or regulations that apply directly to access to or commerce on IP networks, future regulations could include sales taxes on products sold via the Internet and Internet service provider access charges. We could be adversely affected by regulation of IP networks and commerce in any country where we market equipment and services to service providers or cloud provider companies. Regulations governing the range of services and business models that can be offered by service providers or cloud provider companies could adversely affect those customers' needs for products. For instance, in December 2017, the U.S. Federal Communications Commission repealed its 2015 regulations governing aspects of fixed broadband networks and wireless networks. This change in regulatory treatment of networks might impact service provider and cloud provider business models and their need for Internet telecommunications equipment and services. At the same time, several states have enacted their own laws and regulations governing certain aspects of fixed and wireless networks in the manner of the 2015 FCC regulations. These laws and regulations enacted by the states are or will be subject to legal challenges from the federal government and/or regulated providers. Also, many jurisdictions are evaluating or implementing regulations relating to cyber security, supply chain integrity, privacy and data protection, any of which can affect the market and requirements for

networking and security equipment.

The adoption and implementation of additional regulations could reduce demand for our products, increase the cost of building and selling our products, result in product inventory write-offs, impact our ability to ship products into affected areas and recognize revenue in a timely manner, require us to spend significant time and expense to comply, and subject us to fines and civil or criminal sanctions or claims if we were to violate or become liable under such regulations. Any of these impacts could have a material adverse effect on our business, financial condition, and results of operations.

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Governmental regulations and economic sanctions affecting the import or export of products generally or affecting products containing encryption capabilities in particular, could negatively affect our revenues and operating results.

The United States and various foreign governments have imposed controls and restrictions on the export of, among other things, products that contain or use encryption technology. Most of our products contain or use encryption technology and, consequently, are subject to such controls, requirements and restrictions. Certain governments, like those of Russia and China, control importation and in-country use of encryption items and technology. The scope, nature and severity of such controls vary widely across different countries and may change frequently over time.

Increasingly, governments have begun using export and import controls not only to further national security objectives but also to protect local industries and restrict proliferation of locally developed “emerging or foundational technology.” For example, in 2018 the U.S. enacted the Export Control Reform Act, which expands the power of the Commerce Department to use export controls to protect domestic industry and to restrict the export of emerging and foundational technologies not currently subject to controls. In furtherance of that law, on November 19, 2018, the United States Department of Commerce sought public comment on how to define emerging technologies. Our ability to market and sell our products overseas may be impacted by such export controls.

Certain governments also impose special local content, certification, testing, source code review, escrow and governmental recovery of private encryption keys, or feature requirements on cybersecurity and other network equipment for purposes of government procurements. Similar requirements also may be imposed in procurements by state owned entities (“SOE’s”) or even private companies forming part of “critical network infrastructure” or supporting sensitive industries. For example, China, Vietnam and India have promulgated cybersecurity regulations affecting networking products that may impair our ability to profitably market and sell our products there. China, in particular, is expected to require implementation of non-standard Chinese encryption algorithms in products sold into certain government, SOE, critical infrastructure and sensitive industry (such as financial institutions) markets. In the U.S., there are new restrictions on the use of certain Chinese-origin components or systems in items sold to the U.S. government.

In addition, the U.S. and other governments have especially broad sanctions and embargoes prohibiting provision of goods or services to certain countries, and territories, and to certain sanctioned governments, legal entities and individuals. Some of these restrictions have been imposed not just to protect national security but also to protect domestic industries and to achieve political aims. For instance, the U.S. Department of Commerce in 2018 added to its Entity List a Chinese semiconductor manufacturer on the express basis that it threatens the viability of U.S. competitors; the Entity List traditionally is used to restrict exports to end users that pose a security risk. Particularly far reaching and complex are restrictions imposed by the U.S. and EU on exports to Russia and, in particular, to the disputed region of Crimea. We have implemented systems to detect and prevent sales into these restricted countries or to prohibited entities or individuals, but there can be no assurance that our third party, downstream resellers and distributors will abide by these restrictions or have processes in place to ensure compliance, especially where local government regulation might prohibit adherence to such restrictions.

In addition, governments sometimes impose additional taxes on certain imported products. For example, the United States and Chinese governments each have imposed tariffs on certain products originating from the other country. In 2018, the United States, for example, imposed tariffs on a large variety of products of China origin. As a result, beginning September 24, 2018, a large portion of Juniper products manufactured in China became subject to a 10% tariff on importation into the U.S. That tariff rate may increase to 25% on March 2, 2019, absent satisfactory outcome of continuing negotiations between the United States and China. The U.S. President has also indicated a readiness to further expand the scope of the tariffs on Chinese goods if negotiations are not successful; such action could subject an even wider range of Juniper products to tariff on importation into the U.S. Depending upon its duration and implementation, as well as our ability to mitigate their impact, these tariffs could materially affect our business,

including in the form of increased cost of goods sold, increased pricing for customers, and reduced sales.

Governmental regulation of encryption or IP networking technology and regulation of imports or exports, or our failure to obtain required import or export approval for our products, or related economic sanctions could harm our international and domestic sales and adversely affect our revenues and operating results. In addition, failure to comply with such regulations could result in harm to our reputation and ability to compete in international markets, penalties, costs, seizure of assets (including source code) and restrictions on import or export privileges or adversely affect sales to government agencies or government-funded projects.

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Our actual or perceived failure to adequately protect personal data could adversely affect our business, financial condition and results of operations.

A wide variety of provincial, state, national, foreign, and international laws and regulations apply to the collection, use, retention, protection, disclosure, transfer, and other processing of personal data. These privacy- and data protection-related laws and regulations are evolving, with new or modified laws and regulations proposed and implemented frequently and existing laws and regulations subject to new or different interpretations. Further, our legal and regulatory obligations in foreign jurisdictions are subject to unexpected changes, including the potential for regulatory or other governmental entities to enact new or additional laws or regulations, to issue rulings that invalidate prior laws or regulations, or to increase penalties significantly. Compliance with these laws and regulations can be costly and can delay or impede the development and offering of new products and services.

For example, the General Data Protection Regulation (“GDPR”), which became effective in May 2018, imposes more stringent data protection requirements, and provides for significantly greater penalties for noncompliance, than the EU laws that previously applied. Additionally, California recently enacted legislation, the California Consumer Privacy Act (“CCPA”), which will become effective January 1, 2020. The CCPA will, among other requirements, require covered companies to provide new disclosures to California consumers, and allow such consumers new abilities to opt-out of certain sales of personal information. Legislators have stated that they intend to propose amendments to the CCPA before the effective date. It remains unclear the extent of the modifications that will be made to the CCPA, or how such modifications will be interpreted. The effects of the CCPA potentially are significant and may require us to modify our data processing practices and policies and to incur substantial costs and expenses in an effort to comply. We may also be subject to additional obligations relating to personal data by contract that industry standards apply to our practices. Our actual or perceived failure to comply with applicable laws and regulations or other obligations to which we may be subject relating to personal data, or to protect personal data from unauthorized access, use, or other processing, could result in enforcement actions and regulatory investigations against us, claims for damages by customers and other affected individuals, fines, damage to our reputation, and loss of goodwill, any of which could have a material adverse effect on our operations, financial performance, and business. Further, evolving and changing definitions of personal data and personal information, within the EU, the U.S., U.K., and elsewhere, including the classification of IP addresses, machine identification information, location data, and other information, may limit or inhibit our ability to operate or expand our business, including limiting business relationships and partnerships that may involve the sharing or uses of data, and may require significant costs, resources, and efforts in order to comply.

Our ability to develop, market, and sell products could be harmed if we are unable to retain or hire key personnel.

Our future success depends upon our ability to recruit and retain the services of executive, engineering, sales and marketing, and support personnel. The supply of highly qualified individuals, in particular engineers in very specialized technical areas, or sales people with specialized industry expertise, is limited and competition for such individuals is intense. None of our officers or key employees is bound by an employment agreement for any specific term. The loss of the services of any of our key employees, the inability to attract or retain personnel in the future or delays in hiring required personnel, engineers and sales people, and the complexity and time involved in replacing or training new employees, could delay the development and introduction of new products, and negatively impact our ability to market, sell, or support our products.

A number of our team members are foreign nationals who rely on visas and entry permits in order to legally work in the United States and other countries. In recent years, the United States has increased the level of scrutiny in granting H-1(B), L-1 and other business visas. In addition, the current U.S. administration has made immigration reform a priority. Compliance with United States immigration and labor laws could require us to incur additional unexpected labor costs and expenses or could restrain our ability to retain skilled professionals. Any of these restrictions could have a material adverse effect on our business, results of operations and financial conditions.

Our financial condition and results of operations could suffer if there is an impairment of goodwill or other intangible assets with indefinite lives.

We are required to test intangible assets with indefinite lives, including goodwill, annually or more frequently if certain circumstances change that would more likely than not reduce the fair value of a reporting unit and intangible assets below their carrying values. As of December 31, 2018, our goodwill was \$3,108.8 million and our intangible assets with indefinite lives was \$49.0 million. When the carrying value of a reporting unit's goodwill exceeds its implied fair value of goodwill, or if the carrying amount of an intangible asset with an indefinite life exceeds its fair value, a charge to operations is recorded. Either event would result in incremental expenses for that quarter, which would reduce any earnings or increase any loss for the period in which the impairment was determined to have occurred. We have in the past recorded goodwill impairment charges. Declines in our level of revenues or declines in our operating margins, or sustained declines in our stock price, increase the risk that goodwill and intangible assets with indefinite lives may become impaired in future periods.

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Our goodwill impairment analysis is sensitive to changes in key assumptions used in our analysis, such as expected future cash flows, the degree of volatility in equity and debt markets, and our stock price. If the assumptions used in our analysis are not realized, it is possible that an impairment charge may need to be recorded in the future. We cannot accurately predict the amount and timing of any impairment of goodwill or other intangible assets. However, any such impairment would have an adverse effect on our results of operations.

Changes in effective tax rates or adverse outcomes resulting from examination of our income or other tax returns could adversely affect our results.

Our future effective tax rates could be subject to volatility or adversely affected by the following: earnings being lower than anticipated in countries where we have lower statutory rates and higher than anticipated earnings in countries where we have higher statutory rates; changes in the valuation of our deferred tax assets and liabilities; expiration of, or lapses in, the R&D tax credit laws applicable to us; transfer pricing adjustments related to certain acquisitions, including the license of acquired intangibles under our intercompany R&D cost sharing arrangement; costs related to intercompany restructuring; tax effects of share-based compensation; challenges to our methodologies for valuing developed technology or intercompany arrangements; limitations on the deductibility of net interest expense; or changes in tax laws, regulations, accounting principles, or interpretations thereof. For example, on July 24, 2018, the Ninth Circuit Court of Appeals, or the Court, issued an opinion in *Altera Corp. v. Commissioner* requiring related parties in an intercompany cost-sharing arrangement to share expenses related to share-based compensation. On August 7, 2018, the Court withdrew its opinion to allow time for a reconstituted panel to confer. We are monitoring this case and any impact the final opinion may have on our financial statements. In addition, the Tax Cuts and Jobs Act of 2017 (the “Tax Act”), which was signed into law on December 22, 2017, made significant changes to the taxation of U.S. business entities that may have a meaningful impact to our provision for income taxes. These changes included a reduction to the federal corporate income tax rate, the current taxation of certain foreign earnings, the imposition of base-erosion prevention measures which may limit the deduction of certain transfer pricing payments, and possible limitations on the deductibility of net interest expense or corporate debt obligations. Accounting for the income tax effects of the Tax Act required significant judgments and estimates that are based on current interpretations of the Tax Act. The U.S. Department of the Treasury continues to issue Proposed Regulations that affect various components of the Act. Our future effective tax rate may be impacted by changes in interpretation of the regulations, as well as additional legislation and guidance regarding the Act.

Furthermore, on October 5, 2015, the Organisation for Economic Co-operation and Development, or OECD, an international association of 35 countries including the U.S., published final proposals under its Base Erosion and Profit Shifting, or BEPS, Action Plan. The BEPS Action Plan includes fifteen Actions to address BEPS in a comprehensive manner and represents a significant change to the international corporate tax landscape. These proposals, as adopted by countries, may increase tax uncertainty and adversely affect our provision for income taxes. In addition, we are subject to the continuous examination of our income tax returns by the Internal Revenue Service, or IRS, and other tax authorities. It is possible that tax authorities may disagree with certain positions we have taken and any adverse outcome of such a review or audit could have a negative effect on our financial position and operating results. We regularly assess the likelihood of adverse outcomes resulting from these examinations to determine the adequacy of our provision for income taxes, but the determination of our worldwide provision for income taxes and other tax liabilities requires significant judgment by management, and there are transactions where the ultimate tax determination is uncertain. Although we believe that our estimates are reasonable, the ultimate tax outcome may differ from the amounts recorded in our consolidated financial statements and may materially affect our financial results in the period or periods for which such determination is made. There can be no assurance that the outcomes from continuous examinations will not have an adverse effect on our business, financial condition, and results of operations.

We may face difficulties enforcing our proprietary rights, which could adversely affect our ability to compete.

We generally rely on a combination of patents, copyrights, trademarks, and trade secret laws and contractual restrictions on disclosure of confidential and proprietary information, to establish and maintain proprietary rights in our technology and products. Although we have been issued numerous patents and other patent applications are currently pending, there can be no assurance that any of our patent applications will result in issued patents or that any of our patents or other proprietary rights will not be challenged, invalidated, infringed or circumvented or that our rights will, in fact, provide competitive advantages to us or protect our technology, any of which could result in costly product redesign efforts, discontinuance of certain product offerings and other competitive harm.

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In addition, despite our efforts to protect our proprietary rights, unauthorized parties may attempt to copy aspects of our products or obtain and use information that we regard as proprietary. We generally enter into confidentiality or license agreements with our employees, consultants, vendors, and customers, and generally limit access to and distribution of our proprietary information. However, we cannot assure you that we have entered into such agreements with all parties who may have or have had access to our confidential information or that the agreements we have entered into will not be breached. We cannot guarantee that any of the measures we have taken will prevent misappropriation of our technology.

Furthermore, the laws of some foreign countries may not protect our proprietary rights to the same extent as do the laws of the United States. The outcome of any actions taken in these foreign countries may be different than if such actions were determined under the laws of the United States. Although we are not dependent on any individual patents or group of patents for particular segments of the business for which we compete, if we are unable to protect our proprietary rights in a market, we may find ourselves at a competitive disadvantage to others who need not incur the substantial expense, time, and effort required to create innovative products that have enabled our success.

We are subject to risks arising from our international operations, which may adversely affect our business, financial condition, and results of operations.

We derive a substantial portion of our revenues from our international operations, and we plan to continue expanding our business in international markets. We conduct significant sales and customer support operations directly and indirectly through our distributors and value-added resellers in countries throughout the world and depend on the operations of our contract manufacturers and suppliers that are located outside of the United States. In addition, a portion of our R&D and our general and administrative operations are conducted outside the United States. In some countries, we may experience reduced intellectual property protection.

As a result of our international operations, we are affected by economic, business regulatory, social, and political conditions in foreign countries, including the following:

- changes in general IT spending,

- the imposition of government controls, inclusive of critical infrastructure protection;

- changes or limitations in trade protection laws or other regulatory requirements, which may affect our ability to import or export our products from various countries;

- laws that restrict sales of products developed or manufactured outside of the country;

- varying and potentially conflicting laws and regulations;

- fluctuations in local economies;

- wage inflation or a tightening of the labor market;

- tax policies that could have a business impact;

- import tariffs imposed by the United States and reciprocal tariffs imposed by foreign countries;

- data privacy rules and other regulations that affect cross border data flow; and

the impact of the following on customer spending patterns: political considerations, unfavorable changes in tax treaties or laws, natural disasters, epidemic disease, labor unrest, earnings expatriation restrictions, misappropriation of intellectual property, military actions, acts of terrorism, political and social unrest and difficulties in staffing and managing international operations.

Any or all of these factors could have a material adverse impact on our business, financial condition, and results of operations.

In addition, the U.K.'s exit from the EU, commonly referred to as Brexit, has caused, and may continue to cause, uncertainty in the global markets. Brexit, if implemented, will take some period of time to complete and could result in regulatory changes that impact our business. For example, changes to the way service providers conduct business and transmit data between the U.K. and the EU could require us to make changes to the way we handle customer data. We will also review the impact of any resulting

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changes to EU or U.K. law that could affect our operations, such as labor policies, financial planning, product manufacturing, and product distribution. Political and regulatory responses to the vote are still developing and we are in the process of assessing the impact the vote may have on our business as more information becomes available. Nevertheless, because we conduct business in the EU, including the U.K., any of the effects of Brexit, including those we cannot anticipate, could have a material adverse effect on our business, operating results, financial condition and cash flows.

There remains significant risk that the U.K. will exit from the EU on March 30, 2019, without agreement between the EU and U.K. on terms addressing customs and trade matters. If it occurs, this “Hard Brexit” scenario would mean, among other things, that as of March 30, 2019, U.K. Customs would have to clear a far greater daily volume of imports than it has ever had to before. If U.K. Customs is not able to handle such increased volume as of the end of March, significant delays in imports may very well result, thereby potentially producing a short-term material adverse effect on our business. Hard Brexit could result in further short-term uncertainty and currency volatility. Additional currency volatility could drive a weaker British pound, which increases the cost of goods imported into our U.K. operations and may decrease the profitability of our U.K. operations. A weaker British pound versus the U.S. dollar also causes local currency results of our U.K. operations to be translated into fewer U.S. dollars during a reporting period. Any adjustments we make to our business and operations as a result of Brexit could result in significant time and expense to complete. Our business is also impacted by the negotiation and implementation of free trade agreements between the United States and other nations. Such agreements can reduce barriers to international trade and thus the cost of conducting business overseas. For instance, the United States recently reached a new trilateral trade agreement with the Governments of Canada and Mexico to replace the North American Free Trade Agreement (NAFTA). If the United States withdraws from NAFTA and the three countries fail to approve the new agreement, known as the United States-Mexico-Canada Agreement (U.S.MCA), our cost of doing business within the three countries could increase.

Moreover, local laws and customs in many countries differ significantly from or conflict with those in the United States or in other countries in which we operate. In many foreign countries, it is common for others to engage in business practices that are prohibited by our internal policies and procedures or U.S. regulations applicable to us. There can be no assurance that our employees, contractors, channel partners, and agents will not take actions in violation of our policies and procedures, which are designed to ensure compliance with U.S. and foreign laws and policies. Violations of laws or key control policies by our employees, contractors, channel partners, or agents could result in termination of our relationship, financial reporting problems, fines, and/or penalties for us, or prohibition on the importation or exportation of our products, and could have a material adverse effect on our business, financial condition and results of operations.

Our products are highly technical and if they contain undetected defects, errors or malware or do not meet customer quality expectations, our business could be adversely affected, and we may be subject to additional costs or lawsuits or be required to pay damages in connection with any alleged or actual failure of our products and services.

Our products are highly technical and complex, are critical to the operation of many networks, and, in the case of our security products, provide and monitor network security and may protect valuable information. Our products have contained and may contain one or more undetected errors, defects, malware, or security vulnerabilities. These errors may arise from hardware or software we produce or procure from third parties. Some errors in our products may only be discovered after a product has been installed and used by end-customers.

Any errors, defects, malware or security vulnerabilities discovered in our products after commercial release could result in monetary penalties, negative publicity, loss of revenues or delay in revenue recognition, loss of customers, loss of future business and reputation, penalties, and increased service and warranty cost, any of which could adversely affect our business, financial condition, and results of operations. In addition, in the event an error, defect,

malware, or vulnerability is attributable to a component supplied by a third-party vendor, we may not be able to recover from the vendor all of the costs of remediation that we may incur. In addition, we could face claims for product liability, tort, or breach of warranty or indemnification. Defending a lawsuit, regardless of its merit, is costly and may divert management's attention. If our business liability insurance coverage is inadequate, or future coverage is unavailable on acceptable terms or at all, our financial condition and results of operations could be harmed. Moreover, if our products fail to satisfy our customers' quality expectations for whatever reason, the perception of and the demand for our products could be adversely affected.

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

Because a substantial portion of our business is conducted outside the United States, we face exposure to adverse movements in non-U.S. currency exchange rates. These exposures may change over time as business practices evolve and could have a material adverse impact on our financial condition and results of operations.

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The majority of our revenues and expenses are transacted in U.S. Dollars. We also have some transactions that are denominated in foreign currencies, primarily the British Pound, Chinese Yuan, Euro, and Indian Rupee related to our sales and service operations outside of the United States. An increase in the value of the U.S. Dollar could increase the real cost to our customers of our products in those markets outside the United States in which we sell in U.S. Dollars. This could negatively affect our ability to meet our customers' pricing expectations in those markets and may result in erosion of gross margin and market share. A weakened U.S. Dollar could increase the cost of local operating expenses and procurement of raw materials to the extent we must purchase components in foreign currencies.

Currently, we hedge currency exposures associated with certain assets and liabilities denominated in nonfunctional currencies and periodically hedge anticipated foreign currency cash flows, with the aim of offsetting the impact of currency fluctuations on these exposures. However, hedge activities can be costly, and hedging cannot fully offset all risks, including long-term declines or appreciation in the value of the U.S. Dollar. If our attempts to hedge against these risks are not successful, or if long-term declines or appreciation in the value of the U.S. Dollar persist, our financial condition and results of operations could be adversely impacted.

If we fail to adequately evolve our financial and managerial control and reporting systems and processes, our ability to manage and grow our business will be negatively affected.

Our ability to successfully offer our products and implement our business plan in a rapidly evolving market requires an effective planning, forecasting, and management process to enable us to effectively scale and adjust our business and business models in response to fluctuating market opportunities and conditions. We will need to continue to improve our financial and managerial control and our reporting systems and procedures in order to manage our business effectively in the future. If we fail to effectively improve our systems and processes or we fail to monitor and ensure that these systems and processes are being used correctly, our ability to manage our business, financial condition, and results of operations may be negatively affected.

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

Our products are designed to interface with our customers' existing networks, each of which have different specifications and utilize multiple protocol standards and 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 must 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 need to modify our software or hardware to fix or overcome these errors so that our products will interoperate and scale with the existing software and hardware, which could be costly and could negatively affect our business, financial condition, and results of operations. In addition, if our products do not interoperate with those of our customers' networks, demand for our products could be adversely affected or orders for our products could be cancelled. This could hurt our operating results, damage our reputation, and seriously harm our business and prospects.

Our products incorporate and rely upon licensed third-party technology, and if licenses of third-party technology do not continue to be available to us or are not available on terms acceptable to us, our revenues and ability to develop and introduce new products could be adversely affected.

We integrate licensed third-party technology into certain of our products. From time to time, we may be required to renegotiate our current third-party licenses or license additional technology from third-parties to develop new products or product enhancements or to facilitate new business models. Third-party licenses may not be available or continue to be available to us on commercially reasonable terms. The failure to comply with the terms of any license, including

free open source software, may result in our inability to continue to use such license. Some of our agreements with our licensors may be terminated for convenience by them. In addition, we cannot be certain that our licensors are not infringing the intellectual property rights of third parties or that our licensors have sufficient rights to the licensed intellectual property in all jurisdictions in which we may sell our products. Third- party technology we incorporate into our products that is deemed to infringe on the intellectual property of others may result, and in some cases has resulted, in limitations on our ability to source technology from those third parties, restrictions on our ability to sell products that incorporate the infringing technology, increased exposure to liability that we will be held responsible for incorporating the infringing technology in our products and increased costs involved in removing that technology from our products or developing substitute technology. Our inability to maintain or re-license any third-party licenses required in our products or our inability to obtain third-party licenses necessary to develop new products and product enhancements, could require us, if possible, to develop substitute technology or obtain substitute technology of lower quality or performance standards or at a greater cost, any of which could delay or prevent product shipment and harm our business, financial condition, and results of operations.

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We rely on the availability and performance of information technology services provided by third parties, including IBM which will manage a significant portion of our systems.

Under the terms of our recent Master Services Agreement and certain Statements of Work, following a transition period, IBM will provide us with a broad range of information technology services, such as applications, including support, development and maintenance; infrastructure management and support, including for servers storage and network devices; and end user support including service desk. We expect that our businesses will become dependent on the services provided and systems operated for us by IBM and its third-party providers. While we believe that we conducted appropriate due diligence before entering into this agreement, the failure of one or more of these entities to meet our performance standards and expectations, including with respect to data security, may have a material adverse effect on our business, results of operations or financial condition.

Our success is dependent on our ability to maintain effective relationships with IBM and other third-party technology and service providers as well as the ability of IBM and any other third-party providers to perform as expected. We may terminate our agreement with IBM and any and all Statements of Work at any time on short notice for cause, convenience, certain specific performance failures, a breach of warranties by IBM, failure to transition, failure to transform, changes in law, force majeure, or a change in the control of either IBM or us. Depending on the type and timing of a termination, we may be required to pay certain termination amounts to IBM. IBM's only right to terminate the agreement is based on our failure to comply with certain terms applying to disputed payments.

Our ability to realize the expected benefits of this arrangement is subject to various risks, some of which are not within our complete control. These risks include, but are not limited to, disruption in services and the failure to protect the security and integrity of the Company's data under the terms of the agreement. We are unable to provide assurances that some or all of these risks will not occur. Failure to effectively mitigate these risks, if they occur, could have a material adverse effect on our operations and financial results. In addition, we could face significant additional costs or business disruption if our arrangement with IBM is terminated or impaired and we cannot find alternative IT services or support on commercially reasonable terms or on a timely basis or if we are unable to hire new employees in order to return these services in-house.

We are required to evaluate the effectiveness of our internal control over financial reporting and publicly disclose material weaknesses in our controls. Any adverse results from such evaluation may adversely affect investor perception, and our stock price.

Section 404 of the Sarbanes-Oxley Act of 2002 requires our management to assess the effectiveness of our internal control over financial reporting and to disclose in our filing if such controls were unable to provide assurance that a material error would be prevented or detected in a timely manner. We have an ongoing program to review the design of our internal controls framework in keeping with changes in business needs, implement necessary changes to our controls design and test the system and process controls necessary to comply with these requirements. If in the future, our internal controls over financial reporting are determined to be not effective resulting in a material weakness or significant deficiency, investor perceptions regarding the reliability of our financial statements may be adversely affected which could cause a decline in the market price of our stock and otherwise negatively affect our liquidity and financial condition.

Failure to maintain our credit ratings could adversely affect our cost of funds and related margins, liquidity, competitive position and access to capital markets.

The major credit rating agencies routinely evaluate our indebtedness. This evaluation is based on a number of factors, which include financial strength as well as transparency with rating agencies and timeliness of financial reporting. There can be no assurance that we will be able to maintain our credit ratings and failure to do so could adversely affect

our cost of funds and related margins, liquidity, competitive position and access to capital markets.

We may be unable to generate the cash flow to satisfy our expenses, make anticipated capital expenditures or service our debt obligations, including the Notes and the Revolving Credit Facility.

As of December 31, 2018, we have issued \$2,150.0 million in aggregate principal amount of senior notes, which we refer to collectively as the Notes, and had \$2,139.0 million in total outstanding debt, including \$350 million of senior notes that mature in February 2019. In June 2014, we entered into a Credit Agreement with certain institutional lenders that provides for a five-year \$500.0 million unsecured revolving credit facility, which we refer to as the Revolving Credit Facility, with an option to increase the Revolving Credit Facility by up to an additional \$200.0 million. The Credit Agreement will terminate in June 2019, at which point all amounts borrowed must be repaid. As of December 31, 2018, no amounts were outstanding under the Credit Agreement.

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We may not be able to generate sufficient cash flow to enable us to satisfy our expenses, make anticipated capital expenditures or service our indebtedness, including the Notes and the Revolving Credit Facility (if drawn upon). Our ability to pay our expenses, satisfy our debt obligations, refinance our debt obligations and fund planned capital expenditures will depend on our future performance, which will be affected by general economic, financial, competitive, legislative, regulatory and other factors beyond our control. Based upon current levels of operations, we believe cash flow from operations and available cash will be adequate for at least the next twelve months to meet our anticipated requirements for working capital, capital expenditures and scheduled payments of principal and interest on our indebtedness, including the Notes and the Revolving Credit Facility (if drawn upon). However, if we are unable to generate sufficient cash flow from operations or to borrow sufficient funds in the future to service our debt, we may be required to sell assets, reduce capital expenditures, refinance all or a portion of our existing debt (including the Notes) or obtain additional financing. There is no assurance that we will be able to refinance our debt, sell assets or borrow more money on terms acceptable to us, or at all.

The indentures that govern the Notes contain various covenants that limit our ability and the ability of our subsidiaries to, among other things:

• incur liens;

• incur sale and leaseback transactions; and

• consolidate or merge with or into, or sell substantially all of our assets to, another person.

The Credit Agreement contains two financial covenants along with customary affirmative and negative covenants that include the following:

• maintenance of a leverage ratio no greater than 3.0x and an interest coverage ratio no less than 3.0x

covenants that limit or restrict the ability of the Company and its subsidiaries to, among other things, grant liens, merge or consolidate, dispose of all or substantially all of its assets, change their accounting or reporting policies, change their business and incur subsidiary indebtedness, in each case subject to customary exceptions for a credit facility of this size and type.

As a result of these covenants, we are limited in the manner in which we can conduct our business, and we may be unable to engage in favorable business activities or finance future operations or capital needs. Accordingly, these restrictions may limit our ability to successfully operate our business. A failure to comply with these restrictions could lead to an event of default, which could result in an acceleration of the indebtedness. Our future operating results may not be sufficient to enable compliance with these covenants to remedy any such default. In addition, in the event of an acceleration, we may not have or be able to obtain sufficient funds to make any accelerated payments, including those under the Notes, and the Revolving Credit Facility (if drawn upon).

In addition, certain changes under the Tax Act may result in limitations on the deductibility of our net business interest expenses. The Tax Act generally limits the annual deduction for net business interest expense to an amount equal to 30% of adjusted taxable income. As a result, if our taxable income were to decline, we may not be able to fully deduct our net interest expense. These changes, among others under the Tax Act, could result in increases to our future U.S. tax expenses, which could have a material impact on our business.

A portion of the transaction consideration we received from the divestiture of our Junos Pulse product portfolio is in the form of a non-contingent seller promissory note and we may not receive the amount owed to us (including accrued interest), including in the time frame contemplated, by the buyer under the note.

In the fourth quarter of fiscal 2014, we completed the sale of our Junos Pulse product portfolio to an affiliate of Siris Capital, a private equity firm, for total consideration of \$230.7 million, of which \$125.0 million was in the form of an 18-month non-contingent interest-bearing promissory note issued to the Company. On May 1, 2017, we received a principal payment in the amount of \$75.0 million and outstanding interest on the note, and we and the issuer agreed to further amend the terms of the note with respect to the remaining approximately \$58.0 million to, among other things, extend the maturity date from December 31, 2018 to September 30, 2022, provide that interest due can be paid in kind by increasing the outstanding principal amount of the note and subordinate the note to other debt issued by senior lenders. Since a portion of the transaction consideration is in the form of a non-contingent seller promissory note and the note is subordinated to debt issued by senior lenders, there is the risk that we may not receive the amount owed to us (including accrued interest), including in the time frame contemplated, under the note. In the event that the promissory note is not repaid on the terms we contemplate, any collection or restructuring efforts we undertake

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may be costly and require significant time and attention from our management and there is no guarantee that we will be able to recover the amounts owed to us in full.

Our failure to pay quarterly dividends to our stockholders or the failure to meet our commitments to return capital to our stockholders could have a material adverse effect on our stock price.

Our ability to pay quarterly dividends or achieve our intended capital return policy will be subject to, among other things, our financial position and results of operations, available cash and cash flow, capital and debt service requirements, use of cash for acquisitions and other factors. Any failure to pay or increase future dividends as announced, or a reduction or discontinuation of quarterly dividends could have a material adverse effect on our stock price.

In November 2018, we announced that for 2019, we intend to target a capital return policy, inclusive of share repurchases and dividends, of approximately 75% of annual free cash flow. Free cash flow is calculated as net cash provided by operating activities less capital expenditures. In January 2018, we announced that our Board of Directors approved a new \$2.0 billion buyback authorization, which replaced our prior authorization. In February 2018, as a part of our new buyback authorization, we entered into a \$750.0 million accelerated share repurchase program, or ASR, which was completed in the third quarter of 2018, and our Board of Directors declared an increase to our quarterly cash dividend to \$0.18 per share, which reflects an increase of 80% compared to previous quarterly dividends. In January 2019, our Board of Directors declared an increase to our quarterly cash dividend to \$0.19 per share. Any failure to meet our commitments to return capital to our stockholders could have a material adverse effect on our stock price.

The investment of our cash balance and our investments in government and corporate debt securities and equity securities are subject to risks, which may cause losses and affect the liquidity of these investments.

At December 31, 2018, we had \$2,489.0 million in cash and cash equivalents and \$1,269.1 million in short-and long-term investments. We have invested these amounts primarily in asset-backed securities, certificates of deposit, commercial paper, corporate debt securities, foreign government debt securities, money market funds, mutual funds, time deposits, U.S. government agency securities, and U.S. government securities. We also have \$90.4 million in other long-term assets for our investments in privately-held companies. Certain of our investments are subject to general credit, liquidity, market, sovereign debt, and interest rate risks. Our future investment income may fall short of expectations due to changes in interest rates or if the decline in fair value of our publicly traded debt or equity investments is judged to be other-than-temporary. These market risks associated with our investment portfolio may have a material adverse effect on our liquidity, financial condition, and results of operations.

Our amended and restated bylaws provide that the Court of Chancery of the State of Delaware will be the sole and exclusive forum for substantially all disputes between us and our stockholders, which could limit our stockholders' ability to obtain a favorable judicial forum for disputes with us or our directors, officers, or employees.

Our amended and restated bylaws provide that, unless we consent to the selection of an alternative forum, the Court of Chancery of the State of Delaware (or if the Court of Chancery does not have jurisdiction, the U.S. District Court for the District of Delaware) is the sole and exclusive forum for (i) any derivative action or proceeding brought on our behalf; (ii) any action asserting a claim of breach of fiduciary duty owed by any of our current or former directors, officers, or other employees to us or to our stockholders; (iii) any action asserting a claim arising pursuant to the Delaware General Corporation Law, our restated certificate of incorporation, or our bylaws; (iv) any action or proceeding asserting a claim as to which Delaware General Corporation Law confers jurisdiction on the Court of Chancery or (v) any action asserting a claim governed by the internal affairs doctrine. The exclusive forum provisions in our bylaws may limit a stockholder's ability to bring a claim in a judicial forum that it finds favorable for disputes

with us or our current or former directors, officers, or other employees, which may discourage such lawsuits against us and our current or former directors, officers, and other employees. Alternatively, if a court were to find the exclusive forum provisions contained in our bylaws to be inapplicable or unenforceable in an action, we may incur additional costs associated with resolving such action in other jurisdictions, which could have a material and adverse impact on our business.

Uninsured losses could harm our operating results.

We self-insure against many business risks and expenses, such as intellectual property litigation, cybersecurity and our medical benefit programs, where we believe we can adequately self-insure against the anticipated exposure and risk or where insurance is either not deemed cost-effective or is not available. We also maintain a program of insurance coverage for various types of property, casualty, and other risks. We place our insurance coverage with various carriers in numerous jurisdictions. The types and amounts of insurance that we obtain vary from time to time and from location to location, depending on availability, cost, and our decisions with respect to risk retention. The policies are subject to deductibles, policy limits, and exclusions that result in our retention of a level of risk on a self-insurance basis. In addition, our insurance coverage may not be adequate to compensate us

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for all losses or failures that may occur. Losses not covered by insurance could be substantial and unpredictable and could adversely affect our financial condition and results of operations.

Our stock price may fluctuate.

Historically, our common stock has experienced substantial price volatility, particularly as a result of variations between our actual financial results and the published expectations of analysts and as a result of announcements by our competitors and us. Furthermore, speculation in the press or investment community about our strategic position, financial condition, results of operations, business, security of our products, or significant transactions can cause changes in our stock price. In addition, the stock market has experienced extreme price and volume fluctuations that have affected the market price of many technology companies in particular and that have often been unrelated to the operating performance of these companies. From time to time, economic weakness has contributed to extreme price and volume fluctuations in global stock markets that have also reduced the market price of many technology company stocks, including ours. These factors, as well as general economic and political conditions and the announcement of proposed and completed acquisitions or other significant transactions, or any difficulties associated with such transactions, by us or our current or potential competitors, may materially adversely affect the market price of our common stock in the future.

ITEM 1B. Unresolved Staff Comments

Not applicable.

ITEM 2. Properties

Our corporate headquarters are located on 80 acres of owned land in Sunnyvale, California and includes approximately 0.7 million square feet of owned buildings. In addition to our owned facilities, we lease approximately 0.1 million square feet in buildings in Sunnyvale, California as part of our corporate headquarters as of December 31, 2018.

In addition to our leased buildings in Sunnyvale, we also lease space (including offices and other facilities) in various locations throughout the United States, Canada, South America, EMEA, and APAC regions, including offices in Australia, China, Hong Kong, India, Ireland, Israel, Japan, the Netherlands, Russia, United Arab Emirates, and the United Kingdom. As of December 31, 2018, we leased approximately 1.6 million square feet worldwide, with approximately 31% in North America. The respective operating leases expire at various times through November 2029. In addition, in July 2015 we entered into a lease arrangement through March 2026 for approximately 63,000 square feet of space in the State of Washington. Each leased facility is subject to an individual lease or sublease, which could provide various options to renew/terminate the agreement or to expand/contract the leased space. We believe that our current offices and other facilities are in good condition and appropriately support our current business needs. We may improve, replace or reduce facilities as considered appropriate to meet the needs of our operations.

For additional information regarding obligations under our leases, see Note 16, Commitments and Contingencies, in Notes to Consolidated Financial Statements in Item 8 of Part II of this Report. For additional information regarding properties by geographic region, see Note 13, Segments, in Notes to Consolidated Financial Statements in Item 8 of Part II of this Report.

ITEM 3. Legal Proceedings

The information set forth under the heading “Legal Proceedings” in Note 16, Commitments and Contingencies, in Notes to Consolidated Financial Statements in Item 8 of Part II of this Report, is incorporated herein by reference.

ITEM 4. Mine Safety Disclosures

Not applicable.

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PART II

ITEM 5. Market for Registrant's Common Equity, Related Stockholder Matters and Issuer Purchases of Equity Securities

Market Information

The principal market in which our common stock is traded is the New York Stock Exchange, or NYSE, under the symbol JNPR.

Stockholders

As of February 15, 2019, there were 742 stockholders of record of our common stock and we believe a substantially greater number of beneficial owners who hold shares through brokers, banks or other nominees.

Dividends

We paid cash dividends of \$0.18 per share each quarter, totaling \$249.3 million during the year ended December 31, 2018. In January 2019, we declared a quarterly cash dividend of \$0.19 per share of common stock to be paid on March 22, 2019 to stockholders of record as of the close of business on March 1, 2019. The declaration and amount of any future cash dividends are at the discretion of the Board of Directors and will depend on our financial performance, economic outlook, and any other relevant considerations.

Unregistered Securities Issued

On December 6, 2018, we issued 105,317 shares of our common stock as consideration to an individual in connection with the 2016 AppFormix acquisition.

On December 7, 2018, we issued 56,692 shares of our common stock as consideration to one individual in connection with the HTBase acquisition in the fourth quarter of 2018.

The issuance of the above securities was exempt from registration under the Securities Act of 1933, as amended (the "Securities Act"), in reliance upon Section 4(a)(2) of the Securities Act as transactions by an issuer not involving any public offering and/or the private offering safe harbor provision of Rule 506 of Regulation D promulgated under the Securities Act.

Purchases of Equity Securities by the Issuer and Affiliated Purchasers

During the three months ended December 31, 2018, there were no share repurchases under our Board approved 2018 Stock Repurchase Program, which authorized us to purchase an aggregate of up to \$2.0 billion of our common stock. Future share repurchases will be subject to a review of the circumstances in place at that time and will be made from time to time in private transactions or open market purchases as permitted by securities laws and other legal requirements, including Rule 10b-18 promulgated under the Exchange Act. This program may be discontinued at any time.

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Company Stock Performance

The information contained in this Company Stock Performance section shall not be deemed to be incorporated by reference into other U.S. Securities and Exchange Commission, or SEC, filings; nor deemed to be soliciting material or filed with the Commission or subject to Regulation 14A or 14C or subject to Section 18 of the Exchange Act. The comparisons in the performance graph below are based upon historical data and are not indicative of, or intended to forecast, future performance of our common stock.

The performance graph below shows the cumulative total stockholder return over a five-year period assuming the investment of \$100 on December 31, 2013, in each of Juniper Networks' common stock, the Standard & Poor's 500 Stock Index ("S&P 500"), and the NASDAQ Telecommunications Index. Total stockholder return assumes reinvestment of all dividends.

	As of December 31,					
	2013	2014	2015	2016	2017	2018
JNPR	\$100.00	\$99.77	\$125.22	\$130.34	\$133.31	\$129.24
S&P 500	\$100.00	\$113.68	\$115.24	\$129.02	\$157.17	\$150.27
NASDAQ Telecommunications Index	\$100.00	\$111.51	\$105.60	\$124.17	\$149.28	\$157.14

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ITEM 6. Selected Financial Data

The following selected consolidated financial data is derived from our audited Consolidated Financial Statements. As our operating results are not necessarily indicative of future operating results, this data should be read in conjunction with Item 7, Management's Discussion and Analysis of Financial Condition and Results of Operations, and the Consolidated Financial Statements and the notes thereto in Item 8, Financial Statements and Supplementary Data, of this Report, which are incorporated herein by reference.

The information presented below reflects the impact of certain significant transactions and the adoption of certain accounting pronouncements, which makes a direct comparison difficult between each of the last five fiscal years. For a complete description of matters affecting the results in the tables below during the three years ended December 31, 2018, see Notes to Consolidated Financial Statements in Item 8 of Part II of this Report.

Consolidated Statements of Operations Data

	Years Ended December 31,				
	2018 ⁽¹⁾	2017 ⁽²⁾	2016	2015	2014 ⁽³⁾
	(In millions)				
Net revenues	\$4,647.5	\$5,027.2	\$4,990.1	\$4,857.8	\$4,627.1
Gross margin	2,741.2	3,072.1	3,104.5	3,078.6	2,858.2
Operating income (loss)	572.2	848.1	889.7	912.0	(419.7)
Net income (loss)	\$566.9	\$306.2	\$592.7	\$633.7	\$(334.3)

(1) Fiscal year 2018 includes a tax benefit of \$133.0 million related to a lapse in the statute of limitations and tax accounting method changes related to deferred revenue.

(2) Fiscal year 2017 includes an estimated \$289.5 million of tax expense related to the U.S. Tax Cuts and Jobs Act, and pre-tax restructuring charges of \$65.6 million.

(3) Fiscal year 2014 includes the following significant pre-tax items: impairment of goodwill of \$850.0 million; restructuring and other charges of \$208.5 million; gain on the sale of equity investments of \$163.0 million; gain, net of legal fees in connection with the litigation settlement with Palo Alto Networks of \$196.1 million; and gain on the sale of Junos Pulse of \$19.6 million.

Per Common Share Data

	Years Ended December 31,				
	2018	2017	2016	2015	2014
Net income (loss) per share:					
Basic	\$1.62	\$0.81	\$1.55	\$1.62	\$(0.73)
Diluted	\$1.60	\$0.80	\$1.53	\$1.59	\$(0.73)
Cash dividends declared per share of common stock	\$0.72	\$0.40	\$0.40	\$0.40	\$0.20

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Consolidated Balance Sheet Data

	As of December 31,				
	2018	2017	2016	2015	2014
	(In millions)				
Cash, cash equivalents, and investments	\$3,758.1	\$4,021.0	\$3,657.3	\$3,192.2	\$3,104.9
Working capital	2,739.3	2,446.3	2,236.0	1,110.5	1,297.2
Goodwill	3,108.8	3,096.2	3,081.7	2,981.3	2,981.5
Total assets ⁽¹⁾	9,363.3	9,833.8	9,656.5	8,607.9	8,273.6
Total debt ⁽¹⁾	2,139.0	2,136.3	2,133.7	1,937.4	1,341.2
Total long-term liabilities (excluding long-term debt) ⁽²⁾	908.5	1,278.4	824.4	594.1	499.9
Total stockholders' equity ^{(3) (4)}	\$4,823.2	\$4,680.9	\$4,962.5	\$4,574.4	\$4,919.1

Fiscal year 2016 includes the adoption of Accounting Standards Update ("ASU") No. 2015-03 (Subtopic 835-30) - Simplifying the Presentation of Debt Issuance Costs, requiring that debt issuance costs related to a recognized debt liability be presented in the balance sheet as a direct deduction from the carrying amount of that debt liability, consistent with debt discounts. Other long-term assets and long-term debt in the prior years were retrospectively adjusted to conform to the required presentation.

⁽²⁾ Fiscal 2017 includes an estimated \$394.0 million recorded in long-term income taxes payable related to the one-time transition tax as a result of the Tax Cuts and Jobs Act.

Fiscal year 2017 includes the adoption of ASU No. 2016-09 (Topic 718) Compensation—Stock Compensation: Improvements to Employee Share-Based Payment Accounting, which simplified several aspects of the accounting for share-based payment transactions, including the accounting for forfeitures, among other things. We elected to account for forfeitures as they occur using a modified retrospective transition method, rather than estimating forfeitures, resulting in a cumulative-effect adjustment of \$9.0 million, which increased the January 1, 2017 opening accumulated deficit balance on the Consolidated Balance Sheets.

Fiscal 2018 includes the adoption of ASU No. 2014-09 (Topic 606) Revenue from Contracts with Customers, which provides guidance for revenue recognition that superseded the revenue recognition requirements in Accounting Standards Codification Topic 605, Revenue Recognition and most industry specific guidance. We adopted the

⁽⁴⁾ standard under the modified retrospective approach, applying the amendments to prospective reporting periods. Upon adoption, we recorded a cumulative effect adjustment of \$324.7 million, which decreased the January 1, 2018 opening accumulated deficit balance on the Consolidated Balance Sheet primarily due to the application of the new guidance in the areas of distributor sales, software revenue, variable consideration, revenue allocation, and contract acquisition costs.

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

The following discussion should be read with the Consolidated Financial Statements and the related notes in Item 8 of Part II of this Report.

The following discussion is based upon our Consolidated Financial Statements included elsewhere in this Report, which have been prepared in accordance with U.S. generally accepted accounting principles, or U.S. GAAP. In the course of operating our business, we routinely make decisions as to the timing of the payment of invoices, the collection of receivables, the manufacturing and shipment of products, the fulfillment of orders, the purchase of supplies, and the building of inventory and spare parts, among other matters. In making these decisions, we consider various factors including contractual obligations, customer satisfaction, competition, internal and external financial targets and expectations, and financial planning objectives. Each of these decisions has some impact on the financial results for any given period. For further information about our critical accounting policies and estimates, see “Critical Accounting Policies and Estimates” section included in this “Management's Discussion and Analysis of Financial Condition and Results of Operations.”

To aid in understanding our operating results for the periods covered by this Report, we have provided an executive overview, which includes a summary of our business and market environment along with a financial results and key performance metrics overview. These sections should be read in conjunction with the more detailed discussion and analysis of our consolidated financial condition and results of operations in this Item 7, our “Risk Factors” section included in Item 1A of Part I, and our Consolidated Financial Statements and notes thereto included in Item 8 of Part II of this Report.

Executive Overview

Business and Market Environment

Juniper designs, develops, and sells products and services for high-performance networks to enable customers to build scalable, reliable, secure and cost-effective networks for their businesses, while achieving agility and improved operating efficiency through automation.

Our products are sold in three geographic regions: Americas; Europe, Middle East and Africa, or EMEA; and Asia Pacific, or APAC. We sell our high-performance network products and service offerings across routing, switching, and security technologies. In addition to our products, we offer our customers services, including maintenance and support, professional services, and education and training programs. Our products and services address high-performance network requirements for our customers within our verticals: Cloud, Service Provider, and Enterprise who view their network as critical to their success. We believe our silicon, systems, and software represent innovations that transform the economics and experience of networking, helping our customers achieve superior performance, greater choice, and flexibility, while reducing overall total cost of ownership.

Further, our intent is to expand our software business by introducing new software solutions to our product portfolio that simplify the operation of networks, and allow our customers across our key verticals flexibility in consumption and deployment. We believe our software revenues as a percentage of total revenues will increase over time as we introduce new software product offerings and business models designed to better monetize the value of our software offerings.

We believe the network needs for our customers in our Cloud, Service Provider, and Enterprise verticals are converging, as these customers recognize the need for high performance networks and are adopting cloud architectures for their infrastructure and service delivery, such as large public and private data centers and service

provider edge data centers, for improved agility and greater levels of operating efficiency.

In 2018, we continued to experience weakness within our Cloud and Service provider verticals. In our Cloud vertical, certain large Cloud customers were transitioning their network architecture as they continued to add capacity. This resulted in these customers transitioning from purchasing our MX product family to our PTX product family which contributed to the decline in our net revenues as the PTX product family has a lower average selling price compared to the MX product family. We believe the MX to PTX transition is largely behind us; however, the pace of deployments in a portion of our Cloud customer's networks has been slower than expected. Nevertheless, we are focused on the Cloud vertical as well as the transition to 400-gig Ethernet, or 400G, which we believe will present further opportunities for Juniper across our portfolio as our Cloud customers value high-performance, highly compact, power efficient infrastructures, which we support and continue to develop.

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In our Service Provider vertical, changes in business models and the increase in industry consolidation, such as acquisitions, mergers, and partnerships may continue to impact Service Provider investment and the build-out of their networks in the near-term, however, we believe that our Service Provider customers will need to invest in the build-out of high performance networks and the transformation of existing legacy infrastructure to distributed cloud environments. We are committed to this transformation, which we refer to as the Telco Cloud transformation, as our Service Provider customers rearchitect their infrastructure to enable, among other things, next generation mobile network build-outs, or 5G. We are well positioned to capitalize on 5G carrier deployments with the refresh of our MX 5G product and Contrail solutions as well as our new partnership with Ericsson to accelerate 5G initiatives by leveraging each company's complementary portfolios to drive our competitive advantage in the marketplace. We believe these products and partnership position Juniper for improved Service Provider spending in late 2019.

We remain confident in our strategy and we are executing against our innovation roadmap, as each of our industry verticals transitions to cloud architectures. We believe our understanding of high-performance networking technology and cloud architecture, and our strategy, position us to capitalize on the industry transition to more automated, cost-efficient, scalable networks.

In 2018, we continued to execute on our product and solutions strategy and announced several new innovations, including a new 400G optimized routing platform; a new high-performance MX Series 5G Universal Routing Platform with new programmable silicon; an upgrade to our high-end SRX firewall offering with our SPC3 Advanced Security Acceleration line card; and our multi-cloud orchestration and telemetry platform including Contrail Edge Cloud and Contrail Enterprise Multicloud, each of which, we believe, will help strengthen our position across our core markets. We also announced new initiatives under an existing partnership with Nutanix, which we expect will help strengthen our ability to capitalize on multicloud with our Contrail Enterprise Multicloud integration with Nutanix's application programming interface, or APIs to provide enhanced network visibility.

In late 2018, we completed the acquisition of HTBase, a software company that has developed a unique and disruptive platform for software-defined enterprise multicloud, which we expect will accelerate our leadership in multicloud and function with the compute orchestration capabilities of Contrail Enterprise Multicloud. We will continue to look at targeted and strategic acquisitions that we believe can complement our portfolio, operations, R&D strategy, and overall business.

In 2019, we believe we will continue to experience weakness with our Cloud customers in the near-term, as deployment cycles remain difficult to predict; however, we remain confident in our competitive position with our strategic Cloud customers. We are taking a number of actions that we believe will help Juniper achieve year-over-year revenue growth at some point in the second half of 2019 such as: (1) new product offerings which include new MX line cards to capitalize on 5G carrier initiatives; 400G platforms to capture data center footprint; and new enhancements to our Contrail Enterprise Multicloud platform that make it simpler and more cost effective, (2) transitioning our sales organization to better align with our sales strategy, and (3) monetizing our software offerings through subscriptions. Further, we believe the 400G upgrade cycle, 5G deployments, and enterprise multicloud initiatives each represent large opportunities where we are well positioned to benefit over the next several years.

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Financial Results and Key Performance Metrics Overview

On January 1, 2018, we adopted Financial Accounting Standards Board, or FASB, Accounting Standards Update, or ASU, No. 2014-09 (Topic 606) - Revenue from Contracts with Customers, which we refer to as Topic 606. The standard provides guidance for revenue recognition that superseded the revenue recognition requirements in Accounting Standards Codification Topic 605, Revenue Recognition, which we refer to as Topic 605, and most industry specific guidance. See Note 2, Significant Accounting Policies, in the Notes to Consolidated Financial Statements in Item 8 of Part II of this Report for further discussion on the adoption of Topic 606. Results for reporting periods beginning after January 1, 2018 are presented under Topic 606, while prior period amounts are not adjusted and continue to be reported in accordance with the historic accounting under Topic 605.

The following table provides an overview of our financial results and key financial metrics (in millions, except per share amounts, percentages, and days sales outstanding, or DSO):

	As of and for the Years Ended December 31,							
	2018	2017	2016	2018 vs. 2017		2017 vs. 2016		
				\$	%	\$	%	
				Change	Change	Change	Change	
Net revenues	\$4,647.5	\$5,027.2	\$4,990.1	\$(379.7)	(8)%	\$37.1	1	%
Gross margin	\$2,741.2	\$3,072.1	\$3,104.5	\$(330.9)	(11)%	\$(32.4)	(1)	%
Percentage of net revenues	59.0	% 61.1	% 62.2	%				
Operating income	\$572.2	\$848.1	\$889.7	\$(275.9)	(33)%	\$(41.6)	(5)	%
Percentage of net revenues	12.3	% 16.9	% 17.8	%				
Net income	\$566.9	\$306.2	\$592.7	\$260.7	85 %	\$(286.5)	(48)	%
Percentage of net revenues	12.2	% 6.1	% 11.9	%				
Net income per share								
Basic	\$1.62	\$0.81	\$1.55	\$0.81	100 %	\$(0.74)	(48)	%
Diluted	\$1.60	\$0.80	\$1.53	\$0.80	100 %	\$(0.73)	(48)	%
Operating cash flows	\$861.1	\$1,259.3	\$1,126.6	\$(398.2)	(32)%	\$132.7	12	%
Stock repurchase plan activity	\$750.0	\$719.7	\$312.9	\$30.3	4 %	\$406.8	130	%
Cash dividends declared per common stock	\$0.72	\$0.40	\$0.40	\$0.32	80 %	\$—	—	%
DSO ^(*)	58	62	68	(4)	(6)%	(6)	(9)	%
Deferred revenue	\$1,213.6	\$1,539.3	\$1,481.1	\$(325.7)	(21)%	\$58.2	4	%
Product deferred revenue	\$144.4	\$334.2	\$322.9	\$(189.8)	(57)%	\$11.3	3	%
Service deferred revenue	\$1,069.2	\$1,205.1	\$1,158.2	\$(135.9)	(11)%	\$46.9	4	%

(*) DSO is for the fourth quarter ended December 31, 2018, 2017 and 2016.

Net Revenues: During 2018, net revenues decreased compared to 2017, primarily due to lower routing product revenues from our Cloud and Service Provider verticals in the Americas. We experienced ongoing networking architectural transitions and a slower than expected pace of deployments for certain large Cloud customers as well as a decline in our Service Provider business due to the timing of deployments. The year-over-year decline in product net revenues was partially offset by broad-based revenue growth in our Enterprise vertical. Excluding the impact of Topic 606, our service net revenues would have increased during the 2018, compared to 2017, primarily due to strong renewal and attach rates of support contracts. Of our top ten customers for 2018, five were Cloud, four were Service Provider, and one was an Enterprise.

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During 2018, the adoption of Topic 606 resulted in a decrease in revenue recognition of \$22.6 million due to lower service revenues, partially offset by higher product revenues. Service revenues during 2018 were lower by \$122.9 million under Topic 606, compared to Topic 605, primarily due to the impact of revenue allocation between products and services. Product revenues during 2018 were higher by \$100.3 million under Topic 606, compared to Topic 605, primarily due to the impact of revenue allocation between products and services and the timing of revenue recognition of certain contracts that were precluded by Topic 605, partially offset by variable consideration. The product revenues increase from Topic 606 was primarily allocated between routing and switching.

Gross Margin: Our gross margin as a percentage of net revenues decreased during 2018, compared to 2017, primarily due to lower net revenues and product mix, resulting from the year-over-year decline in routing revenues from our Cloud and Service Provider verticals, and to a lesser extent, the impact of Topic 606, partially offset by improvements in our cost structure.

Operating Margin: During 2018, compared to 2017, operating income as a percentage of net revenues decreased primarily due to the drivers described in the gross margin discussion above, partially offset by a net decrease in our operating expenses during 2018, compared to 2017, as a result of lower restructuring charges.

Net Income: During 2018, net income increased compared to 2017, primarily driven by a lower statutory tax rate due to the Tax Act and tax benefits related to items unique to 2018. See Note 14, Income Taxes, in the Notes to Consolidated Financial Statements in Item 8 of Part II of this Report, for further discussion.

Operating Cash Flows: Net cash provided by operations decreased in 2018, compared to 2017, primarily due to higher cash collections from customers during 2017 related to service renewals invoiced during the fourth quarter of 2016, partially offset by a decline in cash paid for personnel-related costs, principally as a result of a reduction in headcount and lower incentive compensation, and a decrease in payments to suppliers.

Capital Return: In 2018, we repurchased 29.3 million shares of our common stock for an aggregate amount of \$750.0 million through the completion of a \$750.0 million accelerated share repurchase program, or ASR. During 2018, we also paid a quarterly cash dividend of \$0.18 per share, for an aggregate amount of \$249.3 million.

DSO: DSO is calculated as the ratio of ending accounts receivable, net of allowances, divided by net revenues for the preceding 90 days. DSO for the quarter ended December 31, 2018 decreased, compared to the quarter ended December 31, 2017, primarily due to lower overall invoicing volume, partially offset by lower revenues.

Deferred Revenue: Total deferred revenue decreased as of December 31, 2018, compared to December 31, 2017, due to the impact of adoption of Topic 606. See Note 2, Significant Accounting Policies, in the Notes to Consolidated Financial Statements in Item 8 of Part II of this Report, for further discussion.

Critical Accounting Policies and Estimates

The preparation of the financial statements and related disclosures in conformity with U.S. GAAP requires us to make judgments, assumptions, and estimates that affect the amounts reported in the Consolidated Financial Statements and the accompanying notes. On an ongoing basis, we evaluate our estimates, including those related to sales returns, pricing credits, warranty costs, allowance for doubtful accounts, impairment of long-term assets, especially goodwill and intangible assets, contract manufacturer liabilities, assumptions used in the valuation of share-based compensation, and litigation. We base our estimates and assumptions on current facts, historical experience, and various other factors that we believe are reasonable under the circumstances, the results of which form the basis for making judgments about the carrying values of assets and liabilities that are not readily apparent from other sources. For further information about our significant accounting policies, see Note 2, Significant Accounting Policies, in

Notes to Consolidated Financial Statements in Item 8 of Part II of this Report, which describes the significant accounting policies and methods used in the preparation of the Consolidated Financial Statements. The accounting policies described below are significantly affected by critical accounting estimates. Such accounting policies require significant judgments, assumptions, and estimates used in the preparation of the Consolidated Financial Statements and actual results could differ materially from the amounts reported based on these policies. To the extent there are material differences between our estimates and the actual results, our future consolidated results of operations may be affected.

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Goodwill: We make significant estimates, assumptions, and judgments when valuing goodwill and other intangible assets in connection with the initial purchase price allocation of an acquired entity, as well as when evaluating impairment of goodwill and other intangible assets on an ongoing basis. These estimates are based upon a number of factors, including historical experience, market conditions, and information obtained from the management of the acquired company. Critical estimates in valuing certain intangible assets include, but are not limited to, historical and projected customer retention rates, anticipated growth in revenue from the acquired customer and product base, and the expected use of the acquired assets. These factors are also considered in determining the useful life of the acquired intangible assets. The amounts and useful lives assigned to identified intangible assets impacts the amount and timing of future amortization expense.

Goodwill represents the future economic benefits arising from other assets acquired in a business combination that are not individually identified and separately recorded. The excess of the purchase price over the estimated fair value of net assets of businesses acquired in a business combination is recognized as goodwill. We evaluate our goodwill for impairment on an annual basis, as of November 1st, or more frequently if an event occurs or facts and circumstances change that would more likely than not reduce the fair value of our reporting units below their carrying amount.

Goodwill is tested for impairment at the reporting unit level, which is one level below our operating segment level, by comparing the reporting unit's carrying value, including goodwill, to the fair value of the reporting unit. The reporting units are determined based on the components of our operating segment that constitutes a business for which discrete financial information is available, and segment management regularly review the operating results of the component.

The provisions of the accounting standard for goodwill and other intangibles allow us to first assess qualitative factors to determine whether it is necessary to perform the two-step quantitative goodwill impairment test. Various factors are considered in the qualitative assessment, including macroeconomic conditions, financial performance, or a sustained decrease in share price. If as a result of the qualitative assessment, it is deemed more likely than not that the fair value of a reporting unit is less than its carrying amount, management will perform the quantitative test.

The quantitative goodwill impairment test, if necessary, involves a two-step process to identify goodwill impairment and measure the amount of goodwill impairment loss to be recognized, if any. The first step tests for potential impairment by comparing the fair value of the reporting unit with the reporting unit's carrying value. If the fair value of the reporting unit exceeds the carrying value of the reporting unit's net assets, goodwill is not impaired and no further testing is required. If the fair value of the reporting unit does not exceed the carrying value of the net assets assigned to the reporting unit, then we perform the second step of the impairment test in order to determine the implied fair value of the reporting unit's goodwill. The second step requires an assignment of the reporting unit's fair value to the reporting unit's assets and liabilities, using the relevant acquisition accounting guidance, to determine the implied fair value of the reporting unit's goodwill. The implied fair value of the reporting unit's goodwill is then compared with the carrying amount of the reporting unit's goodwill, and if the carrying value of a reporting unit's goodwill exceeds its implied fair value, we record an impairment loss equal to the difference.

In the first step, the fair value of each of our reporting units is determined using both the income and market valuation approaches. We believe the income approach and the market approach are equally representative of the reporting unit's fair value. Under the income approach, the fair value of the reporting unit is based on the present value of estimated future cash flows that the reporting unit is expected to generate over its remaining life. Under the market approach, the value of the reporting unit is based on an analysis that compares the value of the reporting unit to values of publicly-traded companies in similar lines of business. In the application of the income and market valuation approaches, we are required to make estimates of future operating trends and judgments on discount rates and other variables. Determining the fair value of a reporting unit is highly judgmental in nature and involves the use of significant estimates and assumptions. We base our fair value estimates on assumptions we believe to be reasonable, but unpredictable and inherently uncertain. Actual future results related to assumed variables could differ from these

estimates. In addition, we make certain judgments and assumptions in allocating shared assets and liabilities to determine the carrying values for each of our reporting units.

Under the income approach, we calculate the fair value of a reporting unit based on the present value of estimated future cash flows. Cash flow projections are based on management's estimates of revenue growth rates and operating margins, taking into consideration industry and market conditions. The discount rate used is based on the weighted-average cost of capital, adjusted for the relevant risk associated with business-specific characteristics and the uncertainty related to the business's ability to execute on the projected cash flows. Under the market approach, we estimate the fair value based on market multiples of earnings derived from comparable publicly-traded companies with similar operating and investment characteristics as the reporting units, and then apply a control premium, which is determined by

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considering control premiums offered as part of the acquisitions that have occurred in market segments that are comparable with our reporting units. The income approach and the market approach are equally weighted to derive the fair value of the reporting unit.

During the fourth quarter of 2018, we performed a quantitative assessment for all of our reporting units: Routing, Switching, and Security. This quantitative assessment was performed by determining the fair value of each reporting unit using a combination of the income approach and the market approach. Based on the results of the quantitative assessments, we determined that the fair value of each reporting unit significantly exceeded its respective carrying value, resulting in no goodwill impairment.

Inventory Valuation and Contract Manufacturer Liabilities: Inventory consists primarily of component parts to be used in the manufacturing process and finished goods in-transit, and is stated at lower of cost or net realizable value. A provision is recorded when inventory is determined to be in excess of anticipated demand or obsolete, to adjust inventory to its estimated realizable value. In determining the provision, we also consider estimated recovery rates based on the nature of the inventory. As of December 31, 2018 and December 31, 2017, our net inventory balances were \$82.0 million and \$97.8 million, respectively.

We establish a liability for non-cancelable, non-returnable purchase commitments with our contract manufacturers for quantities in excess of our demand forecasts or obsolete materials charges for components purchased by contract manufacturers based on our demand forecasts or customer orders. We also take estimated recoveries of aged inventory into consideration when determining the liability. As of December 31, 2018 and December 31, 2017, our contract manufacturer liabilities were \$30.4 million and \$22.0 million, respectively.

Significant judgment is used in establishing our forecasts of future demand, recovery rates based on the nature and age of inventory, and obsolete material exposures. We perform a detailed analysis and review of data used in establishing our demand forecasts. If the actual component usage and product demand are significantly lower than forecast, which may be caused by factors within and outside of our control, or if there were a higher incidence of inventory obsolescence because of rapidly changing technology and our customer requirements, we may be required to increase our inventory write-downs and contract manufacturer liabilities, which could have an adverse impact on our gross margins and profitability. We regularly evaluate our exposure for inventory write-downs and adequacy of our contract manufacturer liabilities. Inventory and supply chain management remains an area of focus as we balance the risk of material obsolescence and supply chain flexibility in order to reduce lead times.

Revenue Recognition: We enter into contracts to sell our products and services, and while some of our sales agreements contain standard terms and conditions, there are agreements that contain non-standard terms and conditions and include promises to transfer multiple goods or services. As a result, significant interpretation and judgment are sometimes required to determine the appropriate accounting for these transactions, including: (1) whether performance obligations are considered distinct that should be accounted for separately versus together, how the price should be allocated among the performance obligations, and when to recognize revenue for each performance obligation; (2) developing an estimate of the stand-alone selling price, or SSP, of each distinct performance obligation; (3) combining contracts that may impact the allocation of the transaction price between product and services; and (4) estimating and accounting for variable consideration, including rights of return, rebates, price protection, expected penalties or other price concessions as a reduction of the transaction price.

Our estimates of SSP for each performance obligation require judgment that considers multiple factors, including, but not limited to, historical discounting trends for products and services, pricing practices in different geographies and through different sales channels, gross margin objectives, internal costs, competitor pricing strategies, and industry technology lifecycles. Our estimates for rights of return, rebates, and price protection are based on historical sales returns and price protection credits, specific criteria outlined in customer contracts or rebate agreements, and other

factors known at the time. Our estimates for expected penalties and other price concessions are based on historical trends and expectations regarding future incurrence.

Changes in judgments with respect to these assumptions and estimates could impact the timing or amount of revenue recognition.

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Income Taxes: We are subject to income taxes in the United States and numerous foreign jurisdictions. Significant judgment is required in evaluating our uncertain tax positions and determining our taxes. Although we believe our reserves are reasonable, no assurance can be given that the final tax outcome of these matters will not be different from that which is reflected in our historical income tax provisions and accruals. We adjust these reserves in light of changing facts and circumstances, such as the closing of a tax audit or the refinement of an estimate. To the extent that the final tax outcome of these matters is different than the amounts recorded, such differences will affect the provision for income taxes in the period in which such determination is made.

Significant judgment is also required in determining any valuation allowance recorded against deferred tax assets. In assessing the need for a valuation allowance, we consider all available evidence, including past operating results, estimates of future taxable income, and the feasibility of tax planning strategies. In the event that we change our determination as to the amount of deferred tax assets that can be realized, we will adjust our valuation allowance with a corresponding impact to the provision for income taxes in the period in which such determination is made.

Our provision for income taxes is subject to volatility and could be adversely affected by earnings being lower than anticipated in countries that have lower tax rates and higher than anticipated in countries that have higher tax rates; by changes in the valuation of our deferred tax assets and liabilities; by expiration of, or lapses in the R&D tax credit laws; by transfer pricing adjustments, including the effect of acquisitions on our intercompany R&D cost-sharing arrangement and legal structure; by tax effects of nondeductible compensation; by tax costs related to intercompany realignments; by changes in accounting principles; or by changes in tax laws and regulations, including possible U.S. changes to the taxation of earnings of our foreign subsidiaries, the deductibility of expenses attributable to foreign income, or the foreign tax credit rules. In addition, the OECD's recommended changes to numerous long-standing tax principles, as adopted by countries, will increase tax uncertainty and may adversely affect our provision for income taxes. Significant judgment is required to determine the recognition and measurement attributes prescribed in the accounting guidance for uncertainty in income taxes. The accounting guidance for uncertainty in income taxes applies to all income tax positions, including the potential recovery of previously paid taxes, which if settled unfavorably could adversely affect our provision for income taxes or additional paid-in capital. In addition, we are subject to the continuous examination of our income tax returns by the IRS and other tax authorities. 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 operating results and financial condition.

Loss Contingencies: We are involved in various lawsuits, claims, investigations, and proceedings, including those involving our IP, commercial, securities and employment matters, which arise in the ordinary course of business. We use significant judgment and assumptions to estimate the likelihood of loss or impairment of an asset, or the incurrence of a liability, in determining loss contingencies. An estimated loss contingency is accrued when it is probable that an asset has been impaired or a liability has been incurred and the amount of loss can be reasonably estimated. We record a charge equal to the minimum estimated liability for litigation costs or a loss contingency only when both of the following conditions are met: (i) information available prior to issuance of our consolidated financial statements indicates that it is probable that an asset had been impaired or a liability had been incurred at the date of the financial statements and (ii) the range of loss can be reasonably estimated. We regularly evaluate current information available to us to determine whether such accruals should be adjusted and whether new accruals are required.

Recent Accounting Pronouncements

See Note 2, Significant Accounting Policies, in Notes to the Consolidated Financial Statements in Item 8 of Part II of this Report for a full description of recent accounting pronouncements, including the expected dates of adoption and estimated effects on financial condition and results of operations, which is incorporated herein by reference.

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Results of Operations

Revenues

The following table presents net revenues by product and service, customer vertical^(*), and geographic region (in millions, except percentages):

	Years Ended December 31,			2018 vs. 2017		2017 vs. 2016	
	2018	2017	2016	\$	%	\$	%
				Change	Change	Change	Change
Routing	\$1,839.7	\$2,189.5	\$2,352.9	\$(349.8)	(16)%	\$(163.4)	(7)%
Switching	934.4	963.4	858.0	(29.0)	(3)%	105.4	12%
Security	333.0	293.3	318.0	39.7	14%	(24.7)	(8)%
Total Product	3,107.1	3,446.2	3,528.9	(339.1)	(10)%	(82.7)	(2)%
Percentage of net revenues	66.9%	68.6%	70.7%				
Total Service	1,540.4	1,581.0	1,461.2	(40.6)	(3)%	119.8	8%
Percentage of net revenues	33.1%	31.4%	29.3%				
Total net revenues	\$4,647.5	\$5,027.2	\$4,990.1	\$(379.7)	(8)%	\$37.1	1%
Cloud	\$1,049.9	\$1,310.7	\$1,315.9	\$(260.8)	(20)%	\$(5.2)	—%
Percentage of net revenues	22.6%	26.0%	26.4%				
Service Provider	2,066.7	2,319.4	2,316.4	(252.7)	(11)%	3.0	—%
Percentage of net revenues	44.5%	46.1%	46.4%				
Enterprise	1,530.9	1,397.1	1,357.8	133.8	10%	39.3	3%
Percentage of net revenues	32.9%	27.8%	27.2%				
Total net revenues	\$4,647.5	\$5,027.2	\$4,990.1	\$(379.7)	(8)%	\$37.1	1%
Americas:							
United States	\$2,339.1	\$2,712.6	\$2,737.0	\$(373.5)	(14)%	\$(24.4)	(1)%
Other	202.1	234.6	231.8	(32.5)	(14)%	2.8	1%
Total Americas	2,541.2	2,947.2	2,968.8	(406.0)	(14)%	(21.6)	(1)%
Percentage of net revenues	54.7%	58.6%	59.5%				
EMEA	1,290.8	1,195.8	1,238.1	95.0	8%	(42.3)	(3)%
Percentage of net revenues	27.8%	23.8%	24.8%				
APAC	815.5	884.2	783.2	(68.7)	(8)%	101.0	13%
Percentage of net revenues	17.5%	17.6%	15.7%				
Total net revenues	\$4,647.5	\$5,027.2	\$4,990.1	\$(379.7)	(8)%	\$37.1	1%

(*) Certain prior-period amounts have been reclassified to conform to the current-period classifications.

2018 Compared to 2017

Product net revenues decreased in 2018, compared to 2017, primarily due to Cloud and Service Provider, impacting routing and switching in the Americas. The decrease in product revenues was partially offset by the impact of Topic 606 and growth in Enterprise.

The decrease in routing and switching revenues in the Americas was driven by the networking architectural transitions for certain large Cloud customers due to the timing of deployments and a decline in our Service Provider business, resulting in lower net revenues from our MX, PTX, and QFX product families. For PTX, the decline was primarily

due to the pace of deployments for certain large Cloud customers. We believe PTX sales will increase as incremental capacity requirements eventually drive improved demand. The decline was partially offset by broad-based revenue growth in Enterprise across all technologies and geographies. Given the strength in our Enterprise vertical, strong customer interest in our new platforms, such as Contrail Enterprise MultiCloud and MX10003, and the investments we are making in our enterprise sales strategy, we believe our Enterprise vertical will continue to contribute to revenue growth in 2019. We also saw strength in EMEA driven by the aforementioned revenue growth in Enterprise,

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as well as higher revenues from Service Provider customers, resulting from our solutions based sales strategy to enable the Telco Cloud transformation and enterprise multicloud initiatives.

We experienced growth in revenues from our security business during 2018, compared to 2017, across all verticals as customers transitioned to our newer product offerings. We expect that our security business will see year-over-year growth for the full year 2019.

Service net revenues decreased during 2018, compared to 2017, due to the impact of Topic 606. Excluding the impact of Topic 606, our service net revenues would have increased year-over-year, driven primarily by strong renewal and attach rates of support contracts.

2017 Compared to 2016

Product net revenues decreased in 2017, compared to 2016, primarily due to a decrease in routing and, to a lesser extent, security, partially offset by growth in switching.

Lower routing revenues were driven by Cloud customers in the Americas as a result of the ongoing architectural shifts in the Cloud vertical to more automated, cost efficient, and scalable networks. Routing revenues in EMEA also declined year-over-year due to lower sales from Service Provider customers, partially offset by revenue growth in APAC from our Service Provider vertical. As we continue to expand our footprint with certain strategic APAC Service Provider and Cloud customers, we expect these strategic opportunities will ultimately help to drive revenue growth in APAC, however the timing is difficult to predict. Revenues from our MX and legacy routing products declined year-over-year, which was partially offset by an increase in revenues from our PTX products from the continued adoption of our PTX1000 series of products.

Security net revenues declined in 2017, compared to 2016, primarily driven by a decrease in our high-end SRX series as it had been undergoing a product refresh cycle and the decline in our Other Legacy products.

The decline in product net revenues was partially offset by an increase in switching net revenues due to continued growth from our data center switching portfolio, particularly from our QFX product family, which grew 25% year-over-year. This growth was across public and private clouds, driven in part by 100G adoption. The switching net revenue growth was primarily driven by the Cloud vertical in the Americas and, to a lesser extent, our Enterprise vertical.

Service net revenues increased during in 2017, compared to 2016, primarily due to strong renewal and attach rates of support contracts. Additionally, we saw strong year-over-year services revenue growth in APAC and EMEA.

Customer

No customer accounted for greater than 10% of our net revenues during the years ended December 31, 2018, 2017, and 2016.

Gross Margins

The following table presents gross margins (in millions, except percentages):

Years Ended December 31,				2018 vs. 2017		2017 vs. 2016	
2018	2017	2016	\$	%	\$	%	
			Change	Change	Change	Change	

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Product gross margin	\$1,829.9	\$2,085.3	\$2,202.7	\$(255.4)	(12)%	\$(117.4)	(5)%
Percentage of product revenues	58.9	% 60.5	% 62.4	%			
Service gross margin	911.3	986.8	901.8	(75.5)	(8)%	85.0	9 %
Percentage of service revenues	59.2	% 62.4	% 61.7	%			
Total gross margin	\$2,741.2	\$3,072.1	\$3,104.5	\$(330.9)	(11)%	\$(32.4)	(1)%
Percentage of net revenues	59.0	% 61.1	% 62.2	%			

Our gross margins as a percentage of net revenues have been and will continue to be affected by a variety of factors, including the mix and average selling prices of our products and services, new product introductions and enhancements, manufacturing, component and logistics costs, expenses for inventory obsolescence and warranty obligations, cost of support and service personnel, customer mix as we continue to expand our footprint with certain strategic customers, the mix of distribution channels through

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which our products and services are sold, and import tariffs. For example, the United States recently imposed a tariff on networking products imported from China, which includes certain products that we import into and sell within the United States. These import tariffs could have a significant impact to our gross margins in the event we are unable to meaningfully mitigate their impact. For more information on the potential impact of tariffs on our business, see the “Risk Factors” section of Item 1A of Part II of this Report.

2018 Compared to 2017

Product gross margin

Product gross margin as a percentage of product revenues decreased in 2018, compared to 2017, primarily due to lower net revenues and product mix, resulting from the year-over-year decline in routing revenues from our Cloud and Service Provider verticals, partially offset by the impact of Topic 606 and improvements in our cost structure. We continue to undertake specific efforts to address certain factors impacting our product gross margin. These efforts include performance and quality improvements through engineering to increase value across our products; optimizing our supply chain and service business; pricing management; and increasing software and solution sales; however, there can be no guarantee that these efforts will be successful or that they will be realized in the time frame we anticipate.

Service gross margin

Service gross margin as a percentage of service net revenues decreased in 2018, compared to 2017, due to lower revenues from the impact of Topic 606, increased professional services costs to support our software deployments, and higher service delivery costs, partially offset by lower personnel-related costs.

2017 Compared to 2016

Product gross margin

Product gross margin as a percentage of product revenues decreased in 2017, compared to 2016, primarily due to lower product net revenues, customer mix, and product mix resulting from the year-over-year decline in routing revenues and our customers' architectural shifts, partially offset by improvements in our cost structure.

Service gross margin

Service gross margin as a percentage of service net revenues increased in 2017, compared to 2016, due to higher service revenues, partially offset by higher material and higher delivery costs.

Operating Expenses

The following table presents operating expenses (in millions, except percentages):

	Years Ended December 31,			2018 vs. 2017		2017 vs. 2016	
	2018	2017	2016	\$	%	\$	%
Research and development	\$ 1,003.2	\$ 980.7	\$ 1,013.7	\$ 22.5	2 %	\$ (33.0)	(3) %
Percentage of net revenues	21.6	% 19.5	% 20.3				
Sales and marketing	927.4	950.2	972.9	(22.8)	(2) %	(22.7)	(2) %
Percentage of net revenues	19.9	% 18.9	% 19.5				

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General and administrative	231.1	227.5	224.9	3.6	2	% 2.6	1	%
Percentage of net revenues	5.0	% 4.5	% 4.5	%				
Restructuring charges	7.3	65.6	3.3	(58.3)	N/M	62.3	N/M	
Percentage of net revenues	0.2	% 1.3	% 0.1	%				
Total operating expenses	\$2,169.0	\$2,224.0	\$2,214.8	\$(55.0)	(2)%	\$9.2	—	%
Percentage of net revenues	46.7	% 44.2	% 44.4	%				

N/M - percentage is not meaningful.

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Our operating expenses have historically been driven in large part by personnel-related costs, including salaries and wages; commissions and bonuses, which we refer to collectively as variable compensation; benefits; share-based compensation; and travel. Facility and information technology, or IT, departmental costs are allocated to each department based on usage and headcount. We had a total of 9,283, 9,381, and 9,832 employees as of December 31, 2018, 2017, and 2016, respectively. Our headcount decreased by 98 employees, or 1%, in 2018, compared to 2017, primarily due to our restructuring plan initiated in the third quarter of 2018 to realign our workforce as a result of organizational and leadership changes, which we refer to as the 2018 Restructuring Plan. Our headcount decreased by 451 employees, or 5%, in 2017, compared to 2016, primarily due to our restructuring plan initiated in the first quarter of 2017 to realign our workforce and increase operational efficiency, which we refer to as the 2017 Restructuring Plan.

2018 Compared to 2017

Research and development

Research and development expense, or R&D, increased in 2018, compared to 2017, primarily due to higher personnel-related costs, including an increase in share-based compensation expense of \$34.4 million driven by higher expense from the modification of certain performance share awards, or PSAs, whose vesting is contingent upon the achievement of certain performance milestones, and higher variable compensation expense of \$17.8 million. The increase was partially offset by lower salaries and wages of \$26.7 million due to a geographic shift in headcount to lower cost regions, as well as a reduction in headcount from restructuring actions.

Sales and marketing

Sales and marketing expense decreased in 2018, compared to 2017, due to lower personnel-related costs of \$10.9 million primarily resulting from a decline in headcount of 49 employees driven by restructuring actions and lower costs of \$9.3 million from a decrease in the number of marketing events held in 2018, compared to 2017. The decrease was partially offset by higher outside service costs of \$7.1 million related to consulting projects.

General and administrative

General and administrative expense increased in 2018, compared to 2017, primarily due to higher acquisition costs related to our 2018 business acquisition of HTBase, partially offset by a decline in outside service costs resulting from fewer consulting projects and lower legal costs.

Restructuring charges

Restructuring charges decreased in 2018, compared to 2017, primarily due to lower restructuring charges from the 2018 Restructuring Plan, compared to the 2017 Restructuring Plan.

See Note 18, Subsequent Events, in Notes to Consolidated Financial Statements in Item 8 of Part II of this Report for a discussion of our restructuring plan initiated subsequent to December 31, 2018.

2017 Compared to 2016

Research and development

Research and development expense, decreased in 2017, compared to 2016, primarily due to a decline in personnel-related costs, including lower share-based compensation of \$39.8 million primarily driven by lower expense

from certain PSAs, whose vesting is contingent upon the achievement of financial performance metrics or certain performance milestones, and lower variable compensation of \$13.7 million. The decrease was partially offset by higher costs related to certain R&D project cancellations of \$11.4 million and higher prototype costs of \$10.4 million.

Sales and marketing

Sales and marketing expense decreased in 2017, compared to 2016, primarily due to a decline in personnel-related costs of \$20.5 million, including lower variable compensation of \$15.5 million primarily as a result of lower commissions expense and lower salaries and wages driven by a decrease in headcount as a result of the 2017 Restructuring Plan.

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General and administrative

General and administrative expense increased in 2017, compared to 2016, primarily due to litigation settlement charges pursuant to a litigation settlement reached in November 2017 in connection with a legal proceeding of approximately \$13.0 million, partially offset by a decline in other legal costs of \$6.4 million.

Restructuring charges

Restructuring charges increased in 2017, compared to 2016, primarily due to severance and contract termination costs recorded under the 2017 Restructuring Plan.

Other Expense, Net

The following table presents other expense, net (in millions, except percentages):

	Years Ended December 31,			2018 vs. 2017		2017 vs. 2016	
	2018	2017	2016	\$	%	\$	%
				Change	Change	Change	Change
Interest income	\$72.7	\$53.0	\$35.4	\$19.7	37 %	\$17.6	50 %
Interest expense	(103.2)	(101.2)	(97.7)	(2.0)	2 %	(3.5)	4 %
(Loss) gain on investments, net	(7.4)	14.6	(1.8)	(22.0)	(151)%	16.4	N/M
Other	(1.6)	(2.7)	1.8	1.1	(41)%	(4.5)	(250)%
Total other expense, net	\$(39.5)	\$(36.3)	\$(62.3)	\$(3.2)	9 %	\$26.0	(42)%
Percentage of net revenues	(0.8)%	(0.7)%	(1.2)%				

N/M - percentage is not meaningful.

Other Expense, Net

Interest income primarily includes interest earned on our cash, cash equivalents, investments, and promissory note issued to us in connection with the sale of Junos Pulse. Interest expense primarily includes interest, net of capitalized interest expense, from long-term debt and customer financing arrangements. (Loss) gain on investments, net, primarily includes gains from the sale of investments in public and privately-held companies, and any observable changes in fair value and impairment charges recorded on these investments. Other typically consists of foreign exchange gains and losses and other non-operational income and expense items.

2018 Compared to 2017

Interest Income

Interest income increased in 2018, compared to 2017, primarily due to higher interest income related to our fixed income investment portfolio, as a result of higher yields on our investments, partially offset by lower average investment balances.

Interest Expense

Interest expense increased in 2018, compared to 2017, primarily due to distributor financing arrangements from extended payment terms financing.

(Loss) Gain on Investments, Net

During the year ended December 31, 2018, we had losses related to the sale of certain equity investments in privately-held companies, compared to gains on sales during 2017. In addition, we recorded impairment charges on a certain equity investment in a privately-held company in 2018, and there were no such charges recorded in 2017.

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2017 Compared to 2016

Interest Income

Interest income increased in 2017, compared to 2016, primarily due to an increase in interest income related to our investment portfolio, as a result of higher yields and a larger balance in the portfolio.

Interest Expense

Interest expense increased in 2017, compared to 2016, primarily due to a full-year effect of interest expense from the issuance of our 2019 and 2024 Notes in the first quarter of 2016. See Note 10, Debt and Financing, in Notes to Consolidated Financial Statements in Item 8 in Part II of this Report for additional information regarding our 2019 and 2024 Notes.

Gain (Loss) on Investments, Net

In 2017, gains on equity investments increased, primarily related to the sale of investments in public and privately-held companies, compared to 2016. In addition, we recorded impairment charges on certain investments in privately-held companies in 2016, and there were no such charges recorded in 2017.

Income Tax (Benefit) Provision

The following table presents the income tax (benefit) provision (in millions, except percentages):

	Years Ended December 31,			2018 vs. 2017		2017 vs. 2016	
	2018	2017	2016	\$	%	\$	%
				Change	Change	Change	Change
Income tax (benefit) provision	\$(34.2)	\$505.6	\$234.7	\$(539.8)	(107)%	\$270.9	115%
Effective tax (benefit) rate	(6.4)%	62.3%	28.4%				

2018 Compared to 2017

The effective tax rate for fiscal year 2018 is lower than 2017, primarily due to: a lower statutory tax rate as a result of the Tax Act enacted on December 22, 2017; a \$67.6 million related to a lapse in the federal statute of limitations relative to tax years 2010 through 2014, including interest; a \$33.2 million benefit as a result of filing a change in tax accounting method for the recognition of deferred product revenue in the U.S. to better align with the financial statement recognition of such revenue; a \$32.2 million resulting from a tax accounting method change related to foreign deferred service revenue; a favorable change in the geographic mix of earnings; and, discrete taxes of approximately \$289.5 million accrued on accumulated foreign earnings under the Tax Act in the fourth quarter ended December 31, 2017.

The Tax Act introduced significant changes to U.S. income tax law. Effective January 1, 2018, the Tax Act reduced the U.S. federal corporate income tax rate from 35% to 21% and created a minimum tax on foreign earnings and imposed a one-time transition tax on accumulated foreign earnings through December 31, 2017. In 2017, we recorded provisional amounts for the effects of the Tax Act of \$289.5 million, primarily related to net taxes on accumulated foreign earnings and the re-measurement of our deferred tax assets at the revised U.S. statutory rate. In the fourth quarter of 2018, we completed our analysis to determine the effect of the Tax Act and recorded immaterial adjustments as of December 31, 2018. We have elected to pay our transition tax, net of applicable tax refunds, over the eight-year period provided in the Tax Act.

For a complete reconciliation of our effective tax rate to the U.S. federal statutory rate of 21% and further explanation of our income tax provision, see Note 14, Income Taxes, in the Notes to Consolidated Financial Statements in Item 8 of Part II of this Report.

On July 24, 2018, the Ninth Circuit Court of Appeals, or the Court, issued an opinion in *Altera Corp. v. Commissioner* requiring related parties in an intercompany cost-sharing arrangement to share expenses related to share-based compensation. On August 7, 2018, the Court withdrew its opinion to allow time for a reconstituted panel to confer. We will continue to monitor ongoing developments and potential impacts to its financial statements. Had the Ninth Circuit not withdrawn its opinion, our effective tax rate for 2018 would have been higher.

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Our effective tax rate may fluctuate significantly on a quarterly basis and may be adversely affected to the extent earnings are lower than anticipated in countries that have lower statutory rates and higher than anticipated in countries that have higher statutory rates. Our effective tax rate may also fluctuate due to changes in the valuation of our deferred tax assets or liabilities, or by changes in tax laws, regulations, or accounting principles, as well as certain discrete items. See Item 1A of Part I, "Risk Factors" of this Report for a description of relevant risks which may adversely affect our results.

2017 Compared to 2016

The effective tax rate for the fiscal year 2017 was higher than 2016, primarily due to an estimated \$289.5 million of net income tax expense related to changes imposed by the Tax Act, which was enacted on December 22, 2017. Effective January 1, 2018, the Tax Act provided for significant changes to U.S. income tax law including the reduction of the U.S. federal corporate income tax rate from 35% to 21% and the creation of a minimum tax on foreign earnings. In addition, the Tax Act imposed a one-time transition tax on accumulated foreign earnings through December 31, 2017. The \$289.5 million income tax expense included an estimated tax charge of \$431.2 million on our accumulated foreign earnings, which we elected to pay over eight years.

As a result of recommendations by the Organisation for Economic Cooperation and Development, or OECD, on Base Erosion and Profit Shifting, certain countries in EMEA and APAC have either enacted new corporate tax legislation or are considering enacting such legislation in the near future. We expect the effect of these reform measures to potentially impact long-standing tax principles, particularly in regards to transfer pricing. Consequently, we expect global tax authorities to increasingly challenge our cost sharing and other intercompany arrangements, and the related sourcing of taxable profits in global jurisdictions.

Liquidity and Capital Resources

The following sections discuss the effects of changes in our balance sheet, our capital return strategy, including our stock repurchase program and dividends, our contractual obligations, and certain other commitments and activities on our liquidity and capital resources.

We have funded our business primarily through our operating activities and the issuance of our long-term debt. The following table presents our capital resources (in millions, except percentages):

	As of December				
	2018	2017	\$	%	
			Change	Change	
Working capital	\$2,739.3	\$2,446.3	\$293.0	12	%
Cash and cash equivalents	\$2,489.0	\$2,006.5	\$482.5	24	%
Short-term investments	1,070.1	1,026.1	44.0	4	%
Long-term investments	199.0	988.4	(789.4)	(80)	%
Total cash, cash equivalents, and investments	3,758.1	4,021.0	(262.9)	(7)	%
Short-term portion of long-term debt	349.9	—	349.9	N/M	
Long-term debt	1,789.1	2,136.3	(347.2)	(16)	%
Cash, cash equivalents, and investments, net of debt	\$1,619.1	\$1,884.7	\$(265.6)	(14)	%

N/M - percentage is not meaningful.

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Summary of Cash Flows

The following table summarizes cash flow activity from our Consolidated Statements of Cash Flows (in millions, except percentages):

	Years Ended December 31,			2018 vs. 2017		2017 vs. 2016	
	2018	2017	2016	\$	%	\$	%
				Change	Change	Change	Change
Net cash provided by operating activities ^(*)	\$861.1	\$1,259.3	\$1,126.6	\$(398.2)	(32)%	\$132.7	12%
Net cash provided by (used in) investing activities ^(*)	\$564.8	\$(303.0)	\$(417.0)	\$867.8	(286)%	\$114.0	(27)%
Net cash used in financing activities	\$(968.6)	\$(794.8)	\$(236.3)	\$(173.8)	22%	\$(558.5)	236%

On January 1, 2018, we adopted the new accounting pronouncement Statement of Cash Flows: Restricted Cash. We ^(*)applied this provision on a retrospective basis to conform to the current-period presentation. The adoption did not have a material impact on the cash flow activity presented in our Consolidated Statement of Cash Flows for the fiscal years ended 2017 and 2016.

Operating Activities

Our primary source of operating cash flows is cash collections from our customers. Our primary uses of cash from operating activities are for personnel-related expenditures, and other general operating expenses, as well as payments related to taxes, interest, and facilities.

2018 Compared to 2017

Net cash provided by operations decreased in 2018, compared to 2017, primarily due to higher cash collections from customers during 2017 related to service renewals invoiced during the fourth quarter of 2016, partially offset by a decline in cash paid for personnel-related costs, principally as a result of a reduction in headcount and lower incentive compensation, and a decrease in payments to suppliers.

2017 Compared to 2016

Net cash provided by operating activities increased in 2017, compared to 2016, primarily due to an increase in cash collections from customers in the first half of 2017 due to higher invoicing activity during the fourth quarter of 2016, partially offset by an increase in payments to suppliers, higher payments for restructuring activities, and an increase in cash paid for income taxes.

Investing Activities

Investing cash flows consist primarily of capital expenditures; purchases, sales, maturities, and redemptions of investments; and cash used for business combinations.

2018 Compared to 2017

Net cash provided by investing activities increased in 2018, compared to 2017, primarily due to the liquidation of repatriated offshore investments to fund the accelerated share repurchase program discussed below.

2017 Compared to 2016

Net cash used in investing activities decreased in 2017, compared to 2016, primarily due to lower payments for business combinations and capital expenditures and the receipt of \$75.0 million in proceeds from the Pulse Note, partially offset by higher net purchases of available-for-sale debt securities.

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Financing Activities

Financing cash flows consist primarily of repurchases and retirement of common stock, payment of cash dividends to stockholders, issuance and repayment of long-term debt, and proceeds from the issuance of shares of common stock through employee equity incentive plans.

2018 Compared to 2017

Net cash used in financing activities increased in 2018, compared to 2017, primarily due to an increase in payments of cash dividends and higher repurchases of our common stock, as a result of the accelerated share repurchase program, or ASR, described further below.

2017 Compared to 2016

Net cash used in financing activities increased in 2017, compared to 2016, primarily due to an increase in repurchases and retirement of our common stock in 2017. In 2016, we raised \$494.0 million from our 2019 Notes and 2024 Notes and repaid \$300.0 million of our 2016 Notes.

Capital Return

The following table summarizes our dividends paid and stock repurchase activities (in millions, except per share amounts):

Year	Dividends		Stock Repurchase Program		Total	
	Per Share	Amount	Average price per share	Amount	Amount	Amount
2018	\$0.72	\$ 249.3	29.3	\$ 25.62	\$ 750.0	\$ 999.3
2017	\$0.40	\$ 150.4	26.1	\$ 27.61	\$ 719.7	\$ 870.1
2016	\$0.40	\$ 152.5	13.5	\$ 23.25	\$ 312.9	\$ 465.4

In January 2018, our Board of Directors, which we refer to as the Board, approved a \$2.0 billion share repurchase program, which we refer to as the 2018 Stock Repurchase Program. The 2018 Stock Repurchase Program replaces the previous authorization approved by the Board in 2014.

As part of the 2018 Stock Repurchase Program, we entered into an ASR to repurchase \$750.0 million of our common stock. We made an up-front payment of \$750.0 million pursuant to the ASR to repurchase our common stock. The aggregate number of shares ultimately repurchased of 29.3 million shares of common stock was determined based on a volume weighted average repurchase price, less an agreed upon discount, of \$25.62 per share.

As of December 31, 2018, there was \$1.3 billion of authorized funds remaining under the 2018 Stock Repurchase Program, as of the filing date of this Report.

Future share repurchases under the 2018 Stock Repurchase Program will be subject to a review of the circumstances at that time and will be made from time to time in private transactions or open market purchases as permitted by securities laws and other legal requirements. Our 2018 Stock Repurchase Program may be discontinued at any time. See Note 11, Equity, in the Notes to Consolidated Financial Statements in Item 8 of Part II of this Report for further discussion of our share purchase program.

In addition, any future dividends, and the establishment of record and payment dates, are subject to approval by the Board or an authorized committee thereof. See Note 18, Subsequent Event, in the Notes to Consolidated Financial Statements in Item 8 of Part II of this Report for discussion of our dividend declaration subsequent to December 31, 2018.

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Off-Balance Sheet Arrangements

As of December 31, 2018 and 2017, we did not have any off-balance sheet arrangements, as defined in Item 303 (a)(4)(ii) of SEC Regulation S-K. It is not our business practice to enter into off-balance sheet arrangements. However, in the normal course of business, we enter into contracts consisting of guarantees of product and service performance, standby letters of credit for certain lease facilities and insurance programs. See Guarantees below for additional information regarding our guarantees.

Contractual Obligations

Our principal commitments consist of obligations outstanding under operating leases, purchase commitments, debt, and other contractual obligations. The following table summarizes our principal contractual obligations as of December 31, 2018 and the effect such obligations are expected to have on our liquidity and cash flow in future periods (in millions):

	Payments Due by Period				
	Total	Less than 1 year	1-3 years	3-5 years	More than 5 years
Operating leases ⁽¹⁾	\$ 146.3	\$ 33.7	\$ 55.0	\$ 31.3	\$ 26.3
Other lease arrangement ⁽²⁾	101.0	13.1	26.9	28.1	32.9
Purchase commitments with contract manufacturers and suppliers ⁽¹⁾	663.3	605.9	57.4	—	—
Long-term debt ⁽³⁾	2,150.0	350.0	600.0	—	1,200.0
Interest payment on long-term debt ⁽³⁾	798.9	88.5	144.4	118.7	447.3
Tax liability related to the Tax Act ⁽⁴⁾	245.2	—	—	53.8	191.4
Other contractual obligations ⁽¹⁾	97.8	43.1	37.8	14.0	2.9
Total	\$4,202.5	\$1,134.3	\$921.5	\$245.9	\$1,900.8

(1) See Note 16, Commitments and Contingencies, in Notes to Consolidated Financial Statements in Item 8 of Part II of this Report for additional information regarding our contractual commitments.

(2) Lease arrangement is related to a data center lease agreement that we entered in to in July 2015. See Note 16, Commitments and Contingencies, in Notes to Consolidated Financial Statements in Item 8 of Part II of this Report for further explanation on the lease agreement.

(3) See Note 10, Debt and Financing, in Notes to Consolidated Financial Statements in Item 8 of Part II of this Report for additional information regarding our debt.

(4) See Note 16, Commitments and Contingencies, in Notes to Consolidated Financial Statements in Item 8 of Part II of this Report for additional information regarding our tax liability related to the Tax Act.

As of December 31, 2018, we had \$159.2 million included in long-term income taxes payable in the Consolidated Balance Sheets for unrecognized tax positions. At this time, we are unable to make a reasonably reliable estimate of the timing of payments related to this amount due to uncertainties in the timing of tax audit outcomes. As a result, this amount is not included in the table above.

Revolving Credit Facility

As of December 31, 2018, we have not borrowed any funds and we were in compliance with all covenants under our unsecured revolving credit facility that will expire in 2019, which enables borrowings up to \$500.0 million, with the option to increase the amount of the credit facility by up to an additional \$200.0 million. See Note 10, Debt and Financing, in Notes to Consolidated Financial Statements in Item 8 of Part II of this Report for further information on our credit facility.

Guarantees

We have entered into agreements with customers that contain indemnification provisions relating to potential situations where claims could be alleged that our products solely, or in combination with other third party products, infringe the intellectual property rights of a third-party. As of December 31, 2018, we recorded \$11.9 million for such indemnification obligations in other accrued liabilities and other long-term liabilities on the Consolidated Balance Sheets. We also have financial guarantees consisting of guarantees of product and service performance and standby letters of credit for certain lease facilities and insurance programs of \$23.1 million and \$23.0 million, as of December 31, 2018 and December 31, 2017, respectively.

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Liquidity and Capital Resources

Liquidity and capital resources may be impacted by our operating activities as well as acquisitions, investments in strategic relationships, repurchases of additional shares of our common stock, and payment of cash dividends on our common stock. Following the enactment of the Tax Act, we repatriated approximately \$2.8 billion of our cash, cash equivalents, and investments balance from outside of the U.S as of December 31, 2018. We expect the new territorial tax system to provide us lower cost access to nearly all of our global free cash flow on an ongoing basis. Free cash flow is calculated as net cash provided by operating activities less capital expenditures. We intend to use the repatriated cash to invest in the business, support value-enhancing merger and acquisitions, or M&A, and fund our return of capital to stockholders.

In August 2016, we filed an automatic shelf registration statement with the SEC enabling us to offer for sale, from time to time, an unspecified amount of securities in one or more offerings and is intended to give us flexibility to take advantage of financing opportunities as needed or deemed desirable in light of market conditions. Our 2019 Notes and 2024 Notes were issued under an automatic shelf registration statement that we filed in August 2013 pursuant to a prospectus supplement filed with the SEC on February 24, 2016. Our 2020 Notes and 2025 Notes were issued under an automatic shelf registration statement pursuant to a prospectus supplement filed with the SEC on February 26, 2015, and our \$350.0 million in principal amount of our 2024 Notes, which form a single series and are fully fungible with our 2024 Notes issued in 2016, were issued under an automatic shelf registration statement pursuant to a prospectus filed with the SEC on February 28, 2014. Any offerings of securities under our automatic shelf registration statement will be made pursuant to a prospectus. In addition, our Revolving Credit Facility will also provide additional flexibility for future liquidity needs.

Based on past performance and current expectations, we believe that our existing cash and cash equivalents, short-term, and long-term investments, together with cash generated from operations and access to capital markets and the revolving credit facility will be sufficient to fund our operations; planned stock repurchases and dividends; capital expenditures; commitments and other liquidity requirements; and anticipated growth for at least the next twelve months. However, our future liquidity and capital requirements may vary materially from those now planned depending on many factors, including, but not limited to, our growth rate; the timing and amount we spend to support development efforts; the expansion of sales and marketing activities; the introduction of new and enhanced products and services; the costs to acquire or invest in businesses and technologies; an increase in manufacturing or component costs; and the risks and uncertainties detailed in the “Risk Factors” section of Item 1A of Part I of this Report.

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ITEM 7A. Quantitative and Qualitative Disclosures about Market Risk

Interest Rate Risk

The primary objectives of our investment activities are, in order of priority, to preserve principal, maintain liquidity, and maximize yield. The value of our investments is subject to market price volatility. To minimize this risk, we maintain an investment portfolio of various holdings, types, and maturities, which includes asset-backed securities, certificates of deposit, commercial paper, corporate debt securities, foreign government debt securities, money market funds, mutual funds, time deposits, U.S. government agency securities, and U.S. government securities. At any time, a rise in interest rates could have a material adverse impact on the fair value of our investment portfolio. Conversely, a decline in interest rates could have a material impact on interest income from our investment portfolio. We do not currently hedge these interest rate exposures.

The following tables present hypothetical changes in fair value of our available-for-sale fixed income securities held as of December 31, 2018 and 2017 that are sensitive to changes in interest rates assuming immediate parallel shifts in the yield curve of 50 basis points, or BPS, 100 BPS and 150 BPS, which are representative of the historical movements in the Federal Funds Rate (in millions):

	- 150 BPS	- 100 BPS	- 50 BPS	Fair Value as of December 31, 2018	+ 50 BPS	+ 100 BPS	+ 150 BPS
Available-for-sale fixed income securities	\$2,210.6	\$2,208.0	\$2,205.4	\$2,202.8	\$2,200.3	\$2,197.7	\$2,195.1

	- 150 BPS	- 100 BPS	- 50 BPS	Fair Value as of December 31, 2017	+ 50 BPS	+ 100 BPS	+ 150 BPS
Available-for-sale fixed income securities	\$2,387.8	\$2,380.4	\$2,372.9	\$2,365.5	\$2,358.0	\$2,350.6	\$2,343.2

Foreign Currency Risk and Foreign Exchange Forward Contracts

Periodically, we use derivatives to hedge against fluctuations in foreign exchange rates. We do not enter into derivatives for speculative or trading purposes.

We use foreign currency forward contracts to mitigate variability in gains and losses generated from the re-measurement of certain monetary assets and liabilities denominated in foreign currencies. These foreign exchange forward contracts typically have maturities of approximately three months.

Our sales and costs of product revenues are primarily denominated in U.S. Dollars. Our cost of service revenue and operating expenses are denominated in U.S. Dollars as well as other foreign currencies, including the British Pound, Chinese Yuan, Euro, and the Indian Rupee. Approximately 78% of such costs and operating expenses are denominated in U.S. Dollars. Periodically, we use foreign currency forward and/or option contracts to hedge certain forecasted foreign currency transactions to reduce variability in cost of service revenue and operating expenses caused by non-U.S. Dollar denominated operating expense and costs. In designing a specific hedging approach, we consider several factors, including offsetting exposures, significance of exposures, costs associated with entering into a

particular hedge instrument, and potential effectiveness of the hedge. These derivatives are designated as cash flow hedges and have maturities of seventeen months or less. The change in operating expenses including cost of service revenue, research and development, sales and marketing, and general and administrative expenses, due to foreign currency fluctuations was a reduction to operating expenses of 0.1% for both years ended December 31, 2018 and December 31, 2017, respectively. See Note 5, Derivative Instruments, in Notes to Consolidated Financial Statements in Item 8 of Part II of this Report for further discussion of our derivative and hedging activity.

We have performed a sensitivity analysis as of December 31, 2018 and as of December 31, 2017, using a modeling technique that measures the change in the amount of non-U.S. dollar cash, cash equivalents and marketable securities arising from a hypothetical 10% movement in the levels of foreign currency exchange rates relative to the U.S. dollar, with all other variables held constant. The foreign currency exchange rates we used were based on market rates in effect on December 31, 2018 and December 31, 2017, respectively. The sensitivity analysis indicated that a hypothetical 10% movement in foreign currency exchange rates would change the amount of cash, cash equivalents, and investments we would report in U.S. Dollars as of December 31, 2018 and December 31, 2017 by less than 1.1% and by less than 1%, respectively.

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Equity Price Risk

We have also invested in privately-held companies. Depending on the nature of these investments, some can be carried at cost, adjusted for changes from observable transactions for identical or similar investments of the same issuer, less impairment, and others can be carried at fair value. The carrying values of our investments in privately-held companies were \$90.4 million and \$83.0 million^(*) as of December 31, 2018 and December 31, 2017, respectively. The privately-held companies in which we invest can still be considered in the startup or development stages. These investments are inherently risky because the markets for the technologies or products these companies are developing are typically in the early stages and may never materialize. We could lose our entire investment in these companies. Our evaluation of investments in privately-held companies is based on the fundamentals of the businesses invested in, including, among other factors, the nature of their technologies and potential for financial return.

^(*) Prior to January 1, 2018, certain investments in privately-held companies were accounted for at cost less impairment. Realized gains or losses from sales or impairments were recognized in the Consolidated Statements of Operations.

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ITEM 8. Financial Statements and Supplementary Data

Juniper Network, Inc.

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Report of Independent Registered Public Accounting Firm

To the Stockholders and the Board of Directors of Juniper Networks, Inc.

Opinion on the Financial Statements

We have audited the accompanying consolidated balance sheets of Juniper Networks, Inc. (the Company) as of December 31, 2018 and 2017, the related consolidated statements of operations, comprehensive income, changes in stockholders' equity and cash flows for each of the three years in the period ended December 31, 2018, and the related notes and the financial statement schedule listed in the Index at Item 15(a)2 (collectively referred to as the "consolidated financial statements"). In our opinion, the consolidated financial statements present fairly, in all material respects, the financial position of the Company at December 31, 2018 and 2017, and the results of its operations and its cash flows for each of the three years in the period ended December 31, 2018, in conformity with U.S. generally accepted accounting principles.

We also have audited, in accordance with the standards of the Public Company Accounting Oversight Board (United States) (PCAOB), the Company's internal control over financial reporting as of December 31, 2018, based on criteria established in Internal Control-Integrated Framework issued by the Committee of Sponsoring Organizations of the Treadway Commission (2013 framework) and our report dated February 22, 2019 expressed an unqualified opinion thereon.

Adoption of ASU 2014-09

As discussed in Note 2 to the consolidated financial statements, the Company changed its method for recognizing revenue as a result of the adoption of Accounting Standards Update (ASU) No. 2014-09, Revenue from Contracts with Customers (Topic 606), and the amendments in ASU's 2015-14, 2016-10 and 2016-12 effective January 1, 2018.

Basis for Opinion

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

We conducted our audits in accordance with the standards of the PCAOB. Those standards require that we plan and perform the audit to obtain reasonable assurance about whether the financial statements are free of material misstatement, whether due to error or fraud. Our audits included performing procedures to assess the risks of material misstatement of the financial statements, whether due to error or fraud, and performing procedures that respond to those risks. Such procedures included examining, on a test basis, evidence regarding the amounts and disclosures in the financial statements. Our audits also included evaluating the accounting principles used and significant estimates made by management, as well as evaluating the overall presentation of the financial statements. We believe that our audits provide a reasonable basis for our opinion.

/s/ Ernst & Young LLP

We have served as the Company's auditor since 1996.
San Jose, California

February 22, 2019

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Report of Independent Registered Public Accounting Firm

To the Stockholders and the Board of Directors of Juniper Networks, Inc.

Opinion on Internal Control over Financial Reporting

We have audited Juniper Networks, Inc.'s internal control over financial reporting as of December 31, 2018, based on criteria established in Internal Control-Integrated Framework issued by the Committee of Sponsoring Organizations of the Treadway Commission (2013 framework) (the COSO criteria). In our opinion, Juniper Networks, Inc. (the Company) maintained, in all material respects, effective internal control over financial reporting as of December 31, 2018, based on the COSO criteria.

We also have audited, in accordance with the standards of the Public Company Accounting Oversight Board (United States) (PCAOB), the consolidated balance sheets of the Company as of December 31, 2018 and 2017, and the related consolidated statements of operations, comprehensive income, changes in stockholders' equity and cash flows for each of the three years in the period ended December 31, 2018, and the related notes and the financial statement schedule listed in the Index at Item 15(a)2 and our report dated February 22, 2019, expressed an unqualified opinion thereon.

Basis for Opinion

The Company's management is responsible 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 an opinion on the Company's internal control over financial reporting based on our audit. We are a public accounting firm registered with the PCAOB and are required to be independent with respect to the Company in accordance with the U.S. federal securities laws and the applicable rules and regulations of the Securities and Exchange Commission and the PCAOB.

We conducted our audit in accordance with the standards of the PCAOB. Those standards require that we plan and perform the audit to obtain reasonable assurance about whether effective internal control over financial reporting was maintained in all material respects.

Our audit included obtaining an understanding of internal control over financial reporting, assessing the risk that a material weakness exists, testing and evaluating the design and operating effectiveness of internal control based on the assessed risk, and performing such other procedures as we considered necessary in the circumstances. We believe that our audit provides a reasonable basis for our opinion.

Definition and Limitations of Internal Control Over Financial Reporting

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

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

/s/ Ernst & Young LLP

San Jose, California

February 22, 2019

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Management's Report on Internal Control Over Financial Reporting

The management of Juniper Networks, Inc. (the "Company") is responsible for establishing and maintaining adequate internal control over financial reporting for the Company. The Company's internal control over financial reporting is a process designed under the supervision of the Company's principal executive and principal financial officers to provide reasonable assurance regarding the reliability of financial reporting and the preparation of the Company's financial statements for external purposes in accordance with U.S. generally accepted accounting principles.

The 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 U.S. 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 Consolidated 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 the Company's internal control over financial reporting as of December 31, 2018, based on the framework set forth by the Committee of Sponsoring Organizations of the Treadway Commission in Internal Control - Integrated Framework as published in 2013. Based on that assessment, management concluded that, as of December 31, 2018, the Company's internal control over financial reporting was effective.

The effectiveness of the Company's internal control over financial reporting as of December 31, 2018 has been audited by Ernst & Young LLP, the independent registered public accounting firm that audits the Company's Consolidated Financial Statements, as stated in their report preceding this report, which expresses an unqualified opinion on the effectiveness of the Company's internal control over financial reporting as of December 31, 2018.

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Juniper Networks, Inc.
 Consolidated Statements of Operations
 (In millions, except per share amounts)

	Years Ended December 31,		
	2018	2017	2016
Net revenues:			
Product	\$3,107.1	\$3,446.2	\$3,528.9
Service	1,540.4	1,581.0	1,461.2
Total net revenues	4,647.5	5,027.2	4,990.1
Cost of revenues:			
Product	1,277.2	1,360.9	1,326.2
Service	629.1	594.2	559.4
Total cost of revenues	1,906.3	1,955.1	1,885.6
Gross margin	2,741.2	3,072.1	3,104.5
Operating expenses:			
Research and development	1,003.2	980.7	1,013.7
Sales and marketing	927.4	950.2	972.9
General and administrative	231.1	227.5	224.9
Restructuring charges	7.3	65.6	3.3
Total operating expenses	2,169.0	2,224.0	2,214.8
Operating income	572.2	848.1	889.7
Other expense, net	(39.5)	(36.3)	(62.3)
Income before income taxes	532.7	811.8	827.4
Income tax (benefit) provision	(34.2)	505.6	234.7
Net income	\$566.9	\$306.2	\$592.7
Net income per share:			
Basic	\$1.62	\$0.81	\$1.55
Diluted	\$1.60	\$0.80	\$1.53
Shares used in computing net income per share:			
Basic	349.0	377.7	381.7
Diluted	354.4	384.2	387.8

See accompanying Notes to Consolidated Financial Statements

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Juniper Networks, Inc.

Consolidated Statements of Comprehensive Income

(In millions)

	Years Ended December		
	31,	2017	2016
	2018		
Net income	\$566.9	\$306.2	\$592.7
Other comprehensive (loss) income, net of tax:			
Available-for-sale debt securities:			
Change in net unrealized gains and losses, net of tax benefit (provision) of \$1.0, (\$4.0), and \$0.7 for 2018, 2017, and 2016, respectively	0.6	4.5	0.8
Net realized (gains) losses reclassified into net income, net of tax provisions of zero, \$0.9, and \$0.5 for 2018, 2017, and 2016, respectively	0.9	(2.1)	(1.2)
Net change on available-for-sale debt securities, net of tax	1.5	2.4	(0.4)
Cash flow hedges:			
Change in net unrealized gains and losses, net of tax benefit (provision) of \$2.3, (\$4.4), and (\$0.8) for 2018, 2017, and 2016, respectively	(6.4)	15.7	(2.1)
Net realized (gains) losses reclassified into net income, net of tax provisions of \$0.3, \$2.4, and \$0.7 for 2018, 2017, and 2016, respectively	(1.2)	(5.2)	(1.1)
Net change on cash flow hedges, net of tax	(7.6)	10.5	(3.2)
Change in foreign currency translation adjustments	(12.4)	19.0	(14.5)
Other comprehensive (loss) income, net of tax	(18.5)	31.9	(18.1)
Comprehensive income	\$548.4	\$338.1	\$574.6

See accompanying Notes to Consolidated Financial Statements

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Juniper Networks, Inc.
 Consolidated Balance Sheets
 (In millions, except par values)

	December 31, 2018	December 31, 2017
ASSETS		
Current assets:		
Cash and cash equivalents	\$ 2,489.0	\$ 2,006.5
Short-term investments	1,070.1	1,026.1
Accounts receivable, net of allowance for doubtful accounts of \$4.9 and \$5.7 as of December 31, 2018 and 2017, respectively	754.6	852.0
Prepaid expenses and other current assets	268.1	299.9
Total current assets	4,581.8	4,184.5
Property and equipment, net	951.7	1,021.1
Long-term investments	199.0	988.4
Purchased intangible assets, net	118.5	128.1
Goodwill	3,108.8	3,096.2
Other long-term assets	403.5	415.5
Total assets	\$ 9,363.3	\$ 9,833.8
LIABILITIES AND STOCKHOLDERS' EQUITY		
Current liabilities:		
Accounts payable	\$ 208.8	\$ 217.6
Accrued compensation	221.0	186.0
Deferred revenue	829.3	1,030.3
Short-term portion of long-term debt	349.9	—
Other accrued liabilities	233.5	304.3
Total current liabilities	1,842.5	1,738.2
Long-term debt	1,789.1	2,136.3
Long-term deferred revenue	384.3	509.0
Long-term income taxes payable	404.4	650.6
Other long-term liabilities	119.8	118.8
Total liabilities	4,540.1	5,152.9
Commitments and contingencies (Note 16)		
Stockholders' equity:		
Convertible preferred stock, \$0.00001 par value; 10.0 shares authorized; none issued and outstanding	—	—
Common stock, \$0.00001 par value; 1,000.0 shares authorized; 346.4 shares and 365.5 shares issued and outstanding as of December 31, 2018 and 2017, respectively	—	—
Additional paid-in capital	7,672.8	8,042.1
Accumulated other comprehensive loss	(18.2) (5.4
Accumulated deficit	(2,831.4) (3,355.8
Total stockholders' equity	4,823.2	4,680.9
Total liabilities and stockholders' equity	\$ 9,363.3	\$ 9,833.8

See accompanying Notes to Consolidated Financial Statements

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Juniper Networks, Inc.

Consolidated Statements of Cash Flows

(In millions)

	Years Ended December 31,		
	2018	2017	2016
Cash flows from operating activities:			
Net income	\$566.9	\$306.2	\$592.7
Adjustments to reconcile net income to net cash provided by operating activities:			
Share-based compensation expense	217.1	187.5	224.6
Depreciation, amortization, and accretion	210.5	225.6	206.7
Deferred income taxes	42.6	(139.6)	55.9
Other	9.6	(14.5)	3.5
Changes in operating assets and liabilities, net of acquisitions:			
Accounts receivable, net	96.3	203.8	(263.5)
Prepaid expenses and other assets	(70.9)	43.0	(43.6)
Accounts payable	3.5	(10.1)	66.6
Accrued compensation	41.4	(42.8)	(19.5)
Income taxes payable	(269.2)	447.3	3.1
Other accrued liabilities	(11.4)	(2.1)	(1.6)
Deferred revenue	24.7	55.0	301.7
Net cash provided by operating activities	861.1	1,259.3	1,126.6
Cash flows from investing activities:			
Purchases of property and equipment	(147.4)	(151.2)	(214.7)
Purchases of available-for-sale debt securities	(1,228.5)	(1,882.9)	(1,598.0)
Proceeds from sales of available-for-sale debt securities	1,070.2	944.0	1,182.1
Proceeds from maturities and redemptions of available-for-sale debt securities	910.2	741.6	342.3
Purchases of equity securities	(17.5)	(14.9)	(25.2)
Proceeds from sales of equity securities	36.9	12.4	9.5
Proceeds from Pulse note receivable	—	75.0	—
Subsequent payments related to acquisitions in prior years	(42.7)	—	—
Payments for business acquisitions, net of cash and cash equivalents acquired	(16.4)	(27.0)	(113.0)
Net cash provided by (used in) investing activities	564.8	(303.0)	(417.0)
Cash flows from financing activities:			
Repurchase and retirement of common stock	(756.6)	(725.8)	(324.6)
Proceeds from issuance of common stock	56.9	64.5	62.3
Payment of dividends	(249.3)	(150.4)	(152.5)
Change in customer financing arrangement	(16.9)	16.9	—
Payment of debt	—	—	(300.0)
Issuance of debt, net	—	—	494.0
Other	(2.7)	—	(15.5)
Net cash used in financing activities	(968.6)	(794.8)	(236.3)
Effect of foreign currency exchange rates on cash, cash equivalents, and restricted cash	(10.6)	17.0	(14.0)
Net increase in cash, cash equivalents, and restricted cash	446.7	178.5	459.3
Cash, cash equivalents, and restricted cash at beginning of period	2,059.1	1,880.6	1,421.3
Cash, cash equivalents, and restricted cash at end of period	\$2,505.8	\$2,059.1	\$1,880.6
Supplemental disclosures of cash flow information:			
Cash paid for interest, net of amounts capitalized	\$94.0	\$93.9	\$92.8

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Cash paid for income taxes, net	\$181.0	\$193.5	\$173.9
Non-cash investing and financing activities:			
Construction costs for building with financing obligation	\$—	\$—	\$15.3
See accompanying Notes to Consolidated Financial Statements			

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Juniper Networks, Inc.

Consolidated Statements of Changes in Stockholders' Equity
(In millions, except per share amounts)

	Shares	Common Stock and Additional Paid-In Capital	Accumulated Other Comprehensive Loss	Accumulated Deficit	Total Stockholders' Equity
Balance at December 31, 2015	384.0	\$8,334.8	\$ (19.2)	\$ (3,741.2)	\$ 4,574.4
Net income	—	—	—	592.7	592.7
Other comprehensive loss, net	—	—	(18.1)	—	(18.1)
Issuance of common stock	11.1	62.3	—	—	62.3
Repurchase and retirement of common stock	(14.0)	(191.3)	—	(133.3)	(324.6)
Share-based compensation expense	—	222.4	—	—	222.4
Tax effects from employee stock option plans	—	5.9	—	—	5.9
Payment of cash dividends (\$0.40 per share of common stock)	—	(152.5)	—	—	(152.5)
Balance at December 31, 2016	381.1	8,281.6	(37.3)	(3,281.8)	4,962.5
Net income	—	—	—	306.2	306.2
Other comprehensive income, net	—	—	31.9	—	31.9
Issuance of common stock	10.7	64.5	—	—	64.5
Repurchase and retirement of common stock	(26.3)	(354.6)	—	(371.2)	(725.8)
Share-based compensation expense	—	188.2	—	—	188.2
Payment of cash dividends (\$0.40 per share of common stock)	—	(150.4)	—	—	(150.4)
Cumulative adjustment for share-based compensation expense upon adoption of Accounting Standards Update ("ASU") 2016-09, net of tax	—	12.8	—	(9.0)	3.8
Balance at December 31, 2017	365.5	8,042.1	(5.4)	(3,355.8)	4,680.9
Net income	—	—	—	566.9	566.9
Other comprehensive loss, net	—	—	(18.5)	—	(18.5)
Issuance of common stock	10.4	56.9	—	—	56.9
Repurchase and retirement of common stock	(29.5)	(395.1)	—	(361.5)	(756.6)
Share-based compensation expense	—	218.2	—	—	218.2
Payments of cash dividends (\$0.72 per share of common stock)	—	(249.3)	—	—	(249.3)
Cumulative adjustment upon adoption of ASU 2014-09 ("Topic 606"), net	—	—	—	324.7	324.7
Reclassification of tax effects upon adoption of ASU 2018-02	—	—	5.7	(5.7)	—
Balance at December 31, 2018	346.4	\$7,672.8	\$ (18.2)	\$ (2,831.4)	\$ 4,823.2

See accompanying Notes to Consolidated Financial Statements

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Juniper Networks, Inc.

Notes to Consolidated Financial Statements

Note 1. Description of Business and Basis of Presentation

Description of Business

Juniper Networks, Inc. (the “Company” or “Juniper”) designs, develops, and sells products and services for high-performance networks, to enable customers to build scalable, reliable, secure and cost-effective networks for their businesses, while achieving agility and improved operating efficiency through automation. The Company sells high-performance routing, switching, and security networking products and service offerings to customers within its verticals: Cloud, Service Provider, and Enterprise who view the network as critical to their success.

Basis of Presentation

The Consolidated Financial Statements, which include the Company and its wholly-owned subsidiaries, are prepared in accordance with U.S. generally accepted accounting principles (“U.S. GAAP”). All intercompany balances and transactions have been eliminated.

The Company adopted Financial Accounting Standards Board (“FASB”) ASU No. 2016-18 (Topic 230) Statement of Cash Flow: Restricted Cash, effective January 1, 2018, using the retrospective transition method. Restricted cash of \$47.4 million and \$52.6 million has been included within cash, cash equivalents, and restricted cash when reconciling the beginning and ending total amounts, respectively, on the statement of cash flows for the year ended December 31, 2017, and restricted cash of \$0.4 million and \$47.4 million has been included within cash, cash equivalents, and restricted cash when reconciling the beginning and ending total amounts, respectively, on the statement of cash flows for the year ended December 31, 2016, to conform to the current period presentation. The adoption did not have a material impact on the cash flow activity presented on the Company's Consolidated Statement of Cash Flows for the years ended December 31, 2017 and 2016. See Note 4, Cash Equivalents and Investments, for a reconciliation of the cash balances within the Consolidated Statements of Cash Flows to the Consolidated Balance Sheets.

Note 2. Significant Accounting Policies

Use of Estimates

The preparation of the financial statements and related disclosures in accordance with U.S. GAAP requires the Company to make judgments, assumptions, and estimates that affect the amounts reported in the Consolidated Financial Statements and the accompanying notes. The Company bases its estimates and assumptions on current facts, historical experience, and various other factors that it believes are reasonable under the circumstances, to determine the carrying values of assets and liabilities that are not readily apparent from other sources. To the extent there are material differences between the Company's estimates and the actual results, the Company's future consolidated results of operation may be affected.

Cash, Cash Equivalents, and Investments

Cash and Cash Equivalents

Cash and cash equivalents consist of cash on hand, demand deposits with banks, highly liquid investments in money market funds, commercial paper, government securities, certificates of deposits, time deposits, and corporate debt

securities, which are readily convertible into cash. All highly liquid investments with original maturities of three months or less from Juniper's purchase date are classified as cash equivalents.

Investments in Available-for-Sale Debt Securities

The Company's investments in debt securities are classified as available-for-sale and include the Company's fixed income securities and investments in privately-held companies, consisting of debt and redeemable preferred stock securities. Fixed income securities are initially recorded at cost and periodically adjusted to fair value in the Consolidated Balance Sheets. Unrealized gains and losses on these investments are reported as a separate component of accumulated other comprehensive loss in the Consolidated Balance Sheets. Realized gains and losses are determined based on the specific identification method and are reported in the Consolidated Statements of Operations.

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Juniper Networks, Inc.

Notes to Consolidated Financial Statements (Continued)

Fixed income securities primarily consist of asset-backed securities, certificate of deposits, commercial paper, corporate debt securities, time deposits, foreign government debt securities, U.S. government agency securities, and U.S. treasury securities. The Company periodically evaluates these investments to determine if impairment charges are required. The Company considers various factors in determining whether to recognize an impairment charge, including the length of time the investment has been in a loss position, the extent to which the fair value has been less than the Company's cost basis, the investment's financial condition, and the near-term prospects of the investee. If the Company determines that the decline in an investment's value is other than temporary, the difference is recognized as an impairment loss in its Consolidated Statements of Operations.

The Company's privately-held debt and redeemable preferred stock securities are included in other long-term assets in the Consolidated Balance Sheets and are recorded at fair value. Fair value is reassessed when the Company is made aware of information indicating a change in the enterprise value of the investee, including known acquisition offers, subsequent funding rounds, and investee's plans for liquidation. The Company periodically evaluates these securities for indicators of impairment, including the inability to recover a portion of or the entire carrying amount of the investment, the inability of the investee to sustain earnings, the reduction in or termination of financial commitment to the investee from other investors, the intention to sell the investment, and whether it is more likely than not that the Company will be required to sell the investment before recovery of the entire amortized cost basis. If the Company determines that the decline in an investment's value is other than temporary, the difference is recognized as an impairment loss in its Consolidated Statements of Operations.

Investments in Equity Securities

The Company's investments in equity securities with readily determinable fair values consist of money market funds, the non-qualified compensation plan ("NQDC") that is invested in mutual funds, and investments in public companies. These investments are measured at fair value with changes in fair value recognized in the Consolidated Statements of Operations.

Equity securities without readily determinable fair values include the Company's investments in privately-held companies consisting of non-redeemable preferred stock and common stock securities. The Company accounts for these securities at cost, adjusted for changes from observable transactions for identical or similar investments of the same issuer, less impairments. Fair value of these equity securities is reassessed when the Company identifies observable price changes indicating that an adjustment upward or downward to the carrying value is necessary. Any observable changes in fair value are recognized in earnings as of the date that the observable transaction took place, rather than the current reporting date. In addition, the Company periodically evaluates equity securities without readily determinable fair values to determine if impairment charges are required by evaluating whether an event or change in circumstance has occurred that may have a significant adverse effect on the fair value of the investment. A qualitative assessment is performed each reporting period to assess whether there are any impairment indicators, including, but not limited to, significant deterioration in the investee's earnings performance; credit rating; asset quality or business prospects; adverse change in the regulatory, economic, or technological environment; change in the general market condition of the geographic area or industry; acquisition offers; and the ability to continue as a going concern. If such indicators are present, the Company estimates the fair value of impaired investments and recognizes an impairment loss in the Consolidated Statement of Operations equal to the difference between the carrying value and fair value.

Fair Value

Fair value is defined as the price that would be received upon sale of an asset or paid to transfer a liability in an orderly transaction between market participants at the measurement date. When determining fair value, the Company

considers the principal or most advantageous market in which it transacts, and considers assumptions that market participants would use when pricing the asset or liability. The Company applies the following fair value hierarchy, which prioritizes the inputs used to measure fair value into three levels and bases the categorization within the hierarchy upon the lowest level of input that is available and significant to the fair value measurement:

Level 1 – Quoted prices in active markets for identical assets or liabilities.

Level 2 – Quoted prices for similar assets and liabilities in active markets or inputs that are observable for the asset or liability, either directly or indirectly through market corroboration, for substantially the full term of the financial instrument. These inputs are valued using market based approaches.

Level 3 – Inputs are unobservable inputs based on the Company’s assumptions. These inputs, if any, are valued using internal financial models.

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Juniper Networks, Inc.

Notes to Consolidated Financial Statements (Continued)

Derivatives

The Company uses derivatives to partially offset its market exposure to fluctuations in certain foreign currencies. The Company does not enter into derivatives for speculative or trading purposes.

The Company uses foreign currency forward contracts to hedge certain forecasted foreign currency transactions relating to operating expenses. These derivatives are designated as cash flow hedges. These derivatives are carried at fair value and the effective portion of the derivative's gain or loss is initially reported as a component of accumulated other comprehensive loss, and upon occurrence of the forecasted transaction, is subsequently reclassified into the costs of services or operating expense line item to which the hedged transaction relates. The Company records any ineffectiveness of the hedging instruments in other expense, net, on its Consolidated Statements of Operations. Cash flows from such hedges are classified as operating activities.

The Company also uses foreign currency forward contracts to mitigate variability in gains and losses generated from the re-measurement of certain monetary assets and liabilities denominated in non-functional currencies. These derivatives are carried at fair value with changes recorded in other expense, net in the Consolidated Statements of Operations in the same period as the changes in the fair value from the re-measurement of the underlying assets and liabilities. Cash flows from such derivatives are classified as operating activities.

The Company presents its derivative assets and derivative liabilities on a gross basis in the Consolidated Balance Sheets. However, under agreements containing provisions on netting with certain counterparties of foreign exchange contracts, subject to applicable requirements, the Company is allowed to net-settle transactions on the same date in the same currency, with a single net amount payable by one party to the other. The Company is neither required to pledge nor entitled to receive cash collateral related to these derivative transactions.

Inventory

Inventory consists primarily of component parts to be used in the manufacturing process and finished goods in-transit, and is stated at the lower of cost or net realizable value. Cost is computed using standard cost, which approximates actual cost, on a first-in, first-out basis. A charge is recorded to cost of product when inventory is determined to be in excess of anticipated demand or considered obsolete. At the point of loss recognition, a new, lower-cost basis for that inventory is established, and subsequent changes in facts and circumstances do not result in the restoration or increase in the newly established cost basis.

Property and Equipment

Property and equipment are recorded at cost less accumulated depreciation. Depreciation is calculated using the straight-line method, over the estimated useful lives of the following assets:

	Estimated Useful Life (years)
Computers, equipment, and software	1.5 to 7
Furniture and fixtures	5 to 7
Building and building improvements	7 to 40
Land improvements	10 to 40
Leasehold improvements	Lease term, not to exceed 10 years

Construction in progress is related to the construction or development of property and equipment that have not yet been placed in service for their intended use.

Goodwill and Other Long-Lived Assets

Goodwill represents the future economic benefits arising from other assets acquired in a business combination that are not individually identified and separately recorded. The excess of the purchase price over the estimated fair value of net assets of businesses acquired in a business combination is recognized as goodwill. Goodwill is tested for impairment annually during the fourth quarter or more frequently if certain circumstances indicate the carrying value of goodwill is impaired. A qualitative assessment is first made to determine whether it is necessary to quantitatively test goodwill for impairment. This initial assessment includes, among others, consideration of macroeconomic conditions and financial performance. If the qualitative assessment indicates that it is more likely than not that an impairment exists, a quantitative analysis is performed by determining the fair value of each reporting unit using a combination of the income approach and the market approach. Based on the outcome of the quantitative

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Juniper Networks, Inc.

Notes to Consolidated Financial Statements (Continued)

assessments, the Company compares the estimated fair value of each reporting unit with their respective carrying values, including goodwill. An impairment loss is recognized to the extent that the carrying amount of goodwill exceeds the asset's implied fair value.

Other intangible assets acquired in a business combination related to in-process research and development ("IPR&D") projects are considered to be indefinite-lived until the completion or abandonment of the associated research and development efforts. Indefinite-lived intangibles are not amortized into the results of operations but instead are evaluated for impairment. If and when development is complete, the associated assets would be deemed finite-lived and would be amortized as cost of revenues over their respective estimated useful lives at that point in time. If the research and development project is abandoned, the acquired IPR&D assets are written off and charged to expense in the period of abandonment.

Long-lived assets, such as property, plant, and equipment, and purchased intangible assets subject to amortization, are reviewed for impairment whenever events or changes in circumstances indicate that the carrying amount of an asset may not be recoverable. Recoverability of assets to be held and used is measured by a comparison of the carrying amount of an asset, or asset group, to estimated undiscounted future cash flows expected to be generated by the asset, or asset group. An impairment charge is recognized by the amount by which the carrying amount of the asset, or asset group, exceeds its fair value.

The Company amortizes intangible assets with estimable useful lives on a straight-line basis over their useful lives.

Revenue Recognition

Revenue is recognized when promised goods or services are transferred to customers in an amount that reflects the consideration to which the Company expects to be entitled in exchange for those goods or services by following a five-step process, (1) identify the contract with a customer, (2) identify the performance obligations in the contract, (3) determine the transaction price, (4) allocate the transaction price, and (5) recognize revenue when or as the Company satisfies a performance obligation, as further described below.

Identify the contract with a customer. The Company generally considers a sales contract or agreement with an approved purchase order as a customer contract provided that collection is considered probable, which is assessed based on the creditworthiness of the customer as determined by credit checks, payment histories, and/or other circumstances. The Company combines contracts with a customer if contracts are negotiated with a single commercial substance or contain price dependencies.

Identify the performance obligations in the contract. Product performance obligations include hardware and software licenses and service performance obligations include maintenance, software post-contract support, training, and professional services. Certain software licenses and related post-contract support are combined into a single performance obligation when the maintenance updates are critical to the continued functionality of the software.

Determine the transaction price. The transaction price for the Company's contracts with its customers consists of both fixed and variable consideration provided it is probable that a significant reversal of revenue will not occur when the uncertainty related to variable consideration is resolved. Fixed consideration includes amounts to be contractually billed to the customer while variable consideration includes estimates for rights of return, rebates, and price protection, which are based on historical sales returns and price protection credits, specific criteria outlined in rebate agreements, and other factors known at the time. The Company generally invoices customers for hardware, software licenses and related maintenance arrangements at time of delivery, and professional services either upfront or upon

meeting certain milestones. Customer invoices are generally due within 30 to 90 days after issuance. The Company's contracts with customers typically do not include significant financing components as the period between the transfer of performance obligations and timing of payment are generally within one year.

Allocate the transaction price to the performance obligations in the contract. For contracts that contain multiple performance obligations, the Company allocates the transaction price to the performance obligations on a relative standalone selling price basis. Standalone selling prices are based on multiple factors including, but not limited to historical discounting trends for products and services, pricing practices in different geographies and through different sales channels, gross margin objectives, internal costs, competitor pricing strategies, and industry technology lifecycles.

Recognize revenue when or as the Company satisfies a performance obligation. Revenue for hardware and certain software licenses, are recognized at a point in time, which is generally upon shipment or delivery. Certain software licenses combined with post-contract support are recognized over time on a ratable basis over the term of the license. Revenue for maintenance and software

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Juniper Networks, Inc.

Notes to Consolidated Financial Statements (Continued)

post-contract support is recognized over time on a ratable basis over the contract term. Revenue from training and professional services is recognized over time as services are completed or ratably over the contractual period of generally one year or less.

Deferred Commissions

Sales commissions earned by the Company's sales force are considered incremental and recoverable costs of obtaining a contract with a customer. These costs are deferred and then amortized over a period of benefit which is typically over the term of the customer contracts as initial commission rates and renewal rates are the same. Amortization expense is included in sales and marketing expenses in the accompanying Consolidated Statements of Operations.

Allowance for Doubtful Accounts

The allowance for doubtful accounts is based on the Company's assessment of the collectability of customer accounts. The Company regularly reviews its receivables that remain outstanding past their applicable payment terms and establishes an allowance by considering factors such as historical experience, credit quality, and age of the accounts receivable balances, and current economic conditions that may affect a customer's ability to pay.

Warranty Reserves

The Company generally offers a one-year warranty on most of its hardware products, and a 90-day warranty on the media that contains the software embedded in the products. Warranty costs are recognized as part of the Company's cost of sales based on associated material costs, logistics costs, labor costs, and overhead at the time revenue is recognized. Material costs are estimated primarily based upon the historical costs to repair or replace product returns within the warranty period. Labor, logistics and overhead costs are estimated primarily based upon historical trends in the cost to support customer cases within the warranty period.

Contract Manufacturer Liabilities

The Company establishes a liability for non-cancelable, non-returnable purchase commitments with its contract manufacturers for carrying charges, quantities in excess of its demand forecasts, or obsolete material charges for components purchased by the contract manufacturers to meet the Company's demand forecast or customer orders. The demand forecasts are based upon historical trends and analysis from the Company's sales and marketing organizations, adjusted for overall market conditions.

Research and Development

Costs to research, design, and develop the Company's products are expensed as incurred.

Software Development Costs

Capitalization of software development costs for software to be sold, leased, or otherwise marketed begins when a product's technological feasibility has been established and ends when a product is available for general release to customers. Generally, the Company's products are released soon after technological feasibility has been established. As a result, costs incurred between achieving technological feasibility and product general availability have not been significant.

The Company capitalizes costs associated with internal-use software systems during the application development stage. Such capitalized costs include external direct costs incurred in developing or obtaining the applications and payroll and payroll-related costs for employees, who are directly associated with the development of the applications.

Advertising

Advertising costs are charged to sales and marketing expense as incurred. Advertising expense was \$20.0 million, \$19.9 million, and \$15.8 million, for 2018, 2017, and 2016, respectively.

Foreign Currency

Assets and liabilities of foreign operations with non-U.S. Dollar functional currency are translated to U.S. Dollars using exchange rates in effect at the end of the period. Revenue and expenses are translated to U.S. Dollars using rates that approximate those in

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Juniper Networks, Inc.

Notes to Consolidated Financial Statements (Continued)

effect during the period. The resulting translation adjustments are included in the Company's Consolidated Balance Sheets in the stockholders' equity section as a component of accumulated other comprehensive loss. The Company records foreign exchange transaction gains and losses for assets and liabilities denominated in non-functional currencies. These remeasurement adjustments are recorded in other expense, net in the Consolidated Statements of Operations.

Loss Contingencies

The Company is subject to the possibility of various loss contingencies arising in the ordinary course of business. Management considers the likelihood of loss related to an asset, or the incurrence of a liability, as well as its ability to reasonably estimate the amount of loss, in determining loss contingencies. An estimated loss contingency is accrued when it is probable that an asset has been impaired or a liability has been incurred and the amount of loss can be reasonably estimated. The Company regularly evaluates current information available to determine whether such accruals should be adjusted and whether new accruals are required.

Share-Based Compensation

The Company measures and recognizes compensation cost for all share-based awards made to employees and directors, including employee stock options, restricted stock awards ("RSAs"), restricted stock units ("RSUs"), performance share awards ("PSAs") and employee stock purchases related to the Employee Stock Purchase Plan ("ESPP"). For service condition only awards, share-based compensation expense is based on the fair value of the underlying awards and amortized on a straight-line basis. For PSAs and market-based RSUs, share-based compensation expense is amortized on a straight-line basis for each separate vesting portion of the awards. The Company accounts for forfeitures as they occur.

The Company utilizes the Black-Scholes-Merton ("BSM") option-pricing model to estimate the fair value of its ESPP purchase rights. The BSM model requires various highly subjective assumptions that represent management's best estimates of volatility, risk-free interest rate, expected life, and dividend yield. The Company estimates expected volatility based on the implied volatility of market-traded options, on the Company's common stock, adjusted for other relevant factors including historical volatility of the Company's common stock over the most recent period commensurate with the estimated expected life of the Company's ESPP. The expected life of ESPP purchase rights approximates the offering period.

The Company determines the grant date fair value of its RSUs, RSAs, and PSAs based on the closing market price of the Company's common stock on the date of grant, adjusted by the present value of the dividends expected to be paid on the underlying shares of common stock during the requisite and derived service period as these awards are not entitled to receive dividends until vested.

For market-based RSUs, the Company estimates the fair value and derived service period using the Monte Carlo simulation option pricing model ("Monte Carlo model"). The determination of the grant date fair value and derived service periods using the Monte Carlo model is affected by the Company's stock price, comparative market-based returns, as well as various highly subjective assumptions that represent management's best estimates of volatility, risk-free interest rate, and dividend yield. The Company estimates expected volatility based on the implied volatility of market-traded options, on the Company's common stock, adjusted for other relevant factors including historical volatility of the Company's common stock over the contractual life of the Company's market-based RSUs.

Provision for Income Taxes

Deferred tax assets and liabilities are recognized for the expected tax consequences of temporary differences between the tax bases of assets and liabilities and their reported amounts. Valuation allowances are recorded to reduce deferred tax assets to the amount that will more likely than not be realized.

The Company accounts for uncertainty in income taxes using a two-step approach to recognize and measure uncertain tax positions. The first step is to evaluate the tax position for recognition by determining if the weight of available evidence indicates that it is more likely than not that the position will be sustained on audit, including resolution of related appeals or litigation processes, if any. The second step is to measure the tax benefit as the largest amount that is more than 50% likely of being realized upon settlement. The Company classifies the liability for unrecognized tax benefits as current to the extent that the Company anticipates payment (or receipt) of cash within one year. Interest and penalties related to uncertain tax positions are recognized in the provision for income taxes.

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Juniper Networks, Inc.

Notes to Consolidated Financial Statements (Continued)

Concentrations of Risk

Financial instruments that subject the Company to concentrations of credit risk consist primarily of cash and cash equivalents, investments, derivatives, and accounts receivable. The Company invests only in high-quality credit instruments and maintains its cash, cash equivalents and available-for-sale investments in fixed income securities with several high-quality institutions. Deposits held with banks, including those held in foreign branches of global banks, may exceed the amount of insurance provided on such deposits. We mitigate the concentration of credit risk in our investment portfolio through diversification of the investments in various industries and asset classes, and limits to the amount of credit exposure to any single issuer and credit rating.

The Company's derivatives expose it to credit risk to the extent that counterparties may be unable to meet the terms of the agreement. To mitigate concentration of risk related to its derivatives, the Company establishes counterparty limits to major credit-worthy financial institutions. In addition, the potential risk of loss with any one counterparty resulting from this type of credit risk is monitored and the derivatives transacted with these entities are relatively short in duration. Therefore, the Company does not expect material losses as a result of defaults by counterparties.

Generally, credit risk with respect to accounts receivable is diversified due to the number of entities comprising the Company's customer base and their dispersion across different geographic locations throughout the world. The Company performs ongoing credit evaluations of its customers and generally does not require collateral on accounts receivable. During the years ended December 31, 2018, 2017, and 2016, no single customer accounted for 10% or more of net revenues.

The Company relies on sole suppliers for certain of its components such as application-specific integrated circuits ("ASICs") and custom sheet metal. Additionally, the Company relies primarily on a limited number of significant independent contract manufacturers and original design manufacturers for the production of its products. The inability of any supplier or manufacturer to fulfill supply requirements of the Company could negatively impact future operating results.

Recently Adopted Accounting Standard

Comprehensive Income: Effective January 1, 2018, the Company early adopted FASB ASU No. 2018-02 (Topic 220), Income Statement - Reporting Comprehensive Income, issued in February 2018, with an election to reclassify stranded tax effects resulting from the U.S. Tax Cuts and Jobs Act (the "Tax Act"), from accumulated other comprehensive income to retained earnings. The adoption resulted in a reclassification of \$5.7 million in income from accumulated other comprehensive loss to accumulated deficit as of the adoption date. The comparative information has not been restated and continues to be reported under the accounting standards in effect for those periods.

Financial Instruments: On January 1, 2018, the Company adopted FASB ASU No. 2016-01, Financial Instruments—Overall: Recognition and Measurement of Financial Assets and Financial Liabilities and FASB ASU No. 2018-03, Technical Corrections and Improvements to Financial Instruments - Overall, which changes how entities classify and measure equity investments and present changes in the fair value of financial liabilities measured under the fair value option. The guidance also updates certain presentation and disclosure requirements. The Company adopted ASU 2016-01 as of January 1, 2018 using the modified retrospective method for its equity securities with readily determinable fair values and the prospective method for its equity securities without readily determinable fair values, resulting in no impact to the opening accumulated deficit balance. The Company has elected to use the measurement alternative for its equity investments without readily determinable fair value, defined as cost adjusted for changes from observable transactions for identical or similar investments of the same issuer, less impairment. See

Note 4, Cash Equivalents and Investments for additional disclosures required upon adopting the standard.

Revenue Recognition: On January 1, 2018, the Company adopted FASB ASU No. 2014-09 (Topic 606) - Revenue from Contracts with Customers ("ASU 2014-09" or "Topic 606"), which provides guidance for revenue recognition that superseded the revenue recognition requirements in Accounting Standards Codification ("ASC") Topic 605, Revenue Recognition ("Topic 605") and most industry specific guidance. Under ASU 2014-09, revenue is recognized when promised goods or services are transferred to customers in an amount that reflects the consideration to which the Company expects to be entitled in exchange for those goods or services. The Company adopted ASU 2014-09 under the modified retrospective approach, applying the amendments to prospective reporting periods. Results for reporting periods beginning after January 1, 2018 are presented under Topic 606, while prior period amounts are not adjusted and continue to be reported in accordance with the historic accounting under Topic 605.

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Juniper Networks, Inc.

Notes to Consolidated Financial Statements (Continued)

The cumulative effect of the changes made to the Company's Consolidated Balance Sheet as of January 1, 2018 for the adoption of Topic 606 to all contracts with customers that were not completed as of December 31, 2017 was recorded as an adjustment to accumulated deficit as of the adoption date as follows:

	December 31, 2017	Adjustments	January 1, 2018
	As reported		As adjusted
Assets:			
Accounts receivable, net of allowances	\$852.0	\$ (1.9)	\$850.1
Prepaid expenses and other current assets	299.9	31.5	331.4
Other long-term assets	415.5	(21.1)	394.4
Total assets	\$9,833.8	\$ 8.5	\$9,842.3
Liabilities:			
Deferred revenue	\$1,030.3	\$ (225.4)	\$804.9
Other accrued liabilities	304.3	33.8	338.1
Long-term deferred revenue	509.0	(124.6)	384.4
Total liabilities	\$5,152.9	\$ (316.2)	\$4,836.7
Stockholders' Equity:			
Accumulated deficit	\$(3,355.8)	\$ 324.7	\$(3,031.1)

Upon adoption, the Company recorded a cumulative effect adjustment of \$324.7 million, net of tax adjustment of \$63.9 million, which decreased the January 1, 2018 opening accumulated deficit balance on the Consolidated Balance Sheet, primarily as a result of the following items:

Distributor Sales: Under Topic 606, the Company recognizes revenue from sales to distributors upon delivery of the product to the distributor, rather than upon delivery of the product to the end-customer. Rebates and incentives offered to distributors, which are earned when sales to end-customers are completed, are estimated at the point of revenue recognition.

Software Revenue: Under Topic 605, the Company deferred revenue for software licenses where vendor-specific objective evidence of fair value had not been established for undelivered items (primarily services). Under Topic 606, revenue for software licenses is recognized at the time of delivery unless the ongoing services provide frequent, critical updates to the software, without which the software functionality would be rapidly diminished.

Variable Consideration: Some of the Company's contracts include penalties, extended payment terms, acceptance provisions or other price variability that precluded revenue recognition under Topic 605 because of the requirement for amounts to be fixed or determinable. Topic 606 requires the Company to estimate and account for variable consideration as a reduction of the transaction price.

Revenue Allocation: Similar to Topic 605, Topic 606 requires an allocation of revenue between deliverables, or performance obligations, within an arrangement. Topic 605 restricted the allocation of revenue that is contingent on future deliverables to current deliverables; however, Topic 606 removes this restriction. In addition, the nature of the performance obligations identified within a contract under Topic 606 as compared to Topic 605 will impact the allocation of the transaction price between product and services.

Contract Acquisition Costs: Topic 606 requires the deferral and amortization of “incremental” costs incurred to obtain a contract where the associated contract duration is greater than one year. The primary contract acquisition cost for the Company are sales commissions. Prior to January 1, 2018, the Company expensed sales commissions. The change required by Topic 606 resulted in the creation of an asset on January 1, 2018.

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Juniper Networks, Inc.

Notes to Consolidated Financial Statements (Continued)

The impact of the adoption of Topic 606 on the Company's Consolidated Statements of Operations and Consolidated Balance Sheet was as follows (in millions):

	Year Ended		
	December 31, 2018*		
	As Reported	Without Adoption of Topic 606	Topic 606 Impact
Net revenues:			
Product	\$3,107.1	\$3,006.8	\$100.3
Service	1,540.4	1,663.3	(122.9)
Total net revenues	\$4,647.5	\$4,670.1	\$(22.6)
Operating expenses:			
Sales and marketing	\$927.4	\$929.3	\$(1.9)

* Except as disclosed, the adoption of Topic 606 did not have a material impact on the Company's Consolidated Statements of Operations for the year ended December 31, 2018.

	As of December 31, 2018		
	As Reported	Without Adoption of Topic 606	Topic 606 Impact
Assets:			
Accounts receivable, net of allowances	\$754.6	\$746.3	\$8.3
Prepaid expenses and other current assets	268.1	241.6	26.5
Other long-term assets	403.5	400.4	3.1
Total assets	\$9,363.3	\$9,325.6	\$37.7
Liabilities:			
Deferred revenue	\$829.3	\$1,111.9	\$(282.6)
Other accrued liabilities	233.5	178.6	54.9
Long-term deferred revenue	384.3	431.8	(47.5)
Total liabilities	\$4,540.1	\$4,815.2	\$(275.1)
Stockholders' Equity:			
Accumulated deficit	\$(2,831.4)	\$(3,144.3)	\$312.9

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Juniper Networks, Inc.

Notes to Consolidated Financial Statements (Continued)

Recent Accounting Standards Not Yet Adopted

Cloud Computing Arrangement: In August 2018, the FASB issued ASU No. 2018-15 (Subtopic 350-40) Intangibles — Goodwill and Other—Internal-Use Software: Customer's Accounting for Implementation Costs Incurred in a Cloud Computing Arrangement That Is a Service Contract, which provides guidance on a customer's accounting for implementation, set-up, and other upfront costs incurred in a cloud computing arrangement that is hosted by a service contract. The new standard is to be applied on either a retrospective or prospective basis to all implementation costs incurred after the date of adoption. The standard is effective for interim and annual periods beginning after December 15, 2019, with early adoption permitted. The Company early adopted the standard effective January 1, 2019 and will prospectively apply the standard to all implementation costs incurred after the adoption date.

Fair Value Measurement: In August 2018, the FASB issued ASU No. 2018-13 (Topic 820) Disclosure Framework — Changes to the Disclosure Requirements for Fair Value Measurement, which eliminates, adds, and modifies certain disclosure requirements for fair value measurements under ASC 820. This ASU is to be applied on a prospective basis for certain modified or new disclosure requirements, and all other amendments in the standard are to be applied on a retrospective basis. The new standard is effective for interim and annual periods beginning after December 15, 2019, with early adoption permitted. The Company is currently evaluating the impact of adoption on the Consolidated Financial Statements.

Derivatives and Hedging: In August 2017, the FASB issued ASU No. 2017-12 (Topic 815) Derivatives and Hedging — Targeted Improvements to Accounting for Hedging Activities, and an amendment thereafter, which expands an entity's ability to hedge financial and nonfinancial risk components and amends how companies assess effectiveness as well as changes the presentation and disclosure requirements. The new standard is to be applied on a modified retrospective basis, and its amendment and presentation and disclosure requirements will be applied on a prospective basis. This standard along with its amendment is effective for interim and annual periods beginning after December 15, 2018, with early adoption permitted. The Company does not expect the adoption to have a material impact on the Consolidated Financial Statements.

Amortization on Purchased Callable Debt Securities: In March 2017, the FASB issued ASU No. 2017-08 Receivables—Nonrefundable Fees and Other Costs (Subtopic 310-20): Premium Amortization on Purchased Callable Debt Securities which shortens the amortization period for the premium on certain purchased callable debt securities to the earliest call date. The ASU will not impact debt securities held at a discount. This standard is effective for annual reporting periods beginning after December 15, 2018, including interim reporting periods within those annual reporting periods, and is to be applied on a modified retrospective basis with early adoption permitted. The adoption of this standard will not have an impact on the Consolidated Financial Statements.

Simplifying the Test for Goodwill Impairment: In January 2017, the FASB issued ASU No. 2017-04 (Topic 350) Intangibles—Goodwill and Other: Simplifying the Test for Goodwill Impairment, which removes Step 2 of the goodwill impairment test, which requires a hypothetical purchase price allocation. Under the amended guidance, a goodwill impairment charge will now be recognized for the amount by which the carrying value of a reporting unit exceeds its fair value, not to exceed the carrying amount of goodwill. This ASU will be applied on a prospective basis and is effective for interim and annual periods beginning after December 15, 2019, with early adoption permitted for any impairment tests performed after January 1, 2017. The Company does not expect the adoption to have a material impact on the Consolidated Financial Statements.

Credit Losses on Financial Instruments: In June 2016, the FASB issued ASU No. 2016-13 (Topic 326) Financial Instruments—Credit Losses: Measurement of Credit Losses on Financial Instruments, which provides more

decision-useful information about the expected credit losses on financial instruments and changes the loss impairment methodology. Further amendment issued by the FASB in November 2018 clarifies that receivables arising from operating leases are not within the scope of Topic 326 and should be accounted for in accordance with Topic 842. This pronouncement and its amendment are effective for reporting periods beginning after December 15, 2019, and interim periods within those fiscal years, using a modified retrospective adoption method. Early adoption is permitted. The Company is currently evaluating the impact of adoption on the Consolidated Financial Statements.

Leases: In February 2016, the FASB issued ASU No. 2016-02 (Topic 842), Leases, and several amendments thereafter, which require recognition of right-of-use ("ROU") assets and lease liabilities for most leases on the Consolidated Balance Sheets by lessees. The guidance also requires enhanced disclosures. The ASU is effective for annual reporting periods beginning after December 15, 2018.

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Juniper Networks, Inc.

Notes to Consolidated Financial Statements (Continued)

The Company has adopted the standard on January 1, 2019 under the modified retrospective approach. Upon adoption, the Company elected:

the package of practical expedients which allows for not reassessing (1) whether existing contracts contain leases, (2) the lease classification for existing leases, and (3) whether existing initial direct costs meet the new definition.

the practical expedient in ASC Subtopic 842-10 to not separate non-lease components from lease components and instead account for each separate lease component and non-lease components associated with that lease component as a single lease component by class of the underlying asset.

not to recognize ROU assets and lease liabilities for short-term leases, which have a lease term of twelve months or less and do not include an option to purchase the underlying asset that the Company is reasonably certain to exercise.

The adoption of the standard resulted in recognition of ROU assets and lease liabilities of approximately \$200.0 million and \$230.0 million, respectively, on the Company's Consolidated Balance Sheets, primarily relating to real estate operating leases. The adoption of the standard did not result in a material impact on the Company's Consolidated Statements of Operations. Additionally, the adoption of the standard had no impact on the Company's debt-covenant compliance under its current agreements.

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Juniper Networks, Inc.

Notes to Consolidated Financial Statements (Continued)

Note 3. Business Combinations

The Company's Consolidated Financial Statements include the operating results of acquired businesses from the date of each acquisition. Pro forma results of operations for these acquisitions have not been presented as the financial impact to the Company's consolidated results of operations, both individually and in aggregate, is not material. The primary areas of the preliminary purchase price allocation that are subject to change relate to certain legal and income tax matters and residual goodwill.

The Company acquired HTBase Corporation ("HTBase") in 2018; Cyphort Inc. ("Cyphort") in 2017; and AppFormix, Inc. ("AppFormix"), Aurrion, Inc. ("Aurrion"), and BTI Systems Inc. ("BTI") in 2016. The following table summarizes the fair values of the assets acquired and liabilities assumed at the acquisition dates (in millions):

	2018	2017	2016		
	HTBase ⁽¹⁾	Cyphort ⁽²⁾	AppFormix	Aurrion	BTI ⁽²⁾
Net tangible assets acquired/(liabilities) assumed	\$ (1.0)	\$ 1.4	\$(5.3)	\$ 6.0	\$(19.7)
Intangible assets	7.8	15.4	20.3	49.0	43.3
Goodwill ⁽³⁾	14.4	16.7	32.9	46.9	20.2
Total	\$ 21.2	\$ 33.5	\$ 47.9	\$ 101.9	\$ 43.8

(1) The primary areas of the preliminary purchase price allocation that are subject to change relate to certain legal and income tax matters.

(2) See Note 7, Goodwill and Purchased Intangible Assets, for adjustments made during the measurement period subsequent to the acquisition dates.

(3) The goodwill recognized for these acquisitions was primarily attributable to expected synergies and is not deductible for U.S. federal income tax purposes.

The following table summarizes the fair value of the separately identifiable intangible assets at the time of acquisition and the period over which each intangible asset will be amortized (in millions, except years):

	2018		2017		2016					
	HTBase	Cyphort	AppFormix	Aurrion	BTI					
	Weighted	Weighted	Weighted	Weighted	Weighted					
	Average	Average	Average	Average	Average					
	Estimated	Estimated	Estimated	Estimated	Estimated	Estimated	Estimated	Estimated	Estimated	
	Useful	Useful	Useful	Useful	Useful	Useful	Useful	Useful	Useful	
	Life	Life	Life	Life	Life	Life	Life	Life	Life	
	(In Years)	(In Years)	(In Years)	(In Years)	(In Years)	(In Years)	(In Years)	(In Years)	(In Years)	
Finite-lived intangible assets:										
Existing technology	4	\$ 7.8	5	\$ 15.4	5	\$ 20.1	—	\$ —	8	\$ 37.1
Customer relationships	—	—	—	—	1	0.2	—	—	8	5.3
Other	—	—	—	—	—	—	—	—	1	0.9
Total intangible assets with finite lives		7.8		15.4		20.3		—		43.3
Indefinite-lived intangible assets:										
IPR&D		—		—		—		49.0		—
		\$ 7.8		\$ 15.4		\$ 20.3		\$ 49.0		\$ 43.3

Total intangible
assets acquired

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Juniper Networks, Inc.

Notes to Consolidated Financial Statements (Continued)

2018 Acquisition

HTBase

On December 7, 2018, the Company acquired 100% of the equity of HTBase for \$19.6 million of cash. The acquisition of HTBase, a software company that has developed a unique and disruptive platform for software-defined enterprise multicloud, is expected to accelerate Juniper's leadership in multicloud and function with the compute orchestration capabilities of Contrail Enterprise Multicloud.

Prior to the acquisition, the Company had an outstanding promissory note and bridge notes totaling \$1.6 million, measured at fair value, which were effectively settled upon acquisition.

Under the terms of the acquisition agreement with HTBase, the Company granted certain share-based awards to continuing employees in substitution of awards held by such employees, which were granted in contemplation of future services. The fair value of these share-based awards was \$3.8 million, which will be expensed as share-based compensation over the remaining service period.

2017 Acquisition

Cyphort

On September 18, 2017, the Company acquired 100% of Cyphort for \$33.5 million of cash. The acquisition of Cyphort, a software company providing security analytics for advanced threat defense, is expected to strengthen Juniper's security product portfolio.

Under the terms of the acquisition agreement with Cyphort, the Company assumed certain share-based awards for continuing employees, which were granted in contemplation of future services. The fair value of these share-based awards was \$3.8 million, which will be expensed as share-based compensation over the remaining service period.

2016 Acquisitions

AppFormix

On December 6, 2016, the Company acquired 100% of AppFormix for \$47.9 million of cash. AppFormix was a company focused on cloud infrastructure optimization software. The Company acquired AppFormix on the expectation that it would complement the analytics and capabilities of Contrail and help its customers enhance their cloud operations.

Under the terms of the acquisition agreement, the Company assumed share-based awards for continuing employees from the acquisition of AppFormix, which were granted in contemplation of future services. The fair value of these share-based awards was \$23.9 million, which will be expensed as share-based compensation over the remaining service period.

Aurrion

On August 9, 2016, the Company acquired the remaining ownership interest in Aurrion, increasing its ownership from 18% to 100%, for \$74.3 million of cash. Aurrion, was a privately-held provider of fabless silicon photonic technology.

The Company acquired Aurrion on the expectation that it would strengthen the Company's long-term competitive advantage in cost-effective, high-density, high-speed networks.

Prior to the acquisition, the Company had a pre-existing investment in Aurrion's equity and also held convertible debt that were remeasured to fair value of \$17.2 million and \$10.4 million, respectively, based upon the perspective of a market participant when estimating the fair value.

Under the terms of the acquisition agreement, the Company assumed share-based awards for continuing employees from the acquisition of Aurrion, which were granted in contemplation of future services. The fair value of these share-based awards was \$55.0 million, which will be expensed as share-based compensation over the remaining service period.

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Juniper Networks, Inc.

Notes to Consolidated Financial Statements (Continued)

Additionally, the Company acquired IPR&D consisting of existing research and development projects that had not yet reached technological feasibility at the time of the acquisition. The acquired IPR&D involves technology for cost-effective, high-speed networks. The IPR&D was valued using the multi-period excess earnings method under the income approach by discounting forecasted cash flows directly related to the products expected to result from the associated project.

BTI

On April 1, 2016, the Company acquired the remaining ownership interest in BTI, increasing its ownership from 12% to 100%, for \$25.8 million of cash. BTI was a privately-held provider of cloud and metro networking systems and software to content, cloud, and service providers. The Company acquired BTI on the expectation that this would help to accelerate the Company's ability to deliver open and automated packet optical transport solutions.

Prior to the acquisition, the Company had a pre-existing investment in BTI's equity and remeasured the investment to its fair value of \$17.1 million, which was based upon the perspective of a market participant when estimating the fair value. The Company also held \$0.9 million of convertible debt measured at fair value and settled upon acquisition. The Company also repaid upon acquisition \$18.6 million of certain outstanding BTI liabilities assumed.

Additionally, under the terms of the acquisition agreement, the Company assumed share-based awards for continuing employees from the acquisition of BTI, which were granted in contemplation of future services. The fair value of these share-based awards was \$8.6 million, which will be expensed as share-based compensation over the remaining service period.

Acquisition Costs

The Company recognized \$4.4 million, \$2.1 million, and \$11.8 million of acquisition-related costs during the years ended December 31, 2018, December 31, 2017, and December 31, 2016, respectively. These acquisition-related costs were expensed in the period incurred within general and administrative expense in the Company's Consolidated Statements of Operations.

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Juniper Networks, Inc.

Notes to Consolidated Financial Statements (Continued)

Note 4. Cash Equivalents and Investments

Investments in Available-for-Sale Debt Securities

The following table summarizes the Company's unrealized gains and losses and fair value of investments designated as available-for-sale debt securities as of December 31, 2018 and December 31, 2017 (in millions):

	As of December 31, 2018				As of December 31, 2017			
	Amortized Cost	Gross Unrealized Gains	Gross Unrealized Losses	Estimated Fair Value	Amortized Cost	Gross Unrealized Gains	Gross Unrealized Losses	Estimated Fair Value
Fixed income securities:								
Asset-backed securities	\$46.8	\$ —	\$ (0.3)	\$46.5	\$287.1	\$ —	\$ (0.6)	\$286.5
Certificates of deposit	152.9	—	—	152.9	83.8	—	—	83.8
Commercial paper	393.6	—	—	393.6	217.1	—	—	217.1
Corporate debt securities	416.1	—	(3.1)	413.0	929.6	0.4	(3.0)	927.0
Foreign government debt securities	20.0	—	(0.1)	19.9	62.9	—	(0.2)	62.7
Time deposits	278.6	—	—	278.6	239.2	—	—	239.2
U.S. government agency securities	87.2	—	(0.2)	87.0	143.9	—	(0.7)	143.2
U.S. government securities	811.8	—	(0.5)	811.3	406.8	0.1	(0.9)	406.0
Total fixed income securities	2,207.0	—	(4.2)	2,202.8	2,370.4	0.5	(5.4)	2,365.5
Privately-held debt and redeemable preferred stock securities	16.6	37.4	—	54.0	15.9	37.4	—	53.3
Total available-for-sale debt securities	\$2,223.6	\$ 37.4	\$ (4.2)	\$2,256.8	\$2,386.3	\$ 37.9	\$ (5.4)	\$2,418.8
Reported as:								
Cash equivalents	\$936.5	\$ —	\$ —	\$936.5	\$351.0	\$ —	\$ —	\$351.0
Short-term investments	1,069.2	—	(1.9)	1,067.3	1,027.2	0.1	(1.2)	1,026.1
Long-term investments	201.3	—	(2.3)	199.0	992.2	0.4	(4.2)	988.4
Other long-term assets	16.6	37.4	—	54.0	15.9	37.4	—	53.3
Total	\$2,223.6	\$ 37.4	\$ (4.2)	\$2,256.8	\$2,386.3	\$ 37.9	\$ (5.4)	\$2,418.8

The following table presents the contractual maturities of the Company's total fixed income securities as of December 31, 2018 (in millions):

	Amortized Cost	Estimated Fair Value
Due in less than one year	\$ 2,005.7	\$2,003.8
Due between one and five years	201.3	199.0
Total	\$ 2,207.0	\$2,202.8

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Juniper Networks, Inc.

Notes to Consolidated Financial Statements (Continued)

The following tables present the Company's total fixed income securities that were in an unrealized loss position as of December 31, 2018 and December 31, 2017 (in millions):

	As of December 31, 2018					
	Less than 12 Months		12 Months or Greater		Total	
	Fair Value	Unrealized Loss	Fair Value	Unrealized Loss	Fair Value	Unrealized Loss
Fixed income securities:						
Asset-backed securities	\$3.1	\$ —	\$43	\$ (0.3)	\$46.1	\$ (0.3)
Corporate debt securities	72.6	(0.1)	330.7	(3.0)	403.3	(3.1)
Foreign government debt securities	1.5	—	18.4	(0.1)	19.9	(0.1)
U.S. government agency securities	2.0	—	45.2	(0.2)	47.2	(0.2)
U.S. government securities	344.0	—	63.5	(0.5)	407.5	(0.5)
Total fixed income securities	\$423.2	\$ (0.1)	\$500.8	\$ (4.1)	\$924.0	\$ (4.2)
	As of December 31, 2017					
	Less than 12 Months		12 Months or Greater		Total	
	Fair Value	Unrealized Loss	Fair Value	Unrealized Loss	Fair Value	Unrealized Loss
Fixed income securities:						
Asset-backed securities	\$215.2	\$ (0.4)	\$38.4	\$ (0.2)	\$253.6	\$ (0.6)
Corporate debt securities	646.7	(2.1)	108.6	(0.9)	755.3	(3.0)
Foreign government debt securities	47.3	(0.2)	6.6	—	53.9	(0.2)
U.S. government agency securities	68.3	(0.2)	67.9	(0.5)	136.2	(0.7)
U.S. government securities	260.8	(0.7)	51.8	(0.2)	312.6	(0.9)
Total fixed income securities	\$1,238.3	\$ (3.6)	\$273.3	\$ (1.8)	\$1,511.6	\$ (5.4)

As of December 31, 2018, the Company had 490 investments in unrealized loss positions. The gross unrealized losses related to these investments were primarily due to changes in market interest rates. The Company does not intend to sell these investments and does not believe that it is more likely than not it will be required to sell any of these investments before recovery of the entire amortized cost basis, therefore the Company has determined that no other-than-temporary impairments associated with credit losses were required to be recognized during the years ended December 31, 2018, 2017, and 2016.

During the years ended December 31, 2018, 2017, and 2016, there were no material gross realized gains or losses from available-for-sale debt securities.

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Juniper Networks, Inc.

Notes to Consolidated Financial Statements (Continued)

Investments in Equity Securities

The following table presents the Company's investments in equity securities as of December 31, 2018 and 2017 (in millions):

	As of December 31,	
	2018	2017
Equity investments with readily determinable fair value		
Money market funds ⁽¹⁾	\$996.9	\$969.8
Mutual funds ⁽²⁾	24.3	27.6
Publicly-traded equity securities	2.8	—
Equity investments without readily determinable fair value ⁽³⁾	36.4	29.7
Total equity securities	\$1,060.4	\$1,027.1
Reported as:		
Cash equivalents	\$985.3	\$928.0
Short-term investments	2.8	—
Prepaid expenses and other current assets	10.9	36.3
Other long-term assets	61.4	62.8
Total	\$1,060.4	\$1,027.1

-
- Prior to January 1, 2018, money market funds were classified as available-for-sale securities and accounted for at
- (1) fair value with unrealized gains and losses recognized in accumulated other comprehensive income (loss). Realized gains or losses from sales or impairments were recognized in the Consolidated Statements of Operations.
- (2) Prior to January 1, 2018, mutual funds related to the Company's NQDC plan were classified as trading securities. Unrealized gains or losses were recognized in the Consolidated Statements of Operations.
- Prior to January 1, 2018, certain investments in privately-held companies were accounted for at cost less
- (3) impairment. Realized gains or losses from sales or impairments were recognized in the Consolidated Statements of Operations.

During the year ended December 31, 2018, there were \$3.2 million in unrealized losses recognized for equity investments. During the years ended 2017, and 2016, there were no material unrealized gains or losses recognized for equity investments.

Restricted Cash and Investments

The Company has restricted cash and investments for: (i) amounts held in escrow accounts, as required in connection with certain acquisitions completed primarily between 2015 and 2018; (ii) amounts held under the Company's short-term disability plan in California; and (iii) amounts under the NQDC plan for senior-level employees. Restricted investments are designated as equity investments. As of December 31, 2018, the carrying value of restricted cash and investments was \$52.7 million, of which \$27.6 million was included in prepaid expenses and other current assets and \$25.1 million was included in other long-term assets on the Consolidated Balance Sheets.

The following table provides a reconciliation of cash, cash equivalents, and restricted cash included in the Consolidated Balance Sheets as of December 31, 2018 and December 31, 2017 (in millions):

As of December
31,

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	2018	2017
Cash and cash equivalents	\$2,489.0	\$2,006.5
Restricted cash included in Prepaid expenses and other current assets	16.8	49.6
Restricted cash included in Other long-term assets	—	3.0
Total cash, cash equivalents, and restricted cash	\$2,505.8	\$2,059.1

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Juniper Networks, Inc.

Notes to Consolidated Financial Statements (Continued)

Note 5. Fair Value Measurements

Assets and Liabilities Measured at Fair Value on a Recurring Basis

The following table provides a summary of assets and liabilities measured at fair value on a recurring basis and as reported in the Consolidated Balance Sheets (in millions):

	Fair Value Measurements at December 31, 2018				Fair Value Measurements at December 31, 2017			
	Quoted Prices in Active Markets For Identical Assets (Level 1)	Significant Other Observable Remaining Inputs (Level 2)	Significant Other Unobservable Remaining Inputs (Level 3)	Total	Quoted Prices in Active Markets For Identical Assets (Level 1)	Significant Other Observable Remaining Inputs (Level 2)	Significant Other Unobservable Remaining Inputs (Level 3)	Total
Assets:								
Available-for-sale debt securities:								
Asset-backed securities	\$—	\$46.5	\$ —	\$46.5	\$—	\$286.5	\$ —	\$286.5
Certificates of deposit	—	152.9	—	152.9	—	83.8	—	83.8
Commercial paper	—	393.6	—	393.6	—	217.1	—	217.1
Corporate debt securities	—	413.0	—	413.0	—	927.0	—	927.0
Foreign government debt securities	—	19.9	—	19.9	—	62.7	—	62.7
Time deposits	—	278.6	—	278.6	—	239.2	—	239.2
U.S. government agency securities	—	87.0	—	87.0	—	143.2	—	143.2
U.S. government securities	352.8	458.5	—	811.3	322.4	83.6	—	406.0
Privately-held debt and redeemable preferred stock securities	—	—	54.0	54.0	—	—	53.3	53.3
Total available-for-sale debt securities	352.8	1,850.0	54.0	2,256.8	322.4	2,043.1	53.3	2,418.8
Equity securities:								
Money market funds ⁽¹⁾	996.9	—	—	996.9	969.8	—	—	969.8
Mutual funds ⁽²⁾	24.3	—	—	24.3	27.6	—	—	27.6
Publicly-traded equity securities	2.8	—	—	2.8	—	—	—	—
Total equity securities	1,024.0	—	—	1,024.0	997.4	—	—	997.4
Derivative assets:								
Foreign exchange contracts	—	5.3	—	5.3	—	9.2	—	9.2
Total assets measured at fair value	\$1,376.8	\$1,855.3	\$ 54.0	\$3,286.1	\$1,319.8	\$2,052.3	\$ 53.3	\$3,425.4
Liabilities:								
Derivative liabilities:								

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Foreign exchange contracts	\$—	\$(7.1)	\$ —	\$(7.1)	\$—	\$(1.8)	\$ —	\$(1.8)
Total liabilities measured at fair value	\$—	\$(7.1)	\$ —	\$(7.1)	\$—	\$(1.8)	\$ —	\$(1.8)
Total assets, reported as:								
Cash equivalents	\$1,025.2	\$896.6	\$ —	\$1,921.8	\$928.1	\$350.9	\$ —	\$1,279.0
Short-term investments	297.5	772.6	—	1,070.1	247.5	778.6	—	1,026.1
Long-term investments	18.2	180.8	—	199.0	74.8	913.6	—	988.4
Prepaid expenses and other current assets	10.8	5.3	—	16.1	36.3	9.2	—	45.5
Other long-term assets	25.1	—	54.0	79.1	33.1	—	53.3	86.4
Total assets measured at fair value	\$1,376.8	\$1,855.3	\$ 54.0	\$3,286.1	\$1,319.8	\$2,052.3	\$ 53.3	\$3,425.4
Total liabilities, reported as:								
Other accrued liabilities	\$—	\$(7.1)	\$ —	\$(7.1)	\$—	\$(1.8)	\$ —	\$(1.8)
Total liabilities measured at fair value	\$—	\$(7.1)	\$ —	\$(7.1)	\$—	\$(1.8)	\$ —	\$(1.8)

-
- Balance includes \$11.6 million and \$16.8 million in restricted investments measured at fair value, related to the
- (1) Company's acquisition-related escrows for the years ended December 31, 2018 and 2017, respectively. The December 31, 2017 balance also includes \$25.0 million related to the Company's Directors and Officers indemnification trust, which was subsequently terminated.
- (2) Balance relates to restricted investments measured at fair value related to the Company's NQDC plan.

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Juniper Networks, Inc.

Notes to Consolidated Financial Statements (Continued)

The Company's Level 2 available-for-sale debt securities are priced using quoted market prices for similar instruments or non-binding market prices that are corroborated by observable market data. The Company uses inputs such as actual trade data, benchmark yields, broker/dealer quotes, or alternative pricing sources with reasonable levels of price transparency which are obtained from quoted market prices, independent pricing vendors, or other sources, to determine the ultimate fair value of these assets. The Company's derivative instruments are classified as Level 2, as they are not actively traded and are valued using pricing models that use observable market inputs. The Company's policy is to recognize asset or liability transfers among Level 1, Level 2, and Level 3 at the beginning of the quarter in which a change in circumstances resulted in a transfer. During the years ended December 31, 2018 and 2017, the Company had no transfers between levels of the fair value hierarchy of its assets or liabilities measured at fair value.

All of the Company's privately-held debt and redeemable preferred stock securities are classified as Level 3 assets due to the lack of observable inputs to determine fair value. The Company estimates the fair value of its privately-held debt and redeemable preferred stock securities on a recurring basis using an analysis of the financial condition and near-term prospects of the investee, including recent financing activities and the investee's capital structure. During the year ended December 31, 2018, there were no significant activities related to privately-held debt and redeemable preferred stock, other than the notes settled upon acquisition of HTBase. See Note 3, Business Combinations, for further information.

Assets and Liabilities Measured at Fair Value on a Nonrecurring Basis

Certain of the Company's assets, including intangible assets and goodwill, are measured at fair value on a nonrecurring basis, when they are deemed to be other-than temporarily impaired. There were no impairment charges recognized during the years ended December 31, 2018, 2017, and 2016.

Equity investments without readily determinable fair value are measured at fair value, when they are deemed to be impaired or when there is an adjustment from observable price changes. For the year ended December 31, 2018, there were no material impairment charges or adjustments resulting from observable price changes for equity investments without readily determinable fair value.

As of December 31, 2018 and 2017, the Company had no liabilities measured at fair value on a nonrecurring basis.
Assets and Liabilities Not Measured at Fair Value

The carrying amounts of the Company's accounts receivable, accounts payable, and other accrued liabilities approximate fair value due to their short maturities. As of December 31, 2018 and December 31, 2017, the estimated fair value of the Company's total outstanding debt in the Consolidated Balance Sheets was \$2,158.7 million and \$2,252.9 million, respectively, based on observable market inputs (Level 2). The carrying value of the promissory note issued to the Company in connection with the previously completed sale of Junos Pulse ("the Pulse Note"), along with the accumulated interest paid in kind, of \$69.0 million and \$61.2 million approximates its fair value as of December 31, 2018 and December 31, 2017, respectively. Notes receivable are generally classified as Level 3 asset due to the lack of observable inputs to determine fair value. The carrying value of a contract manufacturer deposit of \$23.9 million and long-term trade accounts receivable of \$15.0 million, reported within other long-term assets in the Consolidated Balance Sheets approximates its fair value as of December 31, 2018. See Note 8, Other Financial Information, for further information on the Pulse Note and contract manufacturer deposit.

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Juniper Networks, Inc.

Notes to Consolidated Financial Statements (Continued)

Note 6. Derivative Instruments

The notional amount of the Company's foreign currency derivatives is summarized as follows (in millions):

	As of	
	December 31,	
	2018	2017
Cash flow hedges	\$497.7	\$521.1
Non-designated derivatives	158.7	108.3
Total	\$656.4	\$629.4

Cash Flow Hedges

The Company uses foreign currency forward contracts to hedge the Company's planned cost of revenues and operating expenses denominated in foreign currencies. These derivatives are designated as cash flow hedges. Cash flow hedge derivatives typically have maturities of seventeen months or less. As of December 31, 2018, an estimated \$1.6 million of unrealized net loss within accumulated other comprehensive loss is expected to be reclassified into earnings within the next twelve months.

The Company recognized an unrealized loss of \$8.7 million, an unrealized gain of \$20.2 million, and an unrealized loss of \$1.3 million in accumulated other comprehensive loss for the effective portion of its derivative instruments during the years ended December 31, 2018, 2017, and 2016, respectively. The Company reclassified gains of \$0.9 million, \$7.6 million, and \$1.8 million out of accumulated other comprehensive loss to cost of revenues and operating expenses in the Consolidated Statement of Operations during the years ended December 31, 2018, 2017, and 2016, respectively.

The ineffective portion of the Company's derivative instruments recognized in its Consolidated Statements of Operations was not material during the years ended December 31, 2018, 2017, and 2016, respectively.

See Note 5, Fair Value Measurements, for the fair values of the Company's derivative instruments in the Consolidated Balance Sheets.

Non-Designated Derivatives

The Company also uses foreign currency forward contracts to mitigate variability in gains and losses generated from the remeasurement of certain monetary assets and liabilities denominated in foreign currencies. These foreign exchange forward contracts typically have maturities of approximately one to three months. The outstanding non-designated derivative instruments are carried at fair value. Changes in the fair value of these derivatives recorded in other expense, net within the Consolidated Statements of Operations were \$7.6 million, \$1.8 million and \$0.5 million during the years ended December 31, 2018, 2017, and 2016, respectively.

See Note 2, Significant Accounting Policies, for the Company's policy regarding the offsetting of derivative assets and derivative liabilities.

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Juniper Networks, Inc.

Notes to Consolidated Financial Statements (Continued)

Note 7. Goodwill and Purchased Intangible Assets

Goodwill

The Company's goodwill activity was as follows (in millions):

	Total
December 31, 2016	\$3,081.7
Additions due to business combination	16.7
Other ^(*)	(2.2)
December 31, 2017	3,096.2
Additions due to business combination	14.4
Other ^(*)	(1.8)
December 31, 2018	\$3,108.8

^(*) Other primarily consists of certain purchase accounting adjustments related to the acquisitions of BTI and Cyphort.

In the fourth quarter of 2018, the Company performed its annual goodwill impairment test for the Company's three reporting units: Routing, Switching, and Security. There was no goodwill impairment during the years ended December 31, 2018, 2017 and 2016.

Purchased Intangible Assets

The Company's purchased intangible assets, net, were as follows (in millions):

	As of December 31, 2018				As of December 31, 2017			
	Gross	Accumulated Amortization	Accumulated Impairments and Other Charges	Net	Gross	Accumulated Amortization	Accumulated Impairments and Other Charges	Net
Finite-lived intangible assets:								
Technologies and patents	\$648.1	\$(534.0)	\$(49.9)	\$64.2	\$640.3	\$(518.1)	\$(49.9)	\$72.3
Customer contracts, support agreements, and related relationships	83.6	(75.5)	(2.8)	5.3	83.6	(74.1)	(2.8)	6.7
Other	2.0	(2.0)	—	—	2.0	(1.9)	—	0.1
Total	733.7	(611.5)	(52.7)	69.5	725.9	(594.1)	(52.7)	79.1
Indefinite-lived intangible assets:								
IPR&D	49.0	—	—	49.0	49.0	—	—	49.0
Total purchased intangible assets	\$782.7	\$(611.5)	\$(52.7)	\$118.5	\$774.9	\$(594.1)	\$(52.7)	\$128.1

Amortization expense was \$17.4 million, \$17.5 million, and \$16.3 million for the years ended December 31, 2018, 2017, and 2016, respectively. There were no impairment charges related to purchased intangible assets during the years ended December 31, 2018, 2017, and 2016.

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Juniper Networks, Inc.

Notes to Consolidated Financial Statements (Continued)

As of December 31, 2018, the estimated future amortization expense of purchased intangible assets with finite lives is as follows (in millions):

Years Ending December 31,	Amount
2019	\$ 25.1
2020	17.2
2021	12.9
2022	7.7
2023	5.3
Thereafter	1.3
Total	\$ 69.5

Note 8. Other Financial Information

Inventory

The majority of the Company's inventory is production components to be used in the manufacturing process, and finished goods inventory in transit. In addition, the Company purchases and holds inventory to provide adequate component supplies over the life of the underlying products. Total inventory consisted of the following (in millions):

	As of December 31,	
	2018	2017
Production and service materials	\$60.6	\$71.2
Finished goods	21.4	26.6
Inventory	\$82.0	\$97.8

Reported as:

Prepaid expenses and other current assets	\$80.6	\$93.8
Other long-term assets	1.4	4.0
Total	\$82.0	\$97.8

Property and Equipment, Net

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

	As of December 31,	
	2018	2017
Computers and equipment	\$1,100.0	\$1,151.7
Software	223.3	217.8
Leasehold improvements	235.2	258.6
Furniture and fixtures	48.6	47.9
Building and building improvements	254.3	252.8
Land and land improvements	243.2	241.0
Construction-in-process	19.5	53.5
Property and equipment, gross	2,124.1	2,223.3
Accumulated depreciation	(1,172.4)	(1,202.2)
Property and equipment, net	\$951.7	\$1,021.1

Depreciation expense was \$193.2 million, \$202.8 million, and \$184.5 million in 2018, 2017, and 2016, respectively.

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Juniper Networks, Inc.

Notes to Consolidated Financial Statements (Continued)

Notes Receivable and Deposit

Total outstanding notes receivable and deposit, net of issuance costs, reported within other long-term assets in the Consolidated Balance Sheets were as follows (in millions):

	As of	
	December	
	31,	
	2018	2017
Pulse Note (including accumulated interest paid in kind)	\$69.0	\$61.2
Contract manufacturer deposit (non-interest bearing)	23.9	—
Total	\$92.9	\$61.2

In connection with the sale of its Junos Pulse product portfolio in 2014, the Company was issued a non-contingent interest-bearing promissory note of \$125.0 million. In 2017, the Company received payment of \$75.0 million and the outstanding interest due. The maturity date of the Pulse Note was extended to September 30, 2022 under the terms of an amended agreement. The amended agreement also provided that interest due on the note be paid in kind by increasing the principal amount and interest rate on the Pulse Note. The outstanding balance of the Pulse Note was classified as a long-term asset based on expected collection beyond twelve months from the Consolidated Balance Sheet date.

In 2018, the Company paid a deposit of \$25.0 million to a contract manufacturer in exchange for improved pricing and savings on inventory carrying charges. The deposit was recorded at the face value of \$25.0 million, less an unamortized discount of \$1.1 million, calculated based on an imputed interest rate of 4.8%, that will be amortized over the term of the deposit to interest income along with a corresponding amount to cost of revenues. The deposit is due on demand in the first quarter of 2020 and was classified as other long-term assets on the Consolidated Balance Sheets. In January 2019, the Company paid an additional non-interest bearing deposit of \$22.0 million to the contract manufacturer per the terms of the agreement.

Interest income on the notes receivable is accrued and credited to interest income as it is earned, unless it is not probable the Company will collect the amounts due or if the present value of expected cash flows is less than the recorded investment. Interest income recognized was \$8.4 million, \$8.3 million, and \$10.6 million, during the years ended December 31, 2018, 2017, and 2016, respectively.

The Company considers notes receivable to be impaired when, based on current information and events, it is probable that the Company will not be able to collect the scheduled payments of principal or interest when due. No impairment charge was required as of December 31, 2018, 2017, and 2016.

Warranties

The Company accrues for warranty costs based on associated material, labor for customer support, and overhead at the time revenue is recognized. This accrual is reported within other accrued liabilities in the Consolidated Balance Sheets. Changes in the Company's warranty reserve were as follows (in millions):

	As of	
	December 31,	
	2018	2017
Beginning balance	\$27.4	\$41.3
Provisions made during the period, net	30.7	36.7

Actual costs incurred during the period	(30.1)	(50.6)
Ending balance	\$28.0	\$27.4

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Juniper Networks, Inc.

Notes to Consolidated Financial Statements (Continued)

Deferred Revenue

Details of the Company's deferred revenue, as reported in the Consolidated Balance Sheets, were as follows (in millions):

	As of December 31,	
	2018	2017
Deferred product revenue:		
Undelivered product commitments and other product deferrals	\$ 163.3	\$ 312.6
Distributor inventory and other sell-through items	—	68.1
Deferred gross product revenue	163.3	380.7
Deferred cost of product revenue	(18.9)	(46.5)
Deferred product revenue, net	144.4	334.2
Deferred service revenue	1,069.2	1,205.1
Total	\$ 1,213.6	\$ 1,539.3
Reported as:		
Current	\$ 829.3	\$ 1,030.3
Long-term	384.3	509.0
Total	\$ 1,213.6	\$ 1,539.3

Deferred product revenue represents unrecognized revenue related to undelivered product commitments and other shipments that have not met revenue recognition criteria. Deferred service revenue represents billed amounts for service contracts, which include technical support, hardware and software maintenance, professional services, and training, for which services have not been rendered. At December 31, 2017, deferred product revenue also included unrecognized revenue related to shipments to distributors that had not sold through to end-users.

Revenue

See Note 13, Segments, for disaggregated revenue by product and service, customer vertical, and geographic region.

Product revenue of \$104.2 million included in deferred revenue at January 1, 2018 was recognized during the year ended December 31, 2018. Service revenue of \$690.3 million included in deferred revenue at January 1, 2018 was recognized during the year ended December 31, 2018.

The following table summarizes the transaction price for contracts that have not yet been recognized as revenue as of December 31, 2018 and when the Company expects to recognize the amounts as revenue (in millions):

	Revenue Recognition Expected by Period		
	Total	Less than 1 year	More than 3 years
Product	\$ 163.3	\$ 131.2	\$ 28.9
Service	1,069.2	717.1	292.8
Total	\$ 1,232.5	\$ 848.3	\$ 321.7

Deferred Commissions

Deferred commissions were \$33.7 million as of December 31, 2018. During the year ended December 31, 2018, amortization expense for the deferred commissions was \$144.2 million and there were no impairment charges recognized.

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Juniper Networks, Inc.

Notes to Consolidated Financial Statements (Continued)

Other Expense, Net

Other expense, net consisted of the following (in millions):

	Years Ended December		
	31,		
	2018	2017	2016
Interest income	\$72.7	\$53.0	\$35.4
Interest expense	(103.2)	(101.2)	(97.7)
(Loss) gain on investments, net	(7.4)	14.6	(1.8)
Other	(1.6)	(2.7)	1.8
Other expense, net	\$(39.5)	\$(36.3)	\$(62.3)

Interest income primarily includes interest earned on the Company's cash, cash equivalents, investments, and promissory note issued to the Company in connection with the sale of Junos Pulse. Interest expense primarily includes interest, net of capitalized interest expense, from long-term debt and customer financing arrangements. (Loss) gain on investments, net, primarily includes gains from the sale of investments in public and privately-held companies, and any observable changes in fair value and impairment charges recorded on these investments. Other typically consists of foreign exchange gains and losses and other non-operational income and expense items.

Note 9. Restructuring Charges

The following table presents restructuring charges included in the Consolidated Statements of Operations (in millions):

	Years Ended		
	December 31,		
	2018	2017	2016
Severance	\$8.3	\$57.7	\$2.8
Facilities	—	—	0.5
Contract terminations	(1.0)	7.9	—
Total	\$7.3	\$65.6	\$3.3

Reported as:

Restructuring charges	\$7.3	\$65.6	\$3.3
Total	\$7.3	\$65.6	\$3.3

2018 Restructuring Plan

During the third quarter of 2018, the Company initiated a restructuring plan (the "2018 Restructuring Plan") to realign its workforce as a result of organizational and leadership changes. In connection with the 2018 Restructuring Plan, the Company recorded \$5.0 million of severance costs to restructuring charges in the Consolidated Statements of Operations during the year ended December 31, 2018. The 2018 Restructuring Plan is substantially complete.

Prior Restructuring Activities

In 2017, the Company initiated a restructuring plan (the "2017 Restructuring Plan") to realign its workforce and increase operational efficiencies. The 2017 Restructuring Plan consisted of severance and contract termination costs that were recorded to restructuring charges in the Consolidated Statement of Operations.

During the year ended December 31, 2018, in connection with the 2017 Restructuring Plan, the Company recorded \$3.3 million of severance costs to restructuring charges and insignificant favorable adjustments for changes in previous estimates in the Consolidated Statements of Operations. The 2017 Restructuring Plan is substantially complete.

In 2016, the Company recorded restructuring charges related to severance costs for certain former BTI employees as well as restructuring costs related to facilities. These activities were substantially completed as of December 31, 2017.

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Juniper Networks, Inc.

Notes to Consolidated Financial Statements (Continued)

Restructuring Liabilities

Restructuring liabilities are reported within other accrued liabilities in the Consolidated Balance Sheets. The following table provides a summary of changes in the restructuring liabilities associated with the 2018 Restructuring Plan and prior year plans (in millions):

	December 31, 2017	Charges/ (Benefits)	Cash Payments	Other	December 31, 2018
Severance	\$ 17.7	\$ 8.3	\$ (25.0)	\$ 0.1	\$ 1.1
Contract terminations and other	2.3	(1.0)	(1.3)	—	—
Total	\$ 20.0	\$ 7.3	\$ (26.3)	\$ 0.1	\$ 1.1

The Company expects to substantially pay the remaining restructuring liabilities in the first quarter of 2019.

See Note 18, Subsequent Events, for a discussion of the Company's restructuring plan initiated subsequent to December 31, 2018.

Note 10. Debt and Financing

Debt

The following table summarizes the Company's total debt (in millions, except percentages):

As of December 31, 2018

	Issuance date	Maturity Date	Amount	Effective Interest Rates
Senior Notes ("Notes"):				
3.125% fixed-rate notes ("2019 Notes")	February 2016	February 2019	\$350.0	3.36 %
3.300% fixed-rate notes ("2020 Notes")	March 2015	June 2020	300.0	3.47 %
4.600% fixed-rate notes	March 2011	March 2021	300.0	4.69 %
4.500% fixed-rate notes ^(*) ("2024 Notes")	March 2014	March 2024	350.0	4.63 %
4.500% fixed-rate notes ^(*) ("2024 Notes")	February 2016	March 2024	150.0	4.87 %
4.350% fixed-rate notes ("2025 Notes")	March 2015	June 2025	300.0	4.47 %
5.950% fixed-rate notes	March 2011	March 2041	400.0	6.03 %
Total Notes			2,150.0	
Unaccreted discount and debt issuance costs			(11.0)	
Total			\$2,139.0	

^(*) 2024 Notes issued in March 2014 and February 2016 form a single series and are fully fungible.

The Notes above are the Company's senior unsecured and unsubordinated obligations, ranking equally in right of payment to all of the Company's existing and future senior unsecured and unsubordinated indebtedness, and senior in right of payment to any of the Company's future indebtedness that is expressly subordinated to the Notes.

As of December 31, 2018, the Company's aggregate debt maturities based on outstanding principal were as follows (in millions):

Years Ending December 31,	Amount
2019	\$350.0

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2020	300.0
2021	300.0
2022	—
2023	—
Thereafter	1,200.0
Total	\$2,150.0

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Notes to Consolidated Financial Statements (Continued)

The Company may redeem the 2020 Notes and 2025 Notes, either in whole or in part, at any time one month prior to the maturity date of the 2020 Notes, and three months prior to the maturity date of the 2025 Notes, at a redemption price equal to the greater of (i) 100% of the aggregate principal amount of the 2020 Notes and 2025 Notes to be redeemed or (ii) the sum of the present values of the remaining scheduled payments discounted at the Treasury rate plus 30 basis points for the 2020 Notes, or the Treasury rate plus 37.5 basis points for the 2025 Notes, plus, in the case of each of the clauses (i) and (ii) above, accrued and unpaid interest, if any. At any time on or after May 15, 2020, in the case of the 2020 Notes, and at any time on or after March 15, 2025, in the case of the 2025 Notes, the Company may redeem Notes of such series, in whole or in part, at a redemption price equal to 100% of the principal amount of the 2020 Notes and the 2025 Notes to be redeemed, plus accrued and unpaid interest, if any. The Company may redeem the other Notes, either in whole or in part, at any time at a redemption price equal to the greater of (i) 100% of the aggregate principal amount of the Notes to be redeemed or (ii) the sum of the present values of the remaining scheduled payments discounted to the redemption date, plus, in either case, accrued and unpaid interest, if any.

In the event of a change of control repurchase event, the holders of the Notes may require the Company to repurchase for cash all or part of the Notes at a purchase price equal to 101% of the aggregate principal amount, plus accrued and unpaid interest, if any.

Interest on the Notes is payable in cash semiannually. The effective interest rates for the Notes include the interest on the Notes, accretion of the discount, and amortization of issuance costs. The indentures that govern the Notes also contain various covenants, including limitations on the Company's ability to incur liens or enter into sale-leaseback transactions over certain dollar thresholds.

As of December 31, 2018, the Company was in compliance with all covenants in the indentures governing the Notes.

Revolving Credit Facility

In June 2014, the Company entered into a Credit Agreement ("Credit Agreement") with certain institutional lenders and Citibank, N.A., as administrative agent, that provides for a \$500.0 million unsecured revolving credit facility, with an option of the Company to increase the amount of the credit facility by up to an additional \$200.0 million, subject to the lenders' approval. Proceeds of loans made under the Credit Agreement may be used by the Company for working capital and general corporate purposes. Revolving loans may be borrowed, repaid and reborrowed until June 27, 2019, at which time all amounts borrowed must be repaid. Borrowing may be denominated, at the Company's option in U.S. dollars, Pounds Sterling or Euro.

Borrowings under the Credit Agreement will bear interest, at either i) a floating rate per annum equal to the base rate plus a margin of between 0.00% and 0.50%, depending on the Company's public debt rating or ii) a per annum rate equal to the reserve adjusted Eurocurrency rate, plus a margin of between 0.90% and 1.50%, depending on the Company's public debt rating. Base rate is defined as the greatest of (A) Citibank's base rate, (B) the Federal Funds rate plus 0.50% or (C) the ICE Benchmark Administration Settlement Rate applicable to dollars for a period of one month plus 1.00%. The Eurocurrency rate is determined for U.S. dollars and Pounds Sterling as the rate at which deposits in such currency are offered in the London interbank market for the applicable interest period and for Euro as the rate specified for deposits in Euro with a maturity comparable to the applicable interest period.

As of December 31, 2018, the Company has not borrowed any funds under the Credit Agreement and was in compliance with all covenants in the Credit Agreement.

Financing Arrangements

The Company provides certain customers with access to extended financing arrangements that allow for longer payment terms than those typically provided by the Company by factoring accounts receivable to third-party financing providers ("financing providers"). The program does not and is not intended to affect the timing of the Company's revenue recognition. Under the financing arrangements, proceeds from the financing providers are due to the Company within 1 to 90 days from the sale of the receivable. In these transactions with the financing providers, the Company surrenders control over the transferred assets.

Pursuant to the financing arrangements for the sale of receivables, the Company sold receivables of \$122.8 million, \$169.4 million and \$95.6 million during the years ended December 31, 2018, 2017, and 2016, respectively. The Company received cash proceeds from financing providers of \$123.2 million, \$169.3 million, and \$83.2 million during the years ended December 31, 2018, 2017, and 2016, respectively. As of December 31, 2018 and December 31, 2017, the amounts owed by the financing providers were \$17.2 million and \$13.7 million, respectively, which were recorded in accounts receivable on the Company's Consolidated Balance Sheets.

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Juniper Networks, Inc.

Notes to Consolidated Financial Statements (Continued)

The portion of the receivable financed that has not been recognized as revenue is accounted for as a financing arrangement and is included in other accrued liabilities in the Consolidated Balance Sheets. There was no outstanding balance as of December 31, 2018. Cash received from the financing provider not recognized as revenue was \$16.9 million as of December 31, 2017.

Note 11. Equity

The following table summarizes dividends paid, stock repurchases and retirements under the Company's stock repurchase programs, and stock repurchases for tax withholdings (in millions, except per share amounts):

Year	Dividends		Stock Repurchases			Total	
	Per Share	Amount	Shares	Average price per share	Amount	Tax Withholding Amount	Amount
2018 ⁽¹⁾	\$0.72	\$ 249.3	29.3	\$ 25.62	\$ 750.0	\$ 6.6	\$1,005.9
2017 ⁽²⁾	\$0.40	\$ 150.4	26.1	\$ 27.61	\$ 719.7	\$ 6.1	\$876.2
2016 ⁽²⁾	\$0.40	\$ 152.5	13.5	\$ 23.25	\$ 312.9	\$ 11.7	\$477.1

Shares repurchased under the 2018 Stock Repurchase Program. \$750.0 million represents the full amount of the

⁽¹⁾ ASR for which 23.3 million shares were received initially during the first quarter of 2018, and an additional 6.0 million shares were received at final settlement during the third quarter of 2018.

⁽²⁾ Shares repurchased under the 2014 Stock Repurchase Program.

Cash Dividends on Shares of Common Stock

During 2018, the Company declared four quarterly cash dividends of \$0.18 per share on its common stock on January 30, 2018, May 2, 2018, July 26, 2018 and October 24, 2018, which were paid on March 22, 2018, June 22, 2018, September 25, 2018 and December 26, 2018, respectively, to stockholders of record as of the close of business on March 1, 2018, June 1, 2018, September 4, 2018, and December 5, 2018, respectively. Any future dividends, and the establishment of record and payment dates, are subject to approval by the Board of Directors (the "Board") of Juniper Networks or an authorized committee thereof. See Note 18, Subsequent Events, for discussion of the Company's dividend declaration subsequent to December 31, 2018.

Stock Repurchase Activities

In January 2018, the Board approved a \$2.0 billion share repurchase program ("2018 Stock Repurchase Program"), including \$750.0 million to be used pursuant to an accelerated share repurchase program. The 2018 Stock Repurchase Program replaces the previous authorization approved by the Board in 2014 ("2014 Stock Repurchase Program").

As part of the 2018 Stock Repurchase Program, in February 2018, the Company entered into an accelerated share repurchase program (the "ASR") with two financial institutions to repurchase \$750.0 million of the Company's common stock. During the first quarter of 2018, the Company made an up-front payment of \$750.0 million pursuant to the ASR and received an initial 23.3 million shares of the Company's common stock, based on the market value of the Company's common stock on the date of the transaction. During the third quarter of 2018, the ASR was completed and an additional 6.0 million shares were received from the financial institutions for a total repurchase of 29.3 million shares of the Company's common stock at a volume weighted average repurchase price, less an agreed upon discount, of \$25.62 per share. The shares received with respect to the ASR were retired and accounted for as a reduction to

stockholders' equity in the Consolidated Balance Sheets.

As of December 31, 2018, there were \$1.3 billion of authorized funds remaining under the 2018 Stock Repurchase Program.

Future share repurchases under the 2018 Stock Repurchase Program will be subject to a review of the circumstances at that time and will be made from time to time in private transactions or open market purchases as permitted by securities laws and other legal requirements. The Company's 2018 Stock Repurchase Program may be discontinued at any time.

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Notes to Consolidated Financial Statements (Continued)

Accumulated Other Comprehensive Loss, Net of Tax

The components of accumulated other comprehensive loss, net of related taxes, for the years ended December 31, 2018, 2017, and 2016 were as follows (in millions):

	Unrealized Gains/Losses on Available-for- Sale Debt Securities ⁽¹⁾	Unrealized Gains/Losses on Cash Flow Hedges ⁽²⁾	Foreign Currency Translation Adjustments	Total
Balance as of December 31, 2015	\$ 17.0	\$ (1.3)	\$ (34.9)	\$(19.2)
Other comprehensive income (loss) before reclassifications	0.8	(2.1)	(14.5)	(15.8)
Amount reclassified from accumulated other comprehensive loss	(1.2)	(1.1)	—	(2.3)
Other comprehensive loss, net	(0.4)	(3.2)	(14.5)	(18.1)
Balance as of December 31, 2016	\$ 16.6	\$ (4.5)	\$ (49.4)	\$(37.3)
Other comprehensive income before reclassifications	4.5	15.7	19.0	39.2
Amount reclassified from accumulated other comprehensive loss	(2.1)	(5.2)	—	(7.3)
Other comprehensive income, net	2.4	10.5	19.0	31.9
Balance as of December 31, 2017	\$ 19.0	\$ 6.0	\$ (30.4)	\$(5.4)
Other comprehensive income (loss) before reclassifications	0.6	(6.4)	(12.4)	(18.2)
Amount reclassified from accumulated other comprehensive income (loss)	0.9	(1.2)	—	(0.3)
Other comprehensive income (loss), net	1.5	(7.6)	(12.4)	(18.5)
Reclassification of tax effects upon adoption of ASU 2018-02	5.0	0.7	—	5.7
Balance as of December 31, 2018	\$ 25.5	\$ (0.9)	\$ (42.8)	\$(18.2)

The reclassifications out of accumulated other comprehensive loss during the years ended December 31, 2018, 2017, and 2016 for realized gains on available-for-sale debt securities were not material, and were included in other expense, net, in the Consolidated Statements of Operations.

The reclassifications out of accumulated other comprehensive loss during the years ended December 31, 2018, 2017, and 2016 for realized gains and losses on cash flow hedges were not material, and were included within cost of revenues, research and development, sales and marketing, and general and administrative in the Consolidated Statements of Operations.

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Notes to Consolidated Financial Statements (Continued)

Note 12. Employee Benefit Plans

Equity Incentive Plans

The Company's equity incentive plans include the 2015 Equity Incentive Plan (the "2015 Plan"), the 2006 Equity Incentive Plan (the "2006 Plan"), and the 2008 Employee Stock Purchase Plan (the "ESPP"). Under these plans, the Company has granted stock options, RSUs, and PSAs. In addition, in connection with certain past acquisitions, the Company has assumed or substituted stock options, RSUs, RSAs, and PSAs granted under the stock plans of the acquired companies. Such awards were converted into or replaced with the Company's stock options, RSUs, RSAs, and PSAs, respectively.

The 2015 Plan was adopted and approved by the Company's stockholders in May 2015 and had an initial authorized share reserve of 38.0 million shares of common stock, plus the addition of any shares subject to outstanding awards under the 2006 Plan and the Amended and Restated 1996 Stock Plan that were outstanding as of May 19, 2015, and that subsequently expire or otherwise terminate, up to a maximum of an additional 29.0 million shares. In May 2017, the Company's stockholders approved an additional 23.0 million shares of common stock for issuance under the 2015 Plan. As of December 31, 2018, an aggregate of 15.3 million shares were subject to outstanding equity awards under the 2015 Plan and the 2006 Plan. As of December 31, 2018, 21.9 million shares were available for future issuance under the 2015 Plan and no shares were available for future issuance under the 2006 Plan or the 1996 Plan.

The ESPP was adopted and approved by the Company's stockholders in May 2008. To date, the Company's stockholders have approved a share reserve of 35.0 million shares of the Company's common stock for issuance under the ESPP. The ESPP permits eligible employees to acquire shares of the Company's common stock at a 15% discount (as determined in the ESPP) through periodic payroll deductions of up to 10% of base compensation, subject to individual purchase limits of 6,000 shares in any twelve-month period or \$25,000 worth of stock, determined at the fair market value of the shares at the time the stock purchase option is granted, in one calendar year. On November 6, 2017, the Company's Compensation Committee amended and restated the ESPP to provide that for the offering period that began on February 1, 2018 would be for 24 months with four 6-month purchase periods. A new 24-month offering period will commence every six months thereafter. The purchase price for the Company's common stock under the ESPP is 85% of the lower of the fair market value of the shares at (1) the beginning of the applicable offering period or (2) the end of each 6-month purchase period during such offering period. The ESPP will continue in effect until February 25, 2028, unless terminated earlier under the provisions of the ESPP. As of December 31, 2018, approximately 26.3 million shares have been issued and 8.7 million shares remain available for future issuance under the ESPP.

During 2018, 2017, and 2016, the Company completed the acquisitions of HTBase, Cyphort, AppFormix, Aurrion, and BTI. In connection with these acquisitions, the Company assumed or substituted an aggregate of 4.1 million shares of stock options, RSUs, RSAs, and PSAs. No additional awards can be granted under the stock plans of the acquired companies. As of December 31, 2018, approximately 2.2 million shares of common stock were outstanding under all awards assumed or substituted through the Company's acquisitions.

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Notes to Consolidated Financial Statements (Continued)

RSU, RSA, and PSA Activities

RSUs and RSAs generally vest over three years from the date of grant, and PSAs generally vest over a period of two to three years provided that certain annual performance targets and other vesting criteria are met. Until vested, RSUs and PSAs do not have the voting and dividend participation rights of common stock and the shares underlying the awards are not considered issued and outstanding.

The following table summarizes the Company's RSU, RSA, and PSA activity and related information as of and for the year ended December 31, 2018 (in millions, except per share amounts and years):

	Outstanding RSUs, RSAs, and PSAs ⁽⁶⁾			
	Number	Average	Weighted Average	Aggregate
	of	Grant-Date	Remaining	Intrinsic
	Shares	Fair	Contractual Term	Value
		Value per	(In Years)	
		Share		
Balance at December 31, 2017	19.5	\$ 25.39		
RSUs granted ⁽¹⁾⁽²⁾	7.4	25.40		
RSUs substituted in acquisitions ⁽²⁾⁽⁵⁾	0.1	26.26		
RSAs substituted in acquisitions ⁽²⁾⁽⁵⁾	0.1	27.66		
PSAs granted ⁽²⁾⁽⁴⁾	0.9	24.62		
RSUs vested ⁽³⁾	(6.5)	25.67		
RSAs vested ⁽³⁾	(0.2)	25.12		
PSAs vested ⁽³⁾	(1.1)	24.14		
RSUs canceled	(2.0)	25.92		
PSAs canceled	(0.8)	24.45		
Balance at December 31, 2018	17.4	\$ 25.32	1.0	\$ 467.6
As of December 31, 2018				
Vested and expected-to-vest RSUs, RSAs, and PSAs	15.5	\$ 25.31	1.0	\$ 418.4

(1) Includes service-based and market-based RSUs granted under the 2015 Plan according to their terms.

(2) The weighted-average grant-date fair value of RSUs, RSAs, and PSAs granted and assumed or substituted during 2018, 2017, and 2016 was \$25.33, \$27.53, and \$24.66, respectively.

(3) Total fair value of RSUs, RSAs, and PSAs vested during 2018, 2017, and 2016 was \$200.5 million, \$187.3 million, and \$185.7 million, respectively.

The number of shares subject to PSAs granted represents the aggregate maximum number of shares that may be issued pursuant to the award over its full term. The aggregate number of shares subject to these PSAs that would be issued if performance goals determined by the Compensation Committee are achieved at target is 0.7 million shares. Depending on achievement of such performance goals, the range of shares that could be issued under these awards is 0 million to 1.0 million shares.

(5) RSUs and RSAs substituted in connection with the acquisition of HTBase.

Excludes 1.9 million shares of PSAs that were modified in 2018, which relate primarily to PSAs assumed by the

(6) Company in connection with acquisitions consummated in 2016. These awards are contingent upon the achievement of certain performance milestones. The total incremental compensation cost resulting from the modifications totaled \$6.9 million to be recognized over the remaining terms of the modified awards.

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Notes to Consolidated Financial Statements (Continued)

Shares Available for Grant

The following table presents the stock activity and the total number of shares available for grant under the 2015 Plan (in millions):

	Number of Shares
Balance as of December 31, 2017	33.5
Additional shares authorized	—
RSUs and PSAs granted ⁽¹⁾	(17.7)
RSUs and PSAs canceled ⁽²⁾	5.4
Options canceled/expired ⁽²⁾	0.7
Balance as of December 31, 2018	21.9

RSUs and PSAs with a per share or unit purchase price lower than 100% of the fair market value of the Company's common stock on the day of the grant under the 2015 Plan are counted against shares authorized under the plan as

⁽¹⁾ two and one-tenth shares of common stock for each share subject to such award. The number of shares subject to PSAs granted represents the maximum number of shares that may be issued pursuant to the award over its full term.

⁽²⁾ Canceled or expired options and canceled RSUs and PSAs under the 2006 Plan are no longer available for future grant under such plan; however, the number of shares available for grant under the 2015 Plan are increased by (i) the amount of such canceled or expired options and (ii) two and one-tenth the shares for each canceled RSUs or PSAs, as applicable, up to a maximum of 29.0 million additional shares of common stock, pursuant to the terms of the 2015 Plan.

Employee Stock Purchase Plan

The Company's ESPP is implemented in a series of offering periods, each six months in duration, or a shorter period as determined by the Board. Employees purchased 2.5 million shares of common stock through the ESPP during 2018, and 2.7 million shares in both 2017 and 2016 at an average exercise price of \$22.31, \$20.83, and \$19.66 per share, respectively.

Valuation Assumptions

The weighted-average assumptions used and the resulting estimates of fair value for ESPP and market-based RSUs were as follows:

	Years Ended		
	December 31,		
	2018	2017	2016
ESPP:			
Volatility	29%	25%	32%
Risk-free interest rate	1.9%	0.9%	0.4%
Expected life (years)	1.2	0.5	0.5
Dividend yield	2.7%	1.5%	1.8%
Weighted-average fair value per share	\$6.93	\$6.04	\$5.56

Market-based RSUs:

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Volatility	28%	30%	36%
Risk-free interest rate	2.4%	1.9%	1.2%
Dividend yield	2.6%	1.4%	1.7%
Weighted-average fair value per share	\$28.39	\$19.30	\$14.71

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Notes to Consolidated Financial Statements (Continued)

Share-Based Compensation Expense

Share-based compensation expense associated with stock options, RSUs, RSAs, PSAs, and ESPP was recorded in the following cost and expense categories in the Company's Consolidated Statements of Operations (in millions):

	Years Ended		
	December 31,		
	2018	2017	2016
Cost of revenues - Product	\$6.3	\$4.6	\$6.4
Cost of revenues - Service	18.0	17.5	15.3
Research and development	120.6	86.6	126.5
Sales and marketing	51.1	55.6	55.2
General and administrative	21.1	23.2	23.4
Total	\$217.1	\$187.5	\$226.8

The following table summarizes share-based compensation expense by award type (in millions):

	Years Ended		
	December 31,		
	2018	2017	2016
Stock options	\$0.4	\$0.5	\$4.4
RSUs, RSAs, and PSAs	198.2	171.3	206.9
ESPP	18.5	15.7	15.5
Total	\$217.1	\$187.5	\$226.8

For the years ended December 31, 2018, 2017 and 2016, the Company recognized tax benefits on total stock-based compensation expense, which are reflected in the income tax provision in the Consolidated Statements of Operations, of \$33.8 million, \$29.1 million, and \$53.3 million, respectively.

For the years ended December 31, 2018, 2017 and 2016, the realized tax benefit related to awards vested or exercised during the period was \$38.9 million, \$64.1 million and \$58.6 million, respectively. These amounts do not include the indirect effects of stock-based awards, which primarily relate to the research and development tax credit.

As of December 31, 2018, the total unrecognized compensation cost related to unvested share-based awards was \$280.4 million to be recognized over a weighted-average period of 1.4 years.

401(k) Plan

The Company maintains a savings and retirement plan qualified under Section 401(k) of the Internal Revenue Code of 1986, as amended (the "IRC"). Employees meeting the eligibility requirements, as defined under the IRC, may contribute up to the statutory limits each year. The Company currently matches 30% of all eligible employee contributions which vest immediately. The Company's matching contributions to the plan totaled \$20.2 million, \$21.1 million, and \$20.7 million during 2018, 2017, and 2016, respectively.

Deferred Compensation Plan

The Company's NQDC plan is an unfunded and unsecured deferred compensation arrangement. Under the NQDC plan, officers and other senior employees may elect to defer a portion of their compensation and contribute such amounts to one or more investment funds. As of December 31, 2018, the liability of the Company to the plan

participants was \$24.3 million, of which \$3.6 million was included within other accrued liabilities and \$20.7 million was included in other long-term liabilities on the Consolidated Balance Sheets. The Company had investments of \$24.3 million correlating to the deferred compensation obligations, of which \$3.6 million was included within prepaid expenses and other current assets and \$20.7 million was included within other long-term assets on the Consolidated Balance Sheets. As of December 31, 2017, the liability of the Company was \$27.6 million, of which \$4.9 million was included within other accrued liabilities and \$22.7 million was included in other long-term liabilities on the Consolidated Balance Sheets. The Company had investments of \$27.6 million correlating to the deferred compensation obligations, of which \$4.9 million was included within prepaid expenses and other current assets and \$22.7 million was included within other long-term assets on the Consolidated Balance Sheets.

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Juniper Networks, Inc.

Notes to Consolidated Financial Statements (Continued)

Non-US Pension Plans

The Company maintains the India Gratuity Trust and Israel Retirement Trust (or "the Pension Plans") to cover statutory severance obligations in the event of termination of any of its India and Israel employees, respectively. The Pension Plans are primarily invested in mutual funds and measured at fair value using Level 1 hierarchy on a recurring basis. The Company reports the Pension Plans on a net basis on the Consolidated Balance Sheets. As of December 31, 2018 and December 31, 2017, the fair value of the Pension Plans was \$13.1 million and \$11.3 million, respectively. As of December 31, 2018 and December 31, 2017, the Company recorded a net plan liability of \$2.5 million and \$4.3 million, respectively, in accrued compensation on the Consolidated Balance Sheets.

Note 13. Segments

The Company operates in one reportable segment. The Company's chief executive officer, who is the chief operating decision maker, reviews financial information presented on a consolidated basis for purposes of allocating resources and evaluating financial performance, accompanied by disaggregated information about net revenues by product and service, customer vertical, and geographic region as presented below.

The following table presents net revenues by product and service (in millions):

	Years Ended December 31,		
	2018	2017	2016
Routing	\$1,839.7	\$2,189.5	\$2,352.9
Switching	934.4	963.4	858.0
Security	333.0	293.3	318.0
Total product	3,107.1	3,446.2	3,528.9
Total service	1,540.4	1,581.0	1,461.2
Total	\$4,647.5	\$5,027.2	\$4,990.1

The following table presents net revenues by customer vertical^(*) (in millions):

	Years Ended December 31,		
	2018	2017	2016
Cloud	\$1,049.9	\$1,310.7	\$1,315.9
Service Provider	2,066.7	2,319.4	2,316.4
Enterprise	1,530.9	1,397.1	1,357.8
Total	\$4,647.5	\$5,027.2	\$4,990.1

^(*) Certain prior-period amounts have been reclassified to conform to the current-period classifications.

The Company attributes revenues to geographic region based on the customer's shipping address. The following table presents net revenues by geographic region (in millions):

	Years Ended December 31,		
	2018	2017	2016
Americas:			
United States	\$2,339.1	\$2,712.6	\$2,737.0
Other	202.1	234.6	231.8
Total Americas	2,541.2	2,947.2	2,968.8
Europe, Middle East, and Africa	1,290.8	1,195.8	1,238.1

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Asia Pacific	815.5	884.2	783.2
Total	\$4,647.5	\$5,027.2	\$4,990.1

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Notes to Consolidated Financial Statements (Continued)

During the years ended December 31, 2018, 2017, and 2016, no customer accounted for greater than 10% of the Company's net revenues.

The following table presents geographic information for property and equipment, net and purchased intangible assets, net (in millions):

	As of December	
	2018	2017
United States	\$941.7	\$1,005.1
International	128.5	144.1
Property and equipment, net and purchased intangible assets, net	\$1,070.2	\$1,149.2

The Company tracks assets by physical location. The majority of the Company's assets, excluding cash and cash equivalents and investments, as of December 31, 2018 and December 31, 2017, were attributable to U.S. operations.

Note 14. Income Taxes

The components of pretax income are summarized as follows (in millions):

	Years Ended		
	December 31,		
	2018	2017	2016
Domestic	\$160.6	\$474.2	\$466.2
Foreign	372.1	337.6	361.2
Total pretax income	\$532.7	\$811.8	\$827.4

The (benefit) provision for income taxes is summarized as follows (in millions):

	Years Ended December 31,		
	2018	2017	2016
Current (benefit) provision:			
Federal	\$(126.1)	\$594.3	\$121.4
States	9.0	13.9	10.3
Foreign	38.9	45.4	46.0
Total current (benefit) provision	(78.2)	653.6	177.7
Deferred (benefit) provision:			
Federal	36.6	(128.7)	57.2
States	2.2	(17.7)	4.3
Foreign	5.2	(1.6)	(4.5)
Total deferred (benefit) provision	44.0	(148.0)	57.0
Total (benefit) provision for income taxes	\$(34.2)	\$505.6	\$234.7

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Juniper Networks, Inc.

Notes to Consolidated Financial Statements (Continued)

The (benefit) provision for income taxes differs from the amount computed by applying the federal statutory rate of 21% for 2018 and 35% for 2017 and 2016, respectively, to pretax income as follows (in millions):

	Years Ended December		
	31,		
	2018	2017	2016
Expected provision at statutory rate	\$111.9	\$284.1	\$289.6
State taxes, net of federal benefit	7.4	12.0	8.9
Foreign income at different tax rates	(12.8)	(46.4)	(53.4)
R&D tax credits	(22.1)	(15.1)	(16.8)
Share-based compensation	4.7	—	10.5
Release of valuation allowance	—	(1.7)	(0.7)
Domestic production activities	—	(12.4)	(9.5)
Non-deductible compensation	1.9	1.6	2.4
Impact of the U.S. Tax Cuts and Jobs Act	2.8	289.5	—
Tax accounting method changes	(65.4)	—	—
Lapses in federal statutes of limitations	(67.6)	—	—
Other	5.0	(6.0)	3.7
Total (benefit) provision for income taxes	\$(34.2)	\$505.6	\$234.7

In 2018, the Company recorded a \$67.6 million benefit related to a lapse in the federal statute of limitations relative to tax years 2010 through 2014, including interest, a \$33.2 million benefit as a result of filing a change in accounting method for the tax recognition of deferred product revenue in the U.S. to better align with the financial statement recognition of such revenue, and a \$32.2 million benefit resulting from tax accounting method change related to foreign deferred service revenue.

The Tax Act introduced significant changes to U.S. income tax law. Effective January 1, 2018, the Tax Act reduced the U.S. federal corporate income tax rate from 35% to 21%, created a minimum tax on foreign earnings and imposed a one-time transition tax on accumulated foreign earnings through December 31, 2017. In 2017, the Company recorded provisional amounts for the effects of the Tax Act of \$289.5 million primarily related to net taxes on accumulated foreign earnings and the re-measurement of the Company's deferred tax assets at the revised U.S. statutory rate. In the fourth quarter of 2018, the Company completed its analysis to determine the effect of the Tax Act and recorded immaterial adjustments as of December 31, 2018.

The Company accounts for U.S. tax on certain foreign subsidiaries income, which is referred to as Global Intangible Low-Taxed Income ("GILTI") in the year earned. Therefore, the Company has not provided any deferred tax impacts of GILTI in its Consolidated Financial Statements for the year ended December 31, 2018.

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Juniper Networks, Inc.

Notes to Consolidated Financial Statements (Continued)

Deferred income taxes reflect the net tax effects of tax carry-forward items and temporary differences between the carrying amounts of assets and liabilities for financial reporting purposes and the amounts used for income tax purposes. Significant components of the Company's long-term deferred tax assets and deferred tax liabilities are as follows (in millions):

	As of	
	December 31,	
	2018	2017
Deferred tax assets:		
Net operating loss carry-forwards	\$12.9	\$18.3
Research and other credit carry-forwards	220.0	198.8
Deferred revenue	37.7	103.5
Share-based compensation	26.1	31.1
Cost sharing adjustment	12.2	12.4
Reserves and accruals not currently deductible	62.7	76.7
Other	13.2	12.8
Total deferred tax assets	384.8	453.6
Valuation allowance	(233.7)	(214.5)
Deferred tax assets, net of valuation allowance	151.1	239.1
Deferred tax liabilities:		
Property and equipment basis differences	(40.6)	(42.5)
Purchased intangibles	(13.7)	(12.4)
Unremitted foreign earnings	(26.4)	(25.4)
Deferred compensation and other	(8.9)	(10.4)
Total deferred tax liabilities	(89.6)	(90.7)
Net deferred tax assets	\$61.5	\$148.4

Based on changes provided by the Tax Act, the Company re-measured certain deferred tax assets and liabilities based on the rates at which they are expected to reverse in the future, which is generally 21%.

As of December 31, 2018 and 2017, the Company had a valuation allowance on its U.S. domestic deferred tax assets of approximately \$233.7 million and \$214.5 million, respectively. The balance at December 31, 2018 consisted of approximately \$206.0 million, \$20.2 million and \$3.1 million against the Company's California, Massachusetts and Canadian deferred tax assets, respectively, which the Company believes are not more likely than not to be utilized in future years. The remaining deferred tax assets on which the Company recorded valuation allowance of approximately \$4.4 million related to losses that are capital in nature and may carry forward to offset future capital gains only. The valuation allowance increased in 2018 and 2017 by \$19.2 million and \$60.1 million, respectively, primarily related to the change in California, Massachusetts and Canadian R&D tax credits.

As of December 31, 2018, the Company had federal and California net operating loss carry-forwards of approximately \$54.4 million and \$150.4 million, respectively. The California net operating loss carry-forwards of \$150.4 million are expected to expire unused. The Company also had federal and California tax credit carry-forwards of approximately \$2.6 million and \$244.1 million, respectively. Unused net operating loss carry-forwards will expire at various dates beginning in the year 2019. The California tax credit carry-forwards will carry forward indefinitely.

As of December 31, 2018, 2017, and 2016, the total amount of gross unrecognized tax benefits was \$178.1 million, \$264.5 million, and \$223.1 million, respectively. As of December 31, 2018, approximately \$175.3 million of the \$178.1 million gross unrecognized tax benefits, if recognized, would affect the effective tax rate.

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Juniper Networks, Inc.

Notes to Consolidated Financial Statements (Continued)

A reconciliation of the beginning and ending amount of the Company's total gross unrecognized tax benefits was as follows (in millions):

	Years Ended December 31,		
	2018	2017	2016
Balance at beginning of year	\$264.5	\$223.1	\$216.1
Tax positions related to current year:			
Additions	4.3	64.6	27.2
Tax positions related to prior years:			
Additions	12.7	1.8	1.0
Reductions	(33.8)	(16.6)	(4.1)
Settlements	(2.6)	(4.0)	(14.3)
Lapses in statutes of limitations	(67.0)	(4.4)	(2.8)
Balance at end of year	\$178.1	\$264.5	\$223.1

As of December 31, 2018, 2017, and 2016, the Company had accrued interest and penalties related to unrecognized tax benefits of \$33.8 million, \$40.7 million, and \$31.3 million, respectively, to other long-term liabilities in the Consolidated Balance Sheets. Due to the changes in the level of gross unrecognized tax benefit, the Company recognized a benefit for net interest and penalties of \$5.2 million and an expense of \$8.5 million and \$6.0 million in its Consolidated Statements of Operations during the years ended December 31, 2018, 2017, and 2016, respectively.

On November 30, 2018, the Company received a final order from the India Supreme Court, which resolved the Company's dispute with the India Tax Authorities for the 2004 through 2008 income tax years. The final order from the Court effectively concludes the tax investigation for the respective tax years, and as a result the Company released \$5.4 million of previously unrecognized tax benefits, including \$4.6 million of interest and penalties.

In 2018, the U.K., German and Australian tax authorities concluded examinations of the 2016 tax year, 2010 through 2013 tax years and the 2016 through 2017 tax years, respectively, which did not have a material impact to the Company's financial statements.

The Company engages in continuous discussions and negotiations with tax authorities regarding tax matters in various jurisdictions. There is a greater than remote likelihood that the balance of the gross unrecognized tax benefits will decrease by approximately \$7.7 million within the next twelve months due to lapses of applicable statutes of limitation and the completion of tax review cycles in various tax jurisdictions.

The Company conducts business globally and, as a result, Juniper Networks or one or more of its subsidiaries files income tax returns in the U.S. federal jurisdiction and various state and foreign jurisdictions. In the normal course of business, the Company is subject to examination by taxing authorities throughout the world, including such major jurisdictions as the Netherlands, U.K., France, Germany, Japan, China, Australia, India, and the U.S. With few exceptions, the Company is no longer subject to U.S. federal, state and local, and non-U.S. income tax examinations for years before 2007.

The Company is currently under examination by the IRS for the 2007 through 2009 tax years and by the India tax authorities for the 2009 through 2015 tax years. In March 2016, the IRS concluded its field audit and issued a final assessment. The Company is appealing this assessment. The examinations by the India tax authorities are ongoing. The Company regularly assesses the likelihood of an adverse outcome resulting from such examinations. As of December 31, 2018, the Company believes the resolution of the audits is unlikely to have a material effect on its

consolidated financial condition or results of operations.

The Company is pursuing all available administrative remedies relative to these ongoing matters. The Company believes that it has adequately provided for any reasonably foreseeable outcomes related to these proposed adjustments and the ultimate resolution of these matters is unlikely to have a material effect on its consolidated financial condition or results of operations; however, there is still a possibility that an adverse outcome of these matters could have a material effect on its consolidated financial condition and results of operations.

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Juniper Networks, Inc.

Notes to Consolidated Financial Statements (Continued)

Note 15. Net Income per Share

The Company computed basic and diluted net income per share as follows (in millions, except per share amounts):

	Years Ended December 31,		
	2018	2017	2016
Numerator:			
Net income	\$566.9	\$306.2	\$592.7
Denominator:			
Weighted-average shares used to compute basic net income per share	349.0	377.7	381.7
Dilutive effect of employee stock awards	5.4	6.5	6.1
Weighted-average shares used to compute diluted net income per share	354.4	384.2	387.8
Net income per share:			
Basic	\$1.62	\$0.81	\$1.55
Diluted	\$1.60	\$0.80	\$1.53
Anti-dilutive shares	3.9	1.1	2.5

Basic net income per share is computed using net income available to common stockholders and the weighted-average number of common shares outstanding for the period. Diluted net income per share is computed using net income available to common stockholders and the weighted-average number of common shares outstanding plus potentially dilutive common shares outstanding during the period. Dilutive potential common shares consist of common shares issuable upon exercise of stock options, issuances of ESPP, and vesting of RSUs, RSAs, and PSAs. The Company includes the common shares underlying PSAs in the calculation of diluted net income per share only when they become contingently issuable. Anti-dilutive shares are excluded from the computation of diluted net income per share.

Note 16. Commitments and Contingencies

Commitments

The following table summarizes the Company's unconditional purchase obligations and future minimum payments under non-cancelable operating and other lease arrangements for each of the next five years and thereafter as of December 31, 2018 (in millions):

Years Ending December 31,	Unconditional Purchase Obligations	Leases	
		Operating Leases	Other Lease Arrangement
2019	\$ 43.1	\$33.7	\$ 13.1
2020	26.4	30.7	13.3
2021	11.4	24.3	13.6
2022	8.5	17.0	13.9
2023	5.5	14.3	14.2
Thereafter	2.9	26.3	32.9
Total	\$ 97.8	\$146.3	\$ 101.0

In December 2018, the Company entered into a Master Services Agreement and certain Statements of Work, (collectively, the "Agreement") with International Business Machines Corporation ("IBM") pursuant to which the

Company will outsource significant portions of its IT and other administrative functions following a transition period. Under the Agreement, IBM will provide the Company a broad range of IT services such as applications, including support, development and maintenance; infrastructure management and support, including for servers, storage and network devices; and end user support including service desk. The Agreement has an initial term through 2026 over which period the Company will pay IBM a combination of fixed and variable fees, fluctuating based on the Company's actual need for the services utilized. The Company expects to pay IBM

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Juniper Networks, Inc.

Notes to Consolidated Financial Statements (Continued)

approximately \$325.0 million. The table above does not include fees payable to IBM under the contract as the Company is unable to make a reasonably reliable estimate of the amount of the payments related to this contract due to uncertainties in the usage of the services.

Unconditional Purchase Obligations

Unconditional purchase obligations consist of agreements that include firm and non-cancelable terms to transfer funds in the future for fixed or minimum amounts or quantities to be purchased at fixed or minimum prices. These obligations primarily result from contracts entered into for the acquisition of software development services and product development. For obligations with cancellation provisions, the amounts included in the preceding table were limited to the non-cancelable portion of the agreement terms or the minimum cancellation fee.

In May 2018, the Company entered into a strategic alliance with Ericsson AB ("Ericsson") under which both companies have agreed to undertake certain development, testing and related work to bring specific products to market. The alliance has an initial term through 2023. As of December 31, 2018, the minimum fixed fees payable to Ericsson was \$18.0 million.

Operating Leases

The Company leases its facilities and certain equipment under non-cancelable operating leases that expire at various dates through November 2029. Certain leases require the Company to pay variable costs such as taxes, maintenance, and insurance and include renewal options and escalation clauses. Rent expense for 2018, 2017, and 2016 was approximately \$39.0 million, \$39.3 million, and \$37.9 million, respectively.

Other Lease Arrangement

In July 2015, the Company entered into a lease arrangement through March 2026 for approximately 63,000 square feet of space in the State of Washington. The space is used, among other things, to consolidate certain of the Company's laboratory operations currently located in Sunnyvale, California.

Due to certain contractual obligations during the construction period, the Company was deemed the owner of the property during that period. The Company capitalized the construction costs by recording a build-to-suit lease asset and a corresponding build-to-suit financing liability. Upon the completion of construction in 2016, the Company concluded that it had a certain form of continuing economic involvement in the facility, which precluded sale-leaseback accounting treatment. As a result, a total of \$60.9 million of costs capitalized were placed in service and are being depreciated over the lease term. As of December 31, 2018, the total payment under the lease agreement over the ten-year term is approximately \$101.0 million of which \$59.7 million is included in other-long term liabilities on the Consolidated Balance Sheets.

Purchase Commitments with Contract Manufacturers and Suppliers

In order to reduce manufacturing lead times and in the interest of having access to adequate component supply, the Company enters into agreements with contract manufacturers and certain suppliers to procure inventory based on the Company's requirements. A significant portion of the Company's purchase commitments arising from these agreements consists of firm and non-cancelable commitments. These purchase commitments totaled \$663.3 million as of December 31, 2018.

The Company establishes a liability in connection with purchase commitments related to quantities in excess of its demand forecasts or obsolete materials charges for components purchased by the contract manufacturers based on the Company's demand forecast or customer orders. As of December 31, 2018, the Company had accrued \$30.4 million based on its estimate of such charges.

Debt and Interest Payment on Debt

As of December 31, 2018, the Company held total outstanding debt consisting of the Notes with a carrying value of \$2,139.0 million. See Note 10, Debt and Financing, for further discussion of the Company's long-term debt and expected future principal maturities.

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Juniper Networks, Inc.

Notes to Consolidated Financial Statements (Continued)

Tax Liability

In the fourth quarter of 2018, the Company completed its analysis to determine the effect of the Tax Act and recorded immaterial adjustments as of December 31, 2018. The Company has elected to pay its transition tax, net of applicable tax refunds, over the eight-year period provided in the Tax Act. The long-term income taxes payable of \$245.2 million represents the remaining balance of the Company's transition tax obligation.

As of December 31, 2018, the Company had \$159.2 million included in long-term income taxes payable on the Consolidated Balance Sheets for unrecognized tax positions. At this time, the Company is unable to make a reasonably reliable estimate of the timing of payments related to this amount due to uncertainties in the timing of tax audit outcomes.

Guarantees

The Company enters into agreements with customers that contain indemnification provisions relating to potential situations where claims could be alleged that the Company's products solely, or in combination with other third-party products, infringe the intellectual property rights of a third-party. As of December 31, 2018 and 2017, the Company recorded \$11.9 million and \$20.4 million, respectively, for such indemnification obligations in other accrued liabilities and other long-term liabilities on the Consolidated Balance Sheets. The Company also has financial guarantees consisting of guarantees of product and service performance and standby letters of credit for certain lease facilities and insurance programs of \$23.1 million and \$23.0 million, as of December 31, 2018 and December 31, 2017, respectively.

Legal Proceedings

Investigations

The Company previously disclosed that it has been the subject of investigations by the U.S. Securities and Exchange Commission ("SEC") and the U.S. Department of Justice ("DOJ") into possible violations by the Company of the U.S. Foreign Corrupt Practices Act ("FCPA"). In cooperation with these investigations, the Company and the Audit Committee of the Board of Directors, with the assistance of outside counsel and other independent advisors, conducted a thorough internal investigation. As a result of its internal investigation, the Company made significant improvements in its internal controls and carried out a number of disciplinary actions. In the fourth quarter of 2017, the DOJ notified the Company that the DOJ has closed its investigation related to these matters without taking any action against the Company. The Company is continuing to fully cooperate with the SEC's ongoing investigation, and based on the Company's recent communications with the Staff of the SEC, the Company believes that it is likely that the Staff of the SEC will seek to bring an enforcement action against the Company. The Company believes it is probable that it could incur a loss and has established an estimated legal reserve of \$12.0 million related to the ongoing SEC investigation; however, as discussions are continuing, there can be no assurance as to the timing or the terms of any final resolution of this matter.

Other Litigations and Investigations

In addition to the investigations discussed above, the Company is involved in other investigations, disputes, litigations, and legal proceedings. The Company records an accrual for loss contingencies for legal proceedings when it believes that an unfavorable outcome is both (a) probable and (b) the amount or range of any possible loss is reasonably estimable. The Company intends to aggressively defend itself in these matters, and while there can be no

assurances and the outcome of these matters is currently not determinable, the Company currently believes that none of these existing claims or proceedings are likely to have a material adverse effect on its financial position. Notwithstanding the foregoing, there are many uncertainties associated with any litigation and these matters or other third-party claims against the Company may cause the Company to incur costly litigation and/or substantial settlement charges. In addition, the resolution of any intellectual property litigation may require the Company to make royalty payments, which could adversely affect gross margins in future periods. If any of those events were to occur, the Company's business, financial condition, results of operations, and cash flows could be adversely affected. The actual liability in any such matters may be materially different from the Company's estimates, if any, which could result in the need to adjust the liability and record additional expenses.

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Juniper Networks, Inc.

Notes to Consolidated Financial Statements (Continued)

Note 17. Selected Quarterly Financial Data (Unaudited)

The table below sets forth selected unaudited financial data for each quarter of the years ended December 31, 2018 and December 31, 2017 (in millions, except per share amounts):

	Year Ended December 31, 2018				Year Ended December 31, 2017			
	First Quarter	Second Quarter	Third Quarter	Fourth Quarter	First Quarter	Second Quarter	Third Quarter	Fourth Quarter
Net revenues	\$1,082.6	\$1,204.1	\$1,179.8	\$1,181.0	\$1,221.0	\$1,308.9	\$1,257.8	\$1,239.5
Gross margin	618.4	700.9	711.0	710.9	746.6	801.9	772.4	751.2
Income before income taxes	41.4	150.9	152.0	188.4	140.6	245.2	225.8	200.2
Net income (loss) ⁽¹⁾	\$34.4	\$116.5	\$223.8	\$192.2	\$108.8	\$179.8	\$165.7	\$(148.1)
Net income (loss) per share: ⁽²⁾								
Basic	\$0.10	\$0.33	\$0.65	\$0.56	\$0.29	\$0.47	\$0.44	\$(0.40)
Diluted ⁽³⁾	\$0.10	\$0.33	\$0.64	\$0.55	\$0.28	\$0.47	\$0.43	\$(0.40)

(1) Net income for the third and fourth quarters of 2018 include a lower statutory tax rate due to the Tax Act and tax benefits related to items unique to 2018. See Note 14, Income Taxes, for further discussion. Net loss for the fourth quarter of 2017 includes an estimated \$289.5 million of tax expense related to the Tax Act, and restructuring charges of \$36.2 million.

(2) Net income (loss) per share is computed independently. Therefore, the sum of the quarterly net income per share may not equal the total computed for the year or any cumulative interim period.

(3) Potentially dilutive common shares for the fourth quarter of 2017 were excluded from the computation of diluted net loss per share because their effect would be anti-dilutive.

Note 18. Subsequent Events

Restructuring

In January 2019, the Company initiated a restructuring plan (the "2019 Restructuring Plan") designed to realign its workforce with the Company's sales strategy, improve productivity, and enhance cost efficiencies. The 2019 Restructuring Plan consists of workforce reductions and facility consolidations and closures. The Company estimates that the implementation of the 2019 Restructuring Plan will result in total charges of approximately \$18.0 million to \$22.0 million.

Dividend Declaration

On January 29, 2019, the Company announced that the Board declared a quarterly cash dividend of \$0.19 per share of common stock to be paid on March 22, 2019 to stockholders of record as of the close of business on March 1, 2019.

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

Not applicable.

Item 9A. Controls and Procedures

(a) Management's Annual Report on Internal Control Over Financial Reporting: See "Management's Annual Report on Internal Control over Financial Reporting" under Item 8 of Part II of this Report, which is incorporated herein by reference.

(b) For the "Report of Independent Registered Public Accounting Firm," see the report under Item 8 of Part II of this Report, which is incorporated herein by reference.

Evaluation of Disclosure Controls and Procedures

Attached, as exhibits to this report are certifications of our principal executive officer and principal financial officer, which are required in accordance with Rule 13a-14 of the Securities Exchange Act of 1934, as amended (the "Exchange Act"). This "Controls and Procedures" section includes information concerning the controls and related evaluations referred to in the certifications and it should be read in conjunction with the certifications for a more complete understanding of the topics presented.

We carried out an evaluation, under the supervision and with the participation of our management, including our principal executive officer and principal financial officer, of the effectiveness of the design and operation of our disclosure controls and procedures, as defined in Rules 13a-15(e) and 15d-15(e) under the Exchange Act. Based upon that evaluation, our principal executive officer and principal financial officer concluded that, as of the end of the period covered in this Report, our disclosure controls and procedures were effective to ensure that information required to be disclosed by us in reports that we file or submit under the Exchange Act is recorded, processed, summarized, and reported within the time periods specified in Securities and Exchange Commission rules and forms and is accumulated and communicated to our management, including our principal executive officer and principal financial officer, as appropriate to allow timely decisions regarding required disclosure.

Changes in Internal Controls Over Financial Reporting

There were no changes in our internal control over financial reporting during the fourth quarter of 2018 that have materially affected, or are reasonably likely to materially affect, our internal control over financial reporting.

ITEM 9B. Other Information

As previously disclosed, the employment of Terrance F. Spidell, the Company's Chief Accounting Officer, will terminate the business day following the filing of this Report with the SEC. Effective immediately upon Mr. Spidell's termination, Kenneth B. Miller, our Executive Vice President and Chief Financial Officer, will assume the role as the Company's Interim Chief Accounting Officer.

Information regarding Mr. Miller's background and business experience is included in this Annual Report on Form 10-K under Item 1. Business, Executive Officers of the Registrant.

No material plan, contract, or arrangement was entered into or materially amended in connection with Mr. Miller's appointment as the Company's Interim Chief Accounting Officer, and there was no grant or award to Mr. Miller or modification thereto under any such plan, contract, or arrangement in connection with such appointment.

Mr. Miller is not a party to any transaction that would require disclosure under Item 404(a) of Regulation S-K. There are no family relationships between Mr. Miller and any of the Company's directors or executive officers.

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PART III

ITEM 10. Directors, Executive Officers and Corporate Governance

For information with respect to our executive officers, see Part I, Item 1 of this Annual Report on Form 10-K, under “Executive Officers of the Registrant.”

Information concerning our directors, including director nominations, and our audit committee and audit committee financial expert, is included in our definitive Proxy Statement to be filed with the SEC in connection with our 2019 Annual Meeting of Stockholders (the “Proxy Statement”) under “Corporate Governance Principles and Board Matters,” and “Election of Directors” and is incorporated herein by reference.

Information concerning Section 16(a) beneficial ownership reporting compliance is included in the Proxy Statement under “Section 16(a) Beneficial Ownership Reporting Compliance” and is incorporated herein by reference.

Information concerning our worldwide code of business conduct that applies to our principal executive officer and all other employees is included in the Proxy Statement under “Corporate Governance Principles and Board Matters” and is incorporated herein by reference.

ITEM 11. Executive Compensation

Information required by Item 402 of Regulation S-K is included in the Proxy Statement under “Director Compensation,” and “Executive Compensation,” and is incorporated herein by reference.

Information concerning compensation committee interlocks and insider participation appearing in the Proxy Statement under “Compensation Committee Interlocks and Insider Participation” is incorporated herein by reference.

Information concerning the compensation committee report appearing in the Proxy Statement under “Compensation Committee Report” is incorporated herein by reference.

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

Information concerning the security ownership of certain beneficial owners and management is included in the Proxy Statement under “Security Ownership of Certain Beneficial Owners and Management and Related Stockholder Matters” and is incorporated herein by reference.

Information concerning our equity compensation plan information is included in the Proxy Statement under “Equity Compensation Plan Information” and is incorporated herein by reference.

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

Information concerning certain relationships and related transactions is included in the Proxy Statement under the heading “Certain Relationships and Related Transactions” and is incorporated herein by reference.

Information concerning director independence is included in the Proxy Statement under the heading “Board Independence” and is incorporated herein by reference.

ITEM 14. Principal Accounting Fees and Services

Information concerning principal accountant fees and services and the audit committee's pre-approval policies and procedures is included in the Proxy Statement under the heading "Principal Accountant Fees and Services" and is incorporated herein by reference.

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PART IV

ITEM 15. Exhibits and Financial Statement Schedules

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

1. Consolidated Financial Statements

See Index to Consolidated Financial Statements at Item 8 herein.

2. Financial Statement Schedules

Juniper Networks, Inc.
 Schedule II - Valuation and Qualifying Accounts
 Years Ended December 31, 2018, 2017, and 2016
 (In millions)

	Balance at Beginning of Year	Charged to (Reversed from) Costs and Expenses	Write-offs, Net of Recoveries	Balance at End of Year
2018	\$ 5.7	\$ (0.8)	\$ —	\$ 4.9
2017	\$ 7.6	\$ (2.0)	\$ 0.1	\$ 5.7
2016	\$ 9.3	\$ 1.0	\$ (2.7)	\$ 7.6

	Balance at Beginning of Year	Additions Charged as a Reduction in Revenues	Charged to Other Accounts	Used	Balance at End of Year
2018 ^(*)	\$ 44.5	\$70.7	\$ —	\$(82.5)	\$ 32.7
2017	\$ 71.4	\$25.0	\$ 65.9	\$(107.1)	\$ 55.2
2016	\$ 71.2	\$44.6	\$ 89.6	\$(134.0)	\$ 71.4

(*) Upon adoption of Topic 606, the Company recorded a reduction of \$10.7 million as part of the cumulative effect adjustment to the January 1, 2018 opening accumulated deficit balance on the Consolidated Balance Sheet. See Note 2. Significant Accounting Policies, for further information on the cumulative effect of the changes made to the Company's Consolidated Balance Sheet as of January 1, 2018 for the adoption of Topic 606.

All other schedules have been omitted as the required information is not applicable or the information is presented in the Consolidated Financial Statements or notes thereto under Item 8 herein.

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3. Exhibits

Exhibit No.	Exhibit	Incorporated by Reference			
		Filing	Exhibit No.	File No.	File Date
3.1	<u>Restated Certificate of Incorporation of Juniper Networks, Inc. and Certificate of Amendment</u>	S-8	4.1	333-218344	5/30/2017
3.2	<u>Amended and Restated Bylaws of Juniper Networks, Inc.</u>	8-K	3.2	001-34501	5/30/2017
4.1	<u>Indenture, dated March 3, 2011, by and between Juniper Networks, Inc. and The Bank of New York Mellon Trust Company, N.A., as trustee</u>	8-K	4.1	001-34501	3/4/2011
4.2	<u>First Supplemental Indenture, dated March 3, 2011, by and between Juniper Networks, Inc. and The Bank of New York Mellon Trust Company, N.A., as trustee</u>	8-K	4.8	001-34501	3/4/2011
4.3	<u>Second Supplemental Indenture, dated March 4, 2014, by and between Juniper Networks, Inc. and The Bank of New York</u>	8-K	4.1	001-34501	3/4/2014
4.4	<u>Third Supplemental Indenture, dated March 4, 2015, by and between Juniper Networks, Inc. and The Bank of New York Mellon Trust Company, N.A., as trustee</u>	8-K	4.1	001-34501	3/10/2015
4.5	<u>Fourth Supplemental Indenture, dated February 26, 2016, by and between Juniper Networks, Inc. and The Bank of New York Mellon Trust Company, N.A., as trustee</u>	8-K	4.1	001-34501	2/29/2016
4.6	<u>Fifth Supplemental Indenture, dated February 26, 2016, by and between Juniper Networks, Inc. and The Bank of New York Mellon Trust Company, N.A., as trustee</u>	8-K	4.2	001-34501	2/29/2016
4.7	<u>Form of Note for Juniper Networks, Inc.'s 4.600% Senior Notes due 2021</u>	8-K	4.8	001-34501	3/4/2011
4.8	<u>Form of Note for Juniper Networks, Inc.'s 5.950% Senior Notes due 2041</u>	8-K	4.8	001-34501	3/4/2011
4.9	<u>Form of Note for Juniper Networks, Inc.'s 4.500% Senior Notes due 2024</u>	8-K	4.1	001-34501	3/4/2014
4.10	<u>Form of Note for Juniper Networks, Inc.'s 3.300% Senior Notes due 2020</u>	8-K	4.1	001-34501	3/10/2015
4.11	<u>Form of Note for Juniper Networks, Inc.'s 4.350% Senior Notes due 2025</u>	8-K	4.1	001-34501	3/10/2015
4.12	<u>Form of Note for Juniper Networks, Inc.'s 3.125% Senior Notes due 2019</u>	8-K	4.1	001-34501	2/29/2016
10.1	<u>Form of Indemnification Agreement entered into by the Registrant with each of its directors, officers and certain employees+</u>	10-Q	10.1	000-26339	11/14/2003
10.2	<u>Form of Indemnification Agreement entered into by the Registrant with each of its directors, officers and certain employees, approved for use on November 1, 2016+</u>	10-K	10.2	001-34501	2/24/2017
10.3	<u>Juniper Networks, Inc. 2006 Equity Incentive Plan, as amended October 2, 2014+</u>	10-Q	10.9	001-34501	11/10/2014
10.4	<u>Form of Notice of Grant and Restricted Stock Unit Agreement for the Juniper Networks, Inc. 2006 Equity Incentive Plan+</u>	10-K	10.20	000-26339	2/29/2008
10.5	<u>Form of Notice of Grant and Performance Share Agreement for the Juniper Networks, Inc. 2006 Equity Incentive Plan+</u>	10-K	10.21	000-26339	2/29/2008
10.6		10-Q	10.3	000-26339	5/9/2008

10.7	<u>Form of India Restricted Stock Unit Agreement under the Juniper Networks, Inc. 2006 Equity Incentive Plan+ Australian Addendum to the Juniper Networks, Inc. 2006 Equity Incentive Plan, as amended+</u>	10-Q	10.2	000-34501	11/5/2010
10.8	<u>Amended and Restated Juniper Networks, Inc. Performance Bonus Plan, effective January 1, 2017+</u>	8-K	10.1	001-34501	5/27/2016
10.9	<u>BTI Systems Inc. Amended and Restated 2012 Stock Option Plan and Long-Term Incentive Plan+</u>	S-8	4.3	333-211821	6/3/2016
10.10	<u>Aurrion, Inc. Amended and Restated 2008 Equity Incentive Plan+</u>	S-8	4.3	333-213490	9/2/2016
10.11	<u>AppFormix Inc. Amended and Restated 2013 Stock Plan+</u>	10-K	10.16	001-34501	2/24/2017
10.12	<u>Juniper Networks, Inc. Deferred Compensation Plan+</u>	S-8	4.4	333-151669	6/16/2008
10.13	<u>Cyphort Inc. Amended & Restated 2011 Stock Incentive Plan+</u>	S-8	4.3	333-221422	11/8/2017

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Exhibit No.	Exhibit	Incorporated by Reference		
		Filing	Exhibit No.	File No. File Date
10.14	<u>Amended and Restated Juniper Networks, Inc. 2015 Equity Incentive Plan+</u>	8-K	10.1	001-34501 5/30/2017
10.15	<u>HTBase Corporation 2018 Equity Incentive Plan and Forms of Award Agreement Thereunder*+</u>			
10.16	<u>Amended and Restated Juniper Networks, Inc. 2008 Employee Stock Purchase Plan+</u>	10-K	10.19	001-34501 2/23/2018
10.17	<u>Form of Restricted Stock Unit Agreement effective as of May 19, 2015+</u>	8-K	10.2	001-34501 5/20/2015
10.18	<u>Form of Performance Share Agreement effective as of May 19, 2015+</u>	8-K	10.3	001-34501 5/20/2015
10.19	<u>Form of Stock Option Agreement effective as of May 19, 2015+</u>	8-K	10.4	001-34501 5/20/2015
10.20	<u>Form of Severance Agreement for Certain Officers, approved for use on September 19, 2016+</u>	8-K	10.1	001-34501 9/20/2016
10.21	<u>Form of Severance Agreement for Certain Officers, approved for use on August 29, 2017+</u>	8-K	10.2	001-34501 8/31/2017
10.22	<u>Severance Agreement, dated September 5, 2017, between Juniper Networks, Inc. and Bikash Koley+</u>	10-Q	10.6	001-34501 11/7/2017
10.23	<u>Form of Change of Control Agreement for Certain Officers, approved for use on September 19, 2016+</u>	8-K	10.2	001-34501 9/20/2016
10.24	<u>Form of Change of Control Agreement for Certain Officers, approved for use on August 29, 2017+</u>	8-K	10.1	001-34501 8/31/2017
10.25	<u>Change of Control Agreement, dated September 5, 2017, between Juniper Networks, Inc. and Bikash Koley+</u>	10-Q	10.5	001-34501 11/7/2017
10.26	<u>Settlement, Release and Cross-License Agreement, dated May 27, 2014, by and between Juniper Networks, Inc. and Palo Alto Networks, Inc.</u>	8-K	10.1	001-34501 5/29/2014
10.27	<u>Credit Agreement, dated as of June 27, 2014, by and among Juniper Networks, Inc., the lenders from time to time party thereto and Citibank, N.A., as administrative agent</u>	8-K	10.1	001-34501 6/27/2014
10.28	<u>Letter Amendment to Credit Agreement, dated as of November 21, 2017, by and among Juniper Networks, Inc., the lenders from time to time party thereto and Citibank, N.A., as administrative agent</u>	10-K	10.31	001-34501 2/23/2018
10.29	<u>Master Services Agreement, dated December 31, 2018, between Juniper Networks, Inc. and International Business Machines Corporation, as amended on January 4, 2019*†</u>			
10.30	<u>Employment Offer Letter, dated November 18, 2014, between Juniper Networks, Inc. and Rami Rahim+</u>	8-K	10.1	001-34501 11/24/2014
10.31	<u>Employment Offer Letter between Juniper Networks, Inc. and Brian Martin+</u>	10-Q	10.2	001-34501 11/5/2015
10.32	<u>Compensation Letter, dated August 9, 2017, between Juniper Networks, Inc. and Anand Athreya+</u>	10-Q	10.3	001-34501 11/7/2017
10.33	<u>Employment Offer Letter, dated August 9, 2017, between Juniper Networks, Inc. and Bikash Koley+</u>	10-Q	10.4	001-34501 11/7/2017
10.34	<u>Employment Offer Letter, dated March 5, 2018, between Juniper Networks, Inc. and Manoj Leelanivas+</u>	10-Q	10.3	001-34501 5/8/2018
10.35		10-Q	10.4	001-34501 5/8/2018

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	<u>Letter Agreement, dated May 4, 2018, between Juniper Networks, Inc. and Vincent Molinaro+</u>				
10.36	<u>Letter Agreement, dated May 24, 2018, between Juniper Networks, Inc. and Terrance F. Spidell+</u>	8-K	10.1	001-34501	5/29/2018
10.37	<u>Amendment to Letter Agreement, dated November 5, 2018, between Juniper Networks, Inc. and Terrance F. Spidell+</u>	10-Q	10.3	001-34501	11/7/2018
10.38	<u>Letter Agreement, dated June 19, 2018, between Juniper Networks, Inc. and Pierre-Paul Allard+</u>	10-Q	10.1	001-34501	11/7/2018
10.39	<u>Form of Executive Compensation Recovery Agreement for Certain Officers, approved for use in November 2015+</u>	10-K	10.60	001-34501	2/29/2016
10.40	<u>Form of Indemnification Agreement entered into by Juniper Networks, Inc. with each of its directors, officers and certain employees, approved for use on August 9, 2018+</u>	8-K	10.1	001-34501	8/10/2018

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Exhibit No.	Exhibit	Incorporated by Reference		
		Filing	Exhibit No.	File No. File Date
10.41	<u>Share Repurchase Transaction Agreement, dated February 12, 2018 between Juniper Networks, Inc. and Barclays Bank PLC, Inc., through its agent Barclays Capital, Inc.</u>	10-Q	10.1	001-34501 5/8/2018
10.42	<u>Share Repurchase Transaction Agreement, dated February 12, 2018 between Juniper Networks, Inc. and Wells Fargo Bank, National Association</u>	10-Q	10.2	001-34501 5/8/2018
21.1	<u>Subsidiaries of the Company*</u>			
23.1	<u>Consent of Independent Registered Public Accounting Firm*</u>			
24.1	Power of Attorney (included on the signature page to the Report)			
31.1	<u>Certification of Chief Executive Officer pursuant to Rule 13a-14(a)/15d-14(a) of the Securities Exchange Act of 1934*</u>			
31.2	<u>Certification of Chief Financial Officer pursuant to Rule 13a-14(a)/15d-14(a) of the Securities Exchange Act of 1934*</u>			
32.1	<u>Certification of Chief Executive Officer pursuant to Section 906 of the Sarbanes-Oxley Act of 2002**</u>			
32.2	<u>Certification of Chief Financial Officer pursuant to Section 906 of the Sarbanes-Oxley Act of 2002**</u>			
101	The following materials from Juniper Networks Inc.'s Annual Report on Form 10-K for the year ended December 31, 2018, formatted in XBRL (Extensible Business Reporting Language): (i) the Consolidated Statements of Operations, (ii) Consolidated Statements of Comprehensive Income, (iii) Consolidated Balance Sheets, (iv) the Consolidated Statements of Cash Flows, and (v) Consolidated Statements of Changes in Stockholders' Equity, and (iv) Notes to Consolidated Financial Statements, tagged as blocks of text*			
101.INS	XBRL Instance Document*			
101.SCH	XBRL Taxonomy Extension Schema Document*			
101.CAL	XBRL Taxonomy Extension Calculation Linkbase Document*			
101.DEF	XBRL Taxonomy Extension Definition Linkbase Document*			
101.LAB	XBRL Taxonomy Extension Label Linkbase Document*			
101.PRE	XBRL Taxonomy Extension Presentation Linkbase Document*			

* Filed herewith

** Furnished herewith

+ Indicates management contract or compensatory plan, contract or arrangement.

† Portions of this exhibit (indicated by asterisks) have been omitted pursuant to a request for confidential treatment that has been separately filed with the Securities and Exchange Commission.

(b) Exhibits

See Exhibits in Item 15(a)(3) above in this Report.

(c) None

ITEM 16. Form 10-K Summary

Not applicable.

JUNIPER NETWORKS, JUNIPER, the Juniper Networks logo, JUNOS, CONTRAIL, BTI, BTI SYSTEMS, CYPHORT, and APPFORMIX are registered trademarks of Juniper Networks, Inc. and/or its affiliates in the United States and other countries. Other names may be trademarks of their respective owners.

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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.

Juniper Networks, Inc.

February 22, 2019 By: /s/ Kenneth B. Miller
 Kenneth B. Miller
 Executive Vice President, Chief Financial Officer
 (Duly Authorized Officer and Principal Financial Officer)

February 22, 2019 By: /s/ Terrance F. Spidell
 Terrance F. Spidell
 Vice President, Corporate Controller and Chief Accounting Officer
 (Duly Authorized Officer and Principal Accounting Officer)

POWER OF ATTORNEY

KNOW ALL PERSONS BY THESE PRESENTS, that each person whose signature appears below hereby constitutes and appoints Rami Rahim, Brian Martin, and Kenneth Miller, and each of them individually, as his or her attorney-in-fact, each with full power of substitution, for him or her in any and all capacities to sign any and all amendments to this Annual Report on Form 10-K, and to file the same with, with exhibits thereto and other documents in connection therewith, with the Securities and Exchange Commission, hereby ratifying and confirming all that said attorney-in-fact, or his or her substitute, may do or cause to be done by virtue hereof.

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 and on the dates indicated.

Signature	Title	Date
/s/ Rami Rahim Rami Rahim	Chief Executive Officer and Director (Principal Executive Officer)	February 22, 2019
/s/ Kenneth B. Miller Kenneth B. Miller	Executive Vice President and Chief Financial Officer (Principal Financial Officer)	February 22, 2019
/s/ Terrance F. Spidell Terrance F. Spidell	Vice President, Corporate Controller and Chief Accounting Officer (Principal Accounting Officer)	February 22, 2019
/s/ Scott Kriens Scott Kriens	Chairman of the Board	February 22, 2019
/s/ Robert M. Calderoni Robert M. Calderoni	Director	February 22, 2019

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Signature	Title	Date
/s/ Rahul Merchant Rahul Merchant	Director	February 22, 2019
/s/ James Dolce James Dolce	Director	February 22, 2019
/s/ Mercedes Johnson Mercedes Johnson	Director	February 22, 2019
/s/ Kevin DeNuccio Kevin DeNuccio	Director	February 22, 2019
/s/ Gary Daichendt Gary Daichendt	Director	February 22, 2019
/s/ William R. Stensrud William R. Stensrud	Director	February 22, 2019