

CIENA CORP  
Form 10-K  
December 21, 2015  
Table of Contents

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 October 31, 2015

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 001-36250

Ciena Corporation

(Exact name of registrant as specified in its charter)

Delaware

(State or other jurisdiction of  
Incorporation or organization)

23-2725311

(I.R.S. Employer  
Identification No.)

7035 Ridge Road, Hanover, MD

(Address of principal executive offices)

(410) 694-5700

(Registrant's telephone number, including area code)

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

Title of Each Class

Common Stock, \$0.01 par value

Name of Each Exchange on Which Registered

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 filing requirements for the past 90 days. YES  NO

Indicate by check mark whether the registrant has submitted electronically and posted on its corporate Web site, if any, every Interactive Data File required to be submitted and posted pursuant to Rule 405 of Regulation S-T (§232.4-5 of this chapter) during the preceding 12 months (or for such shorter period that the registrant was required to submit and post such files). YES  NO

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

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

Edgar Filing: CIENA CORP - Form 10-K

Large accelerated filer  Accelerated filer  Non-accelerated filer  Smaller reporting company   
(Do not check if a smaller reporting company)

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

The aggregate market value of the Registrant's Common Stock held by non-affiliates of the Registrant was approximately \$2.5 billion based on the closing price of the Common Stock on the New York Stock Exchange on May 1, 2015.

The number of shares of Registrant's Common Stock outstanding as of December 11, 2015 was 135,790,185.

**DOCUMENTS INCORPORATED BY REFERENCE**

Part III of the Form 10-K incorporates by reference certain portions of the Registrant's definitive proxy statement for its 2016 Annual Meeting of Stockholders to be filed with the Commission not later than 120 days after the end of the fiscal year covered by this report.

---

Table of Contents

CIENA CORPORATION  
 ANNUAL REPORT ON FORM 10-K  
 FOR FISCAL YEAR ENDED OCTOBER 31, 2015  
 TABLE OF CONTENTS

	Page
<u>PART I</u>	
<u>Item 1. Business</u>	<u>4</u>
<u>Item 1A. Risk Factors</u>	<u>21</u>
<u>Item 1B. Unresolved Staff Comments</u>	<u>35</u>
<u>Item 2. Properties</u>	<u>35</u>
<u>Item 3. Legal Proceedings</u>	<u>36</u>
<u>Item 4. Mine Safety Disclosures</u>	<u>37</u>
<u>PART II</u>	
<u>Item 5. Market for Registrant’s Common Stock, Related Stockholder Matters and Issuer Purchases of Equity Securities</u>	<u>38</u>
<u>Item 6. Selected Consolidated Financial Data</u>	<u>40</u>
<u>Item 7. Management’s Discussion and Analysis of Financial Condition and Results of Operations</u>	<u>42</u>
<u>Item 7A. Quantitative and Qualitative Disclosures about Market Risk</u>	<u>66</u>
<u>Item 8. Financial Statements and Supplementary Data</u>	<u>68</u>
<u>Item 9. Changes in and Disagreements with Accountants on Accounting and Financial Disclosure</u>	<u>108</u>
<u>Item 9A. Controls and Procedures</u>	<u>109</u>
<u>Item 9B. Other Information</u>	<u>109</u>
<u>PART III</u>	
<u>Item 10. Directors, Executive Officers and Corporate Governance</u>	<u>110</u>
<u>Item 11. Executive Compensation</u>	<u>110</u>
<u>Item 12. Security Ownership of Certain Beneficial Owners and Management and Related Stockholder Matters</u>	<u>110</u>
<u>Item 13. Certain Relationships and Related Transactions, and Director Independence</u>	<u>110</u>
<u>Item 14. Principal Accountant Fees and Services</u>	<u>110</u>
<u>PART IV</u>	
<u>Item 15. Exhibits and Financial Statement Schedules</u>	<u>111</u>
<u>Signatures</u>	<u>112</u>
<u>Index to Exhibits</u>	<u>113</u>

Table of Contents

## PART I

This annual report contains statements that discuss future events or expectations, projections of results of operations or financial condition, changes in the markets for our products and services, trends in our business, business prospects and strategies and other “forward-looking” information. In some cases, you can identify “forward-looking statements” by words like “may,” “will,” “should,” “expects,” “plans,” “anticipates,” “believes,” “estimates,” “predicts,” “intends,” “potential” the negative of those words and other comparable words. These statements may relate to, among other things,

adoption of next-generation network technology and software programmability and control of networks; our competitive landscape; factors impacting our industry; factors impacting the businesses of network operators and their network architectures; our corporate strategy, including our research and development, supply chain and go-to-market initiatives; efforts to increase application of our solutions in customer networks and to increase the reach of our business into new or growing customer and geographic markets; our backlog and seasonality in our business; our acquisition of Cyan, Inc. and its impact on our business and results of operations; expectations for our financial results, revenue, gross margin, operating expense and key operating measures in future periods; the adequacy of our sources of liquidity to satisfy our working capital needs, capital expenditures, and other liquidity requirements; business initiatives including real estate and IT transitions or initiatives; and market risks associated with financial instruments and foreign currency exchange rates. These statements are subject to known and unknown risks, uncertainties and other factors, and actual events or results may differ materially due to factors such as:

- our ability to execute our business and growth strategies;
- fluctuations in our revenue and operating results and our financial results generally;
- the loss of any of our large customers, a significant reduction in their spending, or a material change in their networking or procurement strategies;
- the competitive environment in which we operate;
- market acceptance of products and services currently under development and delays in product or software development;
- lengthy sales cycles and onerous contract terms with communications service providers, Web-scale providers and other large customers;
- product performance problems and undetected errors;
- our ability to diversify our customer base beyond our traditional customers and broaden the application for our solutions in communications networks;
- the international scale of our operations and fluctuations in currency exchange rates;
- our ability to accurately forecast demand for our products for purposes of inventory purchase practices;
- our ability to enforce our intellectual property rights, and costs we may incur in response to intellectual property right infringement claims made against us;
- the continued availability on commercially reasonable terms of software and other technology under third party licenses;
- failure to maintain the security of confidential, proprietary or otherwise sensitive business information or systems or to protect against cyber security attacks;
- the performance of our third party contract manufacturers;
- changes or disruption in components or supplies provided by third parties, including sole and limited source suppliers;
- our ability to effectively manage our relationships with third party service partners and distributors;
- unanticipated risks and additional obligations in connection with our resale of complementary products or technology of other companies;
- our exposure to the credit risks of our customers and our ability to collect receivables;
- modification or disruption of our internal business processes and information systems;
- the effect of our outstanding indebtedness on our liquidity and business;
- fluctuations in our stock price and our ability to access the capital markets to raise capital;
- unanticipated expenses or disruptions to our operations caused by facilities transitions or restructuring activities;
- inability to attract and retain experienced and qualified personnel;
-

disruptions to our operations caused by strategic acquisitions and investments or the inability to achieve the expected benefits and synergies of newly-acquired businesses;

- our ability to integrate Cyan, Inc. into our operations and to use that acquisition to grow our software business;
- changes in, and the impact of, government regulations, including with respect to: the communications industry generally; the business of our customers; the use, import or export of products; and the environment, potential climate change and other social initiatives;
- impairment charges caused by the write-down of goodwill or long-lived assets;
- our ability to maintain effective internal controls over financial reporting and liabilities that result from the inability to comply with corporate governance requirements; and

3

---

## Table of Contents

adverse results in litigation matters.

These are only some of the factors that may affect the forward-looking statements contained in this annual report. For a discussion identifying additional important factors that could cause actual results to vary materially from those anticipated in the forward-looking statements, see “Management’s Discussion and Analysis of Financial Condition and Results of Operations” and “Risk Factors” in this annual report. You should review these risk factors for a more complete understanding of the risks associated with an investment in our securities. However, we operate in a very competitive and rapidly changing environment and new risks and uncertainties emerge, are identified or become apparent from time to time. It is not possible for us to predict all risks and uncertainties that could have an impact on the forward-looking statements contained in this annual report. You should be aware that the forward-looking statements contained in this annual report are based on our current views and assumptions. We undertake no obligation to revise or update any forward-looking statements made in this annual report to reflect events or circumstances after the date hereof or to reflect new information or the occurrence of unanticipated events, except as required by law. The forward-looking statements in this annual report are intended to be subject to protection afforded by the safe harbor for forward-looking statements contained in the Private Securities Litigation Reform Act of 1995.

### Item 1. Business

#### Overview

We are a network specialist focused on providing communications networking solutions that enable a wide range of network operators to adopt next-generation architectures. We have optimized our business and solutions to enable network operators to create and deliver the broad array of high-bandwidth services relied upon by enterprise and consumer end users. We provide equipment, software and services that support the transport, switching, aggregation, service delivery and management of voice, video and data traffic on communications networks. In addition to our high-capacity hardware platforms, we offer network management and control software platforms that help network operators simplify and automate their networks and virtualize certain network functions. Our solutions are designed to enable network operators to adopt open, multi-vendor, software-programmable network infrastructures that improve automation, reduce network complexity and flexibly support changing service requirements. Our solutions yield business and operational value for our customers by enabling them to introduce new, revenue-generating services and to reduce network complexity and expense.

Our Converged Packet Optical, Packet Networking and Optical Transport products are used, individually or as part of an integrated solution, by communications service providers, cable and multiservice operators, Web-scale providers, submarine network operators, governments, enterprises, research and education (R&E) institutions and other network operators across the globe. Our products, which support applications from the network core to network access points, allow network operators to scale capacity, increase transmission speeds, allocate traffic and adapt dynamically to changing end-user service demands. Our software solutions are oriented around our Blue Planet software platform, a modular, network virtualization, service orchestration and network management software platform designed to simplify the creation, automation and delivery of services across multi-vendor and multi-domain network environments. To complement our hardware and software solutions, we offer a broad range of network transformation and related support services that help our customers design, optimize, deploy, manage and maintain their networks.

The rapid proliferation of communications services and devices, together with increased mobility, growth in video, cloud-based services and data center interconnection, have fundamentally affected the bandwidth and service demands placed upon communications networks. As the capacity of their network infrastructures are pressured, many network operators also face a rapidly changing business environment and shifting competitive landscape. Newer market entrants, such as cloud service and over-the-top content providers, are challenging certain traditional business models. Our OP<sup>n</sup> Architecture, which enables increased network scalability, flexibility and programmability, is designed to

meet these challenges. It allows for network-level software applications to control and configure the network dynamically, while flexible interfaces integrate computing, storage and other network resources. This approach enables highly configurable network infrastructures that can meet the “on-demand” service requirements of both our customers and their end-users. By enhancing software-based management and control, enabling network functions to be provided virtually, and reducing required network elements, our OP<sup>n</sup> approach optimizes network infrastructures. At the same time, it increases network scale at reduced cost and simplifies the management, deployment and orchestration of multi-vendor hardware and software elements. Our OP<sup>n</sup> Architecture, which underpins our solutions offering and guides our research and development strategy, is described more fully in the “Strategy” section below.

Acquisition of Cyan, Inc.

4

---

## Table of Contents

On August 3, 2015, we acquired Cyan, Inc. (“Cyan”), a leading provider of software-defined networking (SDN), network functions virtualization (NFV), and metro packet-optical solutions, in a cash and stock transaction. See Note 2 to the Consolidated Financial Statements found in Item 8 of Part II of this annual report for information relating to the terms of this transaction.

We believe that Cyan's best-in-class Blue Planet software platform will significantly strengthen our software offering and accelerate the strategy behind our OP<sup>n</sup> network approach. The Blue Planet software platform offers multi-vendor network and service orchestration and next-generation network management software solutions designed to automate, orchestrate, and manage the lifecycle of virtualized services across data centers and the wide area network (WAN). Further strengthening our leadership in packet-optical hardware solutions, Cyan also brings a metro packet-optical business with a complementary base of key customers for its family of Z-Series high-capacity, multi-layer switching and transport platforms. We believe that this strategic acquisition will accelerate our availability to offer a complete, on-demand solution for virtualized networks and services in an open ecosystem, and will increase our opportunity to play a leading role in the transformation of the network from the delivery of capacity to the creation of service capability on-demand.

## Certain Financial Information and Segment Data

We generated revenue of \$2.4 billion in fiscal 2015, as compared to \$2.3 billion in fiscal 2014. Sales to AT&T were \$423.5 million, or 18.5% of total revenue in fiscal 2014, and \$487.8 million, or 19.9% of total revenue in fiscal 2015. We did not have any other customers accounting for greater than 10% of our revenue in fiscal 2014 or fiscal 2015. For more information regarding our results of operations, see “Management's Discussion and Analysis of Financial Condition and Results of Operations” in Item 7 of Part II of this annual report. During fiscal 2015, we continued to organize our operations into four separate operating segments: “Converged Packet Optical;” “Packet Networking;” “Optical Transport;” and “Software and Services.” See Notes 21 and 24 to the Consolidated Financial Statements found in Item 8 of Part II of this annual report for information related to our segment results for fiscal 2015 and our updated operating segments for fiscal 2016, respectively.

The matters discussed in this “Business” section should be read in conjunction with the Consolidated Financial Statements found in Item 8 of Part II of this annual report, which include additional financial information about our operating segments, total assets, revenue, measures of profit and loss, and financial information about geographic areas and customers representing greater than 10% of revenue.

## Corporate Information and Access to SEC Reports

We were incorporated in Delaware in November 1992 and completed our initial public offering on February 7, 1997. Our principal executive offices are located at 7035 Ridge Road, Hanover, Maryland 21076. Our telephone number is (410) 694-5700, and our website address is [www.ciena.com](http://www.ciena.com). We make our annual reports on Form 10-K, quarterly reports on Form 10-Q, current reports on Form 8-K, and amendments to those reports, available free of charge in the “Investors” section of our website as soon as reasonably practicable after we file these reports with the Securities and Exchange Commission (the “SEC”). We routinely post the reports above, recent news and announcements, financial results and other important information about our business on our website at [www.ciena.com](http://www.ciena.com). Information contained on our website is not a part of this annual report.

## Industry Background

The markets in which we sell our communications networking solutions have been subject to significant changes in recent years. Network operators face rapid growth in network traffic, technology convergence and evolving cloud-based service offerings and end-user demands. Increased connectivity and growing demand for bandwidth and expanded service requirements have created significant demands on the network infrastructures of many network



operators. While network operators seek to grow revenue and manage the costs of their network, many face competitive pressures that challenge their business models. These pressures include new market entrants, such as Web-scale providers, and competing business models. We believe that these dynamics, and the need to adapt to changing business conditions, are creating an environment that will cause network operators to increasingly adopt infrastructures that are more open, programmable and automated. We also believe that these conditions will require network operators and vendors alike to seek to utilize an open ecosystem of physical and virtual network resources provided by a variety of third parties, driving increased openness and interoperability of network infrastructures.

#### Network Traffic Growth Driving Increased Capacity Requirements and Transmission Speeds

Optical networks, which carry voice, video and data traffic using multiple wavelengths of light across fiber optic cables, have experienced a multi-year period of strong traffic growth. Increased network traffic is being driven by significant technology shifts including:

## Table of Contents

**Growth in Mobile Devices and Applications.** Traffic from mobile applications, including Internet, video and data services, has expanded with the proliferation of smartphones, tablets and other wireless devices.

**Adoption and Reliance upon Bandwidth-Intensive Applications.** Business customers are increasingly dependent upon enterprise services and data center connectivity that facilitate global operations, employee mobility and access to critical business applications and data. At the same time, consumer-oriented applications and adoption of broadband technologies, including peer-to-peer Internet applications, video services, and multimedia downloads, have added to network traffic demands.

**Growth in Cloud Computing and Content Delivery.** Enterprises and consumers are continuing to adopt cloud-based technologies and service offerings that host key applications, store data, enable the viewing and downloading of content, and utilize on-demand computing resources.

We believe that this traffic growth will require network operators to adopt higher capacity networks with increased transmission speeds, particularly in regional and metropolitan networks and switching applications.

### Changes Impacting our Network Operator Customers

We believe the following are illustrative of the significant technology and service changes impacting the businesses of network operators and their design and adoption of next-generation network infrastructures.

**“Cloud” Services.** Cloud services are characterized by the sharing of remotely hosted computing, storage and network resources across a network to improve economics through higher utilization of networked elements. Prevalent cloud-based services include Platform as a Service (PaaS), Software as a Service (SaaS) and Infrastructure as a Service (IaaS). Through cloud-based arrangements, smaller enterprises and consumers can subscribe to an expanding range of services to replace locally-housed computing and storage requirements. Larger enterprises and data center operators can use private clouds to consolidate their own resources and public clouds to accommodate peak demand situations, sometimes in combination. Today, infrastructures exist to dynamically allocate centralized storage and computing resources from the cloud to end users and network architectures must be capable of being adapted in real time to changing capacity requirements and locations.

**Mobility.** Smart mobile devices and tablets that deliver integrated voice, audio, photo, video, email and mobile Internet capabilities are rapidly changing the services and data traffic carried by wireless networks. Because most wireless traffic ultimately travels over a wireline network in order to reach its destination, growth in mobile communications continues to place demands upon wireline networks. As a result, network architectures must be able to adapt and scale capacity cost-effectively to address a changing mix of end user services.

**Over-the-Top (OTT) Content.** Providers of OTT content are challenging the business models of certain network operators. OTT content refers to video, television and other services delivered directly from the content provider to the viewer or end user. These services are delivered and the Internet connections are provided by a different network operator than the content provider. OTT content is imposing significant demands upon the infrastructures of communications service providers and multi-service operators as bandwidth-intensive traffic associated with this content continues to grow.

**On-Demand Services.** The application-centric, cloud-driven world is changing user bandwidth consumption patterns. Network service users want to be connected to content and bandwidth whenever they desire, leading to less predictable traffic patterns and usage. To address this trend, many network operators are looking to adopt programmable network infrastructures that enable them to dynamically shift and allocate resources, on demand.

Internet of Things. As the number of networked connections between devices and servers grows, machine-to-machine (M2M)-related traffic is expected to represent an increasing portion of traffic in what some refer to as the “Internet of Things”. These device-to-device connections can provide value-added services and allow users to share data that can be monitored and analyzed by applications residing on various devices. We expect service traffic relating to the interconnection of machines or devices to grow as Internet and cloud-based content delivery, smartgrid applications, health care and safety monitoring, resource/inventory management, home entertainment, consumer appliances and other mobile data applications become more widely adopted.

Network Transition to Open, Software Programmable Network Architectures

6

---

## Table of Contents

By leveraging software programmability, network operators can adapt more quickly to changing end-user demands, provide network functions virtually on demand, and enable more efficient service delivery. We expect network operators increasingly to look to adopt networking strategies, including one or more of the following, that rely upon software to enable more open and programmable network infrastructures:

**Software-Defined Networking (SDN).** In traditional networking approaches, network resources are managed individually, focusing on the needs of a particular network element instead of the needs of the applications that network element enables. SDN seeks to separate or abstract that control from individual network elements, replacing it with a standard network control protocol. The result provides end-to-end visibility of network flows, enabling the ability to optimize traffic paths and programmatically control data flows through a network. SDN seeks to simplify networks, creating more open environments that ease manageability, support automation, and more quickly deliver customized services to end users.

**Network Function Virtualization (NFV).** Virtualization is the decoupling of physical IT or communications assets from the services or capabilities they can provide. These virtualization principles — previously applied to computing and storage resources — are now being applied to communications networks, with certain hardware-based network functions now capable of being virtualized and enabled via software. Through NFV, network operators can eliminate costly, single-function or dedicated network appliances, such as firewalls and wide area network (WAN) accelerators, and obtain the same functionality provided by those appliances virtually over centralized, generic servers. We believe that NFV can decrease power and space requirements, reduce cost, and improve network flexibility.

We believe that network operator adoption of these approaches and similar efforts to increase network software programmability and control of communications networks will require network operators and vendors alike to increasingly look to utilize an ecosystem of physical and virtual network resources provided by multiple third parties. We expect that these network architectural approaches, in turn, will drive increased openness and interoperability of multi-vendor, multi-domain network environments, requiring an increased degree of cooperation among us and other solutions providers, including our competitors.

## Strategy

Our corporate strategy to capitalize on the market dynamics above, promote operational efficiency and drive the profitable growth of our business includes the following initiatives:

**Promote our OP<sup>n</sup> Architecture.** We intend to promote our OP<sup>n</sup> Architecture as the preferred approach for network operators to transition to next-generation networks and address the industry dynamics described above. Our OP<sup>n</sup> Architecture enables a programmable infrastructure that brings together the reliability and capacity of optical networking with the flexibility and economics of packet networking technologies. Our OP<sup>n</sup> Architecture leverages this convergence to enable network operators to scale their networks efficiently and cost effectively, while applying advanced software-based network management and control for enhanced programmability. The software-driven aspects of this architecture become increasingly important as we expect network operators increasingly to seek to utilize an open ecosystem that enables multi-vendor and multi-domain network management and virtualized resources required for next-generation network architectures. We see opportunities to drive the evolution of network infrastructures by offering a portfolio of solutions, including our Blue Planet software platform, that can accelerate the realization of our OP<sup>n</sup> Architecture.

**Extend Technology Leaderships and Expand Application of Our Solutions.** Our product development strategy is focused on maintaining our technology leadership and expanding our role in customer networks to support service delivery and additional network applications. Our research and development efforts seek to extend our existing technologies, including our WaveLogic coherent optical processor for 200G and 400G optical transport, and to

introduce terabit per second and greater transmission speeds. We are also focused on expanding high-capacity service delivery capabilities in our Packet Networking and Converged Packet Optical products for metro networks, data center interconnectivity and WAN applications. Separately, we are increasing the scale, density and capability of our packet offerings, reducing power and space requirements, and enabling NFV capabilities for applications in metro networks, user aggregation and data center connectivity. We are also focused on increasing software programmability of networks and enabling network operators to automate and accelerate the creation and delivery of new, cloud-based services. These efforts include investments in our Blue Planet software platform — which is designed to automate, orchestrate, and manage physical network resources and virtualized services across data centers and the WAN —and its integration across our portfolio and with additional third party network resources.

## Table of Contents

Expand our Role and Reach through Go-to-Market Model. To address the industry dynamics described above, we believe that it is important to secure customer relationships with a diverse set of traditional communications service providers and Web-scale providers, as we expect that their purchasing and network decisions will become increasingly interdependent. As such, our go-to-market model is focused on driving sales growth by diversifying our business with existing customers and penetrating additional customer verticals and international markets.

Our sales and marketing efforts seek to promote increased sales to existing customers, particularly through opportunities that expand our role or the application of our solutions within their network and business. We are pursuing opportunities to increase adoption of our packet access and aggregation solutions, and to secure market share of our Blue Planet software platform, including within our existing customers base. We are also focused on opportunities to support metro aggregation, data center interconnectivity, managed services offerings, cloud-based services, submarine networks, business Ethernet services and mobile backhaul. We intend to leverage our existing customer relationships to increase sales and promote the adoption of our solutions as our customers scale and evolve their networks.

We also intend to target important growth markets, including key customer market segments and geographies. Our go-to-market strategy is focused on further penetrating Internet content providers, data center operators and other emerging network operators that form the “Web-scale” marketplace. We intend to use our direct and indirect sales channels to target and expand our sales with several other market verticals, including cable and multiservice operators, submarine network operators, enterprise customers and in the government, research and education (R&E) markets. We are also focused on securing additional communications service provider customers in outside of North America, including in high-growth geographies such as Brazil and India. We believe that this is an important part of our strategy and necessary for continued revenue growth. To leverage the geographic reach of our direct sales resources and expand sales into key geographies, we have pursued channel and distribution opportunities, including our strategic relationship with Ericsson, that enable sales through third parties, including service providers, systems integrators and value-added resellers.

Optimize Business to Yield Operating Leverage. We are actively pursuing initiatives to improve our operating margin, constrain operating expense and redesign certain business processes, systems, and resources. These initiatives include portfolio optimization and engineering efforts to drive improved efficiencies in the design and development of our solutions and supply procurement initiatives to ensure that our product cost model remains ahead of market-based price erosion. We are also focused on transforming our supply chain, including efforts to reduce our material and overhead costs, reduce customer lead times and improve inventory management and logistics. Our initiatives also include significant investments in the re-engineering of company-wide enterprise resource planning platforms, improved automation of key business processes and systems, and the off-shoring of certain business functions. We seek to leverage these initiatives to promote the profitable growth of our business and to drive additional operating leverage.

### Customers and Markets

We sell our product and service solutions through direct and indirect sales channels to network operators in the following customer and market segments.

#### Communications Service Providers

Our service provider customers include regional, national and international wireline and wireless carriers. Communications service providers are our historical customer base and continue to represent a significant majority of our revenue. We provide service providers with products from the wireline network core to its edge where end users gain access. Our service provider solutions address growing bandwidth demand from multiservice traffic growth and support key service provider offerings, including carrier-managed services, WAN consolidation, data center and

inter-site connectivity, wireless backhaul and business Ethernet services.

#### Cable & Multiservice Operators (MSO)

Our customers include leading cable and multiservice operators in the United States and internationally. Our cable and multiservice operator customers rely upon us for carrier-grade Ethernet transport and switching products and high-capacity coherent optical transport. Our platforms allow cable operators to integrate voice, video and data applications over a converged infrastructure and to scale their networking infrastructure to keep ahead of the bandwidth and application demands of their subscribers. Our products support key cable applications, including business Ethernet services, wireless backhaul, broadcast and digital video, voice over IP, and video on demand.

#### Web-scale Providers

8

---

## Table of Contents

Our customers include a diverse range of Internet content providers focused on applications such as search, social media, video, real-time communications and cloud-based offerings to consumers and enterprises. Customers within this segment also include data center operators and other emerging network operators that are often focused on virtualized infrastructure and Ethernet exchanges. These customers are sometimes collectively included in a customer segment referred to as “Web-scale” providers or “Web 2.0.” These customers often require massive scale, low latency, reliability and performance to interconnect critical data centers and connect end users to network resources and content.

### Enterprise

Our enterprise customers include large, multi-site commercial organizations, including participants in the financial, health care, transportation, utilities, energy and retail industries. Our products enable inter-site connectivity between data centers, sales offices, manufacturing plants, retail stores and research and development centers, using an owned or leased private fiber network or a carrier-managed service. Our products facilitate key enterprise applications including IT virtualization, cloud computing, business Ethernet services, business continuity, online collaboration, video conferencing, low latency networking and WAN encryption. Our products also enable our enterprise customers to prevent unexpected network downtime and ensure the safety, security and availability of their data.

### Government, Research and Education (R&E)

Our government customers include federal and state agencies in the United States as well as international government entities. Our R&E customers include research and education institutions in the United States and abroad, as well as communities or consortia including leaders in research, academia, industry and government. Customers in this segment seek to take advantage of technology innovation, improve their information infrastructure and facilitate increased collaboration. Our solutions feature ultra-high capacity required to meet the requirements of supercomputing systems, as well as network assurance and security features required by customers in this space.

### Submarine Network Operators

Our customers include service providers and consortia operators of submarine communications networks across the globe. Our submarine line terminal equipment (SLTE) helps submarine network operators build new networks and upgrade submarine networks to increase transmission speeds and capacity as they address rapid traffic growth, including from Web-scale providers. In recent years, we have had market success in enabling operators to upgrade terrestrial equipment located at the end of submarine networks, extending the value and life of their existing, submerged plant infrastructure. As traffic growth continues globally, we believe that the same trends impacting the terrestrial market will impact the submarine market, requiring further investment and the adoption of network approaches that improve economies of scale, cost per bit and end-to-end latency.

### Products and Services

Our product portfolio consists of our Converged Packet Optical, Packet Networking and Optical Transport products. Our product offering also includes a suite of software solutions that unify our product portfolio and provide enhanced network automation, software-defined management and control features, and NFV to enable efficient service delivery. These products, together with our network transformation and support services offerings, allow us to offer comprehensive solutions to customers that address their communications network priorities.

### Converged Packet Optical



Our Converged Packet Optical portfolio includes networking solutions optimized for the convergence of coherent optical transport, OTN switching and packet switching.

Using our coherent optical transport technology, our 6500 Packet-Optical Platform provides a flexible and scalable dense wavelength division multiplexing (DWDM) solution that adds capacity to core, regional and metro networks and enables efficient transport at high transmission speeds. Our 6500 Packet-Optical Platform features our WaveLogic coherent optical processors. The third generation of our custom silicon chipset is now in the market. WaveLogic facilitates deployment over existing fiber plant (terrestrial and submarine), scales capacity to 40G, 100G and greater transmission speeds, and minimizes the need for certain network equipment, such as amplifiers, regenerators and dispersion compensation devices. Our 6500 Packet-Optical Platform also includes certain integrated switching elements, addressing market demand for converged network features, functions and layers to drive more robust and cost-effective network infrastructures. This platform, which includes

## Table of Contents

several chassis sizes and a comprehensive set of line cards optimized for individual services or applications, can be used throughout the network, from customer premises to metropolitan networks, to the regional core, where the need for high capacity and carrier-class performance is essential.

This portfolio also includes our 5400 Family of products that provide packet switching capability to allocate network capacity efficiently and enable rapid service delivery. Our 5430 Reconfigurable Switching System includes a family of multi-terabit reconfigurable switching systems that utilize intelligent mesh networking to provide resiliency and feature an integrated optical control plane to automate the provisioning and bandwidth control of high-capacity services. These platforms flexibly support a mix of Carrier Ethernet/MPLS, OTN, WDM, and SONET/SDH switching to facilitate the transition to a service-enabling infrastructure. Our CoreDirector® Multiservice Optical Switch and 5430 Reconfigurable Switching System offer multiservice, multi-protocol switching systems that consolidate the functionality of an add/drop multiplexer, digital cross-connect and packet switch into a single, high-capacity intelligent switching system. These products address both core and metro segments of communications networks and support key managed services, including Ethernet/TDM Private Line and IP services.

In May 2015, we launched our Waveserver™ product. Waveserver is a stackable data center interconnect (DCI) platform that allows network operators, including Web-scale providers and data center operators, to scale bandwidth quickly and to support high-speed data transfer, virtual machine migration and disaster recovery/backup between data centers. Waveserver is a specialized platform, purpose-built for connecting data centers within a single metro area. It is optimized for the capacity, speed, space and power requirements of data center environments. Waveserver is designed to leverage the data server user experience, with open application programming interfaces (APIs) and server-like deployment, provisioning and programmability via smart devices. We believe this product expands our role and market opportunity beyond our current Converged Packet Optical solutions offering and enables us to diversify further our business through sales to additional customer verticals.

Our Converged Packet Optical solutions also include our family of Z-Series high-capacity, multi-layer switching and transport platforms acquired from Cyan. Our Z-Series family is used in regional and metro networks and is designed to support a variety of use cases including increasing capacity for optical transport, traffic aggregation at the network edge and switching optimized for handoff at the network core.

## Packet Networking

Our Packet Networking products allow customers to deliver new, revenue-generating services to consumer and enterprise end users. These products have applications from the edge of metro and core networks, where they aggregate traffic, to the access tiers of networks where they can be deployed to support wireless backhaul infrastructures and to deliver business data services. Our Packet Networking products facilitate network simplicity and cost effectiveness, including reduced costs associated with power and space, as compared to traditional IP routing network designs. These solutions also enable a flexible and open architecture that reduces the complexity of growing networks and enables network infrastructures to adapt to new service demands of end users.

Our Packet Networking portfolio includes our 8700 Packetwave platform, a multi-terabit packet switching platform for high-density metro networks and inter-data center wide area networks. The 8700 combines high-capacity Ethernet switching and optical transport technologies for both data center networks and metro networks, to help network operators rapidly deliver cloud-based services, streaming video, and Internet content distribution, efficiently aggregate users, and provide express connections to data centers. By increasing the traffic density while reducing power and space requirements, the 8700 also enables network operators to reduce capital and operating expense associated with their networks and to simplify service management and enablement.

To date, revenue from our Packet Networking segment has been primarily related to our 3000 family of service delivery switches and service aggregation switches, and our 5000 family of service aggregation switches. Our 3000 and 5000 families support the access and aggregation tiers of communications networks and have principally been deployed to support business data services and wireless backhaul infrastructures. Employing sophisticated, carrier-grade Ethernet switching technology, these products deliver “quality of service” capabilities, virtual local area networking and switching functions, and carrier-grade operations, administration, and maintenance features. Our Service-Aware Operating System (SAOS) software is employed in our Packet Networking and Converged Packet Optical platforms to provide a common set of advanced Ethernet features and to incorporate key Operations, Administration, and Maintenance (OA&M) features to support the network and service performance monitoring requirements of large-scale Ethernet deployments. We believe our SAOS is a key differentiator in the market, enabling reduced cost and improving operational efficiency from the network edge to core with consistent system and service attributes.

## Table of Contents

### Optical Transport

Our Optical Transport products include stand-alone WDM and SONET/SDH-based optical transport solutions that add capacity to core, regional and metro networks and enable cost-effective and efficient transport of voice, video and data traffic at high transmission speeds. The products in this segment principally include the 4200 Advanced Services Platform, Corestream® Agility Optical Transport System, 5100/5200 Advanced Services Platform, Common Photonic Layer (CPL) and 6100 Multiservice Optical Platform. Our Optical Transport portfolio includes our traditional SONET/SDH transport and data networking products, as well as certain enterprise-oriented transport solutions that support storage and LAN extension, interconnection of data centers, and virtual private networks.

### Software and Services

Historically, our software business has principally consisted of the development and licensing of element and network management software and software-related services that support our hardware offerings. In connection with our acquisition of Cyan during the fourth quarter of fiscal 2015, we unified the software resources and activities of both companies under a single brand and comprehensive set of resources known as the "Blue Planet" division. This division, which includes Ciena's former Agility division, is focused on providing next-generation, multi-vendor network virtualization, service orchestration and management solutions. During fiscal 2015, our software revenue was principally related to licensing of our element and network management solutions. The market relating to our Blue Planet software platform and the other applications of our Blue Planet division is in the early stages. As such, a number of features or functions associated with our Blue Planet software platform are in development, not generally available, or have only recently been introduced, and revenue from our Blue Planet software division and its solutions have been immaterial to date.

#### Blue Planet Software Platform and Network Management and Planning Solutions

Our Blue Planet software platform is a modular, network virtualization, service orchestration and network management software platform that simplifies the creation, automation and delivery of services across multi-vendor and multi-domain network environments. Blue Planet is multi-functional in that it is designed to simplify the management, deployment and orchestration of hardware and software elements and services, from Ciena or third-party vendors, based on the requirements of a network operator. Blue Planet utilizes a container-based, micro-services software architecture that provides flexibility to support the following use cases from a unified software platform:

**Management and Control Platform (MCP).** Multi-layer WANs have historically operated using multiple layer- and vendor-specific management systems, with limited awareness of adjacent layers or network resources, resulting in additional complexity and cost, and challenging network management. Through its automation, management and control of multi-vendor and multi-layer network infrastructures, Blue Planet eliminates this complexity. Our MCP solution enables network operators to visualize and control these disparate network elements through a unified solution that incorporates open APIs and resource adapters to control a range of third-party network elements. We believe our MCP solution can enable network operators to simplify their network environments and accelerate end-to-end service delivery.

**Multi-Domain Service Orchestration (MDSO).** Network infrastructures are comprised of multiple technology layers and domains — such as the data center, cloud, metro, access and core networks — and it is often complex for network operators to offer services end-to-end in this environment. Blue Planet enables service orchestration across multiple network (physical and virtual) domains and multiple hardware and software vendors. By using open APIs and model-driven templates, Blue Planet integrates with third-party SDN controllers, element and network management systems, and orchestration platforms. We believe our MDSO solution can enable network operators to minimize vendor-specific management silos, reduce network complexity and enhance service management.

NFV Orchestration (NFVO). To reduce their dependence upon single-purpose hardware platforms and accelerate the time to market for new revenue-generating services, network operators are increasingly looking for solutions that enable these functions through software that runs on industry-standard servers, network and storage platforms. Blue Planet provides network operators with carrier-grade, NFV management and orchestration capabilities for instantiating and managing virtualized network functions and data center resources. Blue Planet uses an open, vendor-agnostic approach that allows network operators to select and scale those virtual network functions (VNFs) they wish to offer to their end customers. We believe that our NFVO solution can enable network operators to increase network programmability, reduce complexity and cost, and reduce time-to-market with new, revenue-generating services.

## Table of Contents

Our software portfolio also includes our SDN multi-layer WAN controller that spans network layers, our Navigate path computation engine, and network-level software applications that enable WAN services over an open network ecosystem. Our V-WAN application provides service providers the tools to offer enterprise, content, and cloud services to end users in a more automated and self-service oriented manner. We also offer network-level software applications, including Protect and Optimize, that enable network operators to improve reliability, to allow for more rapid network restoration, and to better monetize cloud-based services.

Network Management Solutions and Software. Our software offerings include our element and network management solutions and planning tools used by network operators. Our network management solutions currently include our OneControl Unified Management System. This integrated network and service management solution supports our Converged Packet Optical, Packet Networking and Optical Transport network elements from a single platform. It offers end to end service creation, activation, and assurance to enable rapid deployment of next-generation services and technologies under a single system. It provides visualization of fault and performance information for network health status, and enables proactive network management. Our OneControl system integrates easily into next-generation back office solutions and features a flexible and scalable deployment model. The OneControl platform supports element and equipment management functions for large scale networks including as network inventory, network element configuration backup, network element software delivery and security administration. In addition to its network maintenance functions, OneControl also has a rich set of service management applications for the provisioning and troubleshooting of wavelength, OTN and packet services.

Our element and network management software offering also includes a number of software solutions that support installed base of network solution. These include:

- ON-Center® Network & Service Management Suite, which provides network and service management for our installed base of 4200 Advanced Services Platform and Corestream products;
- Optical Suite Release, which provides network and service management for our installed base of traditional SONET/SDH transport Optical Transport products;
- Ethernet Services Manager which provides network and service management for our installed base of Packet Networking products; and
- Planet Operate, which provides network and service management for our installed base of Z-Series products acquired from Cyan.

Our software suite also includes Ciena OnePlanner, a suite of planning tools advanced, multi-layer network design and optimization tool that leverages Ciena's extensive background in Layer 0 and Layer 1 control plane planning and simulation, photonic system design, advanced algorithm research, and graphical user interface development into a comprehensive and easy-to-use platform for network engineering and design. OnePlanner correlates data from different network layers, allowing the network planner to easily see the association between services, facilities, and equipment. OnePlanner's modular architecture enables use of design and engineering modules with the Ciena portfolio.

## Global Services

To complement our product portfolio, we offer a broad suite of consulting and support services that help our customers design, optimize, deploy, manage and maintain their communications networks. We believe that our broad set of service offerings is an important component of our network specialist approach and a significant differentiator from our competitors. We believe that our services offering and our close collaborative engagement with customers provide us with valued insight into network and business challenges faced by our customers, enabling them to modernize and gain value from their network infrastructures. Our services offerings enable us to work closely with our customers in the assessment, planning, deployment, and transformation of their networks. We believe that our customers place significant value on the strategic, consultative engagements afforded by our services offering and on

our ability to partner with them through services-oriented solutions that address their network and business needs on an individualized basis.

Our services and support portfolio includes the following offerings:

- Deployment services, including turn-key installation and turn-up and test services;
- Maintenance and support services, including:
  - helpdesk and technical support assistance;
  - spares and logistics management;
  - engineering dispatch and on-site professional services; and
  - equipment repair and replacement.

## Table of Contents

• Software-related services, including software subscription services, consulting, network migration and integration, installation and upgrade support services, and technical support;  
• Network management and monitoring through network operations center (NOC) services; and  
• Project management services, including staging, site preparation and installation support activities.

We also provide training services to educate our customers and sales channels on the implementation, use, functionality and support of our solutions. We provide the services above using a combination of Ciena technical support engineers and qualified and authorized third party service partners.

## Product Development

Our industry is subject to rapid technological developments, emerging service delivery requirements and shifts in customer and end-user network demand. To remain competitive, we must continually enhance our product platforms and add new features and functionality to ensure alignment with these changing dynamics. Our research and development strategy has been to enable scalable, software-configurable network infrastructures that can dynamically enable service delivery and provide an on-demand end-user experience. Our OP<sup>n</sup> Architecture, which underpins our solutions offering and guides our research and development strategy, leverages the convergence of optical and packet technologies to increase network scale cost effectively, while emphasizing software-enabled programmability, automation and open interfaces. Our product development initiatives include design and development work intended to address growing opportunities for the application of our solutions, such as metropolitan networks, data center interconnectivity, enterprise networking, and packet-based infrastructure solutions for high-capacity cloud-based service delivery. To address these opportunities and promote our OP<sup>n</sup> network vision, our current development efforts are focused upon:

• Developing products that enhance software-based network management, orchestration and function virtualization, including:

• Investments in our Blue Planet software platform to integrate across our portfolio, enable management of additional third party network resources, and enhance orchestration across multi-vendor and multi-domain network environments;

• Extension of the NFV capabilities of Blue Planet to enable virtualization of additional network features or functions traditionally supported by hardware elements;

• SDN multi-layer WAN controller; and

• Network-level applications that automate various network functions, support new service introduction and monetize network assets.

• Enhancing and extending our Packet-Optical and Packet Networking solutions, including:

• Extending our leadership in coherent transport platforms, at 100G, 200G and 400G;

• Continued development of our WaveLogic coherent optical processor to improve network capacity, transmission speed, spectral efficiency and reach;

• Accelerating packet feature development and technology convergence upon our Converged Packet Optical platforms; and

• Expanding packet networking capabilities and features for our high-capacity Ethernet aggregation switches, for metro and service aggregation applications, data center interconnection, cloud-service delivery, mobile backhaul and business Ethernet services;

• Designing products that enable network operators to achieve improved cost and efficiency, including with respect to power, space and cost per bit.

Our research and development efforts are also geared toward portfolio optimization and engineering changes intended to drive cost reductions across our platforms.



We regularly review our existing solution offering and prospective development of new components, features or products, to determine their fit within our portfolio and broader corporate strategy. We also assess the market demand, technology evolution, prospective return on investment and growth opportunities, as well as the costs and resources necessary to develop and support these products. To ensure that our product development investments and solutions offerings are closely aligned with market demand, we continually seek input from customers and promote collaboration among our product development, marketing and global field organizations. In some cases, where we seek to utilize or gain access to complementary or emerging technologies or solutions, we may obtain such technology through an acquisition or, alternatively, through initiatives with third parties pursuant to technology licenses, original equipment manufacturer (OEM) arrangements and other strategic technology relationships or investments. In addition, we participate in industry and standards organizations and, where appropriate, incorporate information from these affiliations throughout the product development process.

## Table of Contents

Within our global products group, we maintain a team of skilled engineers with extensive experience in the areas of photonics, packet and circuit switching, network system design, and embedded operating system and network management software. Our research and development expense was \$383.4 million, \$401.2 million and \$414.2 million, for fiscal 2013, 2014 and 2015, respectively. For more information regarding our research and development expense, see “Management's Discussion and Analysis of Financial Condition and Results of Operations” in Item 7 of Part II of this report.

## Sales and Marketing

Within our global field organization, we maintain a direct sales presence that is organized geographically around the following markets: (i) United States and Canada; (ii) Caribbean and Latin America; (iii) Europe, Middle East and Africa; and (iv) Asia-Pacific. Within each geographic area, we may maintain specific teams or personnel that focus on a particular region, country, customer or market vertical. These teams include sales management, account salespersons, and systems engineers, as well as services professionals and commercial management personnel, who ensure we operate closely with and provide a high level of support to our customers.

We also maintain a global channel program that works with resellers, systems integrators, service providers, and other third party distributors who market and sell our products and services. Our third party channel sales include the packet-optical resale element of our strategic relationship with Ericsson. We intend to pursue and foster targeted strategic channel relationships in an effort to enable us to sell our products as a complement to the broader offering of these vendors or integrators, including, in particular, in support of enterprise-oriented applications and cloud-based services. We see opportunities to leverage our strategic channel relationships to address additional customer market segments, additional applications for our solutions and growth geographies. We believe this strategy and our use of third party channels afford us expanded market opportunities and reduce the financial and operational risk of entering these additional markets.

To support our sales efforts, we engage in marketing activities intended to promote our brand, increase customer awareness of our product, software and service offerings and drive demand generation. Our marketing strategy is highly focused on building our brand, promoting our OPn network architecture and increasing customer adoption of our solutions, particularly our Blue Planet software platform. Our marketing team supports Ciena's sales efforts through a variety of marketing vehicles, including direct customer interaction, industry events, public relations, industry analysts, social media, trade shows, our website and other marketing channels for our customers and channel partners.

## Operations and Supply Chain Management

Operations personnel within our global products group manage our relationships with our third party manufacturers and manage our supply chain. In addition, elements of our global products group team also address component sourcing, product testing and quality, fulfillment and logistics relating to our sales, support and professional services, and distribution efforts.

We utilize a global sourcing strategy that emphasizes procurement of materials and product manufacturing in lower cost regions. We rely upon third party contract manufacturers, with facilities in Canada, Mexico, Thailand and the United States, to manufacture, support and ship, our products, and therefore are exposed to risks associated with their businesses, financial condition and the geographies in which they operate. We also rely upon these contract manufacturers and other third parties to perform design and prototype development, component procurement, full production, final assembly, testing and customer order fulfillment. Our manufacturers procure components necessary for assembly and manufacture of our products based on our specifications, approved vendor lists, bills of materials and testing and quality standards. Our manufacturers' activity is based on rolling forecasts that we provide to them to

estimate demand for our products. This build-to-forecast purchase model exposes us to the risk that our customers will not order those products for which we have forecast sales, or will purchase less than we have forecast. As a result, we may incur carrying charges or obsolete material charges for components purchased by our manufacturers that are not ultimately used. We work closely with our manufacturers to manage material, quality, cost and delivery times, and we continually evaluate their services to ensure performance on a reliable and cost-effective basis.

We are currently using a direct order fulfillment model for the sale of several products, and we are engaged in initiatives to expand this model to a broader set of products. This model allows us to rely on our third party contract manufacturers to perform final system integration and testing prior to shipment of products from their facilities directly to our customers. For certain products, we continue to perform a portion of the system assembly, software application, final system integration and testing internally. We believe that our sourcing and manufacturing strategy allows us to conserve capital, lower costs of product sales, adjust quickly to changes in market demand, and operate without dedicating significant resources to manufacturing-related plant and equipment.

## Table of Contents

Shortages or lack of availability of components that we rely upon have occurred and are possible. Our products include some components that are proprietary in nature and only available from one or a small number of suppliers. Significant time would be required to establish relationships with alternate suppliers or providers of such components. We generally do not have long-term contracts with suppliers or contract manufacturers that guarantee supply of components or manufacturing services. If component supplies become limited, production at a contract manufacturer is disrupted, or if we experience difficulty in our relationship with a key supplier or contract manufacturer, we may encounter manufacturing delays that could adversely affect our business and result of operations.

As part of our effort to optimize our operations, we continue to focus on driving cost reductions through sourcing, design and engineering efforts, rationalizing our supply chain, outsourcing or virtualizing certain activities, and consolidating distribution sites and service logistics partners. These efforts also include process optimization and initiatives, such as vendor-managed inventory models, to drive improved efficiencies in our sourcing, logistics and fulfillment.

## Backlog

Generally, we make sales pursuant to purchase orders placed by customers under framework agreements that govern the general commercial terms and conditions of the sale of our products and services. These agreements do not obligate customers to purchase any minimum or guaranteed order quantities. Moreover, we are periodically awarded business for new network opportunities or network upgrades following a selection process. In calculating backlog, we only include (i) customer purchase orders for products that have not been shipped and for services that have not yet been performed; and (ii) customer orders relating to products that have been delivered and services that have been performed, but are awaiting customer acceptance under the applicable purchase terms. Generally, our customers may cancel or change their orders with limited advance notice, or they may decide not to accept our products and services, although both cancellation and non-acceptance are infrequent. Backlog may be fulfilled several quarters following receipt of a purchase order, or in the case of certain service obligations, may relate to multi-year support period. As a result, backlog should not necessarily be viewed as an accurate indicator of future revenue for any particular period.

Our backlog increased from \$824 million as of October 31, 2014 to \$1 billion as of October 31, 2015. Backlog includes product and service orders from commercial and government customers combined. Backlog at October 31, 2015 includes approximately \$260 million primarily related to orders for products and maintenance and support services that are not expected to be filled or performed within fiscal 2016. Backlog at October 31, 2014 included approximately \$180 million primarily related to orders for products and maintenance and support services, that were not expected to be filled within fiscal 2015. Because backlog can be defined in different ways by different companies, our presentation of backlog may not be comparable with figures presented by other companies in our industry.

## Seasonality

Like other companies in our industry, we have experienced quarterly fluctuations in customer activity due to seasonal considerations. We typically experience reductions in order volume toward the end of the calendar year, as the procurement cycles of some of our customers slow and network deployment activity by service providers is curtailed. This period coincides with the first quarter of our fiscal year. This seasonality in our order flows can result in somewhat weaker revenue results in the first quarter of our fiscal year. These seasonal effects may not apply consistently in future periods and may not be a reliable indicator of our future revenue or results of operations.

## Competition

Competition among communications network solution vendors remains intense. The markets in which we compete are characterized by rapidly advancing technologies, introduction of new networking solutions and aggressive selling

efforts to displace incumbent vendors and capture market share. Competition for sales of communications networking solutions is dominated by a small number of very large, multi-national companies. Our competitors include Alcatel-Lucent, Cisco, Fujitsu, Huawei, Juniper Networks, and ZTE. In April 2015, Nokia Corporation announced its intent to acquire Alcatel-Lucent. Many of these competitors have substantially greater financial, operational and marketing resources than Ciena, significantly broader product offerings or more extensive customer bases. We also continue to compete with several smaller, but established, companies that offer one or more products that compete directly or indirectly with our offerings or whose products address specific niches within the markets and customer segments we address. These competitors include ADVA, BTI, Coriant, ECI, Infinera, and RAD. In addition, there are a variety of earlier-stage companies with products targeted at specific segments of the communications networking market. These competitors often employ aggressive competitive and business tactics as they seek to gain entry to certain customers or markets. Due to these practices and the narrower focus of their development efforts, these

## Table of Contents

competitors may be able to develop and introduce products more quickly, or offer commercial terms that are more attractive to customers.

The principal competitive factors applicable to our markets include:

- product functionality, speed, capacity, scalability and performance;
- price and total cost of ownership of our solutions;
- incumbency and strength of existing business relationships;
- ability to offer comprehensive networking solutions, consisting of equipment, software and network consulting services;
- product development that satisfies customers' immediate and future network requirements;
- flexibility and openness of platforms, including ease of integration, interoperability and integrated management;
  - manufacturing and lead-time capability; and
- services and support capabilities.

As a result of the intense and fragmented environment in which we compete, winning new opportunities can require that we agree to unfavorable commercial terms or pricing, and certain other onerous contractual commitments. These terms can adversely affect our results of operations. These terms can also lengthen our revenue recognition or cash collection cycles, add start-up costs to initial sales or deployment of our solutions, require financial commitments or performance bonds, and place a disproportionate allocation of risk upon us.

We expect the competitive landscape in which we operate to continue to broaden and competition to increase as network technologies and layers continue to converge, network hardware functions become virtualized, and networks come under unified software management, orchestration and control. As these changes occur, we expect to compete with a broader group of vendors promoting their own network architectural approaches and offering their own solutions. As we expand our solutions offerings, we expect that our business will overlap more directly with additional networking solution suppliers, including IP router vendors, data center switch providers and other suppliers or integrators of networking technology traditionally geared toward different network applications, layers or functions. In addition, as demands for software programmability, management and control increase, we expect to increasingly compete with software vendors and other information technology vendors or integrators. We may also face increased competition from companies, including those in our supply chain, who develop networking products based on off-the-shelf or commoditized hardware technology, referred to as “white box” hardware, particularly where our customer's network strategies seek to emphasize deployment of those product offerings.

## Patents, Trademarks and Other Intellectual Property Rights

The success of our business and technology leadership is significantly dependent upon our proprietary and internally developed technology. We rely upon the intellectual property protections afforded by patents, copyrights, trademarks, and trade secret laws to establish, maintain and enforce rights in our proprietary technologies and product branding. We maintain an invention incentive program that seeks to reward innovation and an internal invention review board that selects appropriate protection mechanisms for our technology. We regularly file applications for patents and have a significant number of patents in the United States and other countries where we do business. As of December 1, 2015, we had 1,508 issued U.S. patents, 249 pending U.S. patent applications and 432 non-U.S. patents.

We also rely on non-disclosure agreements and other contracts and policies regarding confidentiality with employees, contractors and customers to establish proprietary rights and protect trade secrets and confidential information. Our practice is to require employees and relevant consultants to execute non-disclosure and proprietary rights agreements

upon commencement of their employment or consulting arrangements with us. These agreements acknowledge our ownership of intellectual property developed by the individual during the course of his or her work with us. The agreements also require that these persons maintain the confidentiality of all proprietary information disclosed to them.

Enforcing proprietary rights, especially patents, can be costly, and we cannot be certain that the steps that we are taking will detect or prevent all unauthorized use. The industry in which we compete is characterized by rapidly changing technology, a large number of patents, and frequent claims and related litigation regarding patent and other intellectual property rights. We have been subject to several claims related to patent infringement, including by competitors and also by non-practicing patent assertion entities, and we have been requested to indemnify customers pursuant to contractual indemnity obligations relating to infringement claims made by third parties. Intellectual property infringement assertions could cause us to incur substantial costs, including settlement costs and legal fees in the defense of related actions. If we are not successful in defending these claims, our business could be adversely affected. For example, we may be required to enter into a license agreement requiring

## Table of Contents

us to make ongoing royalty payments, we may be required to redesign our products or we may be prohibited from selling infringing technology in certain jurisdictions.

Our operating system, element management and network virtualization, management, and orchestration software and other solutions incorporate software and components under licenses from third parties, including software subject to various open source software licenses. As network operators seek to adopt network infrastructures with increased software control and programmability and utilize an open ecosystem of physical and virtual network resources provided by multiple third parties, and as we invest in our Blue Planet software platform, we expect to incorporate into our solutions additional elements of open source software or license additional software or technology from third parties. We expect that these network architectural approaches will require increased openness and interoperability of multi-vendor, multi-domain network environments, requiring an increased degree of cooperation among solutions providers. Failure to obtain or maintain such licenses or other third party intellectual property rights could affect our development efforts and market opportunities, or could require us to re-engineer our products or to obtain alternate technologies. Moreover, there is a risk that open source and other technology licenses could be construed in a manner that could impose unanticipated conditions or restrictions on our ability to commercialize our products.

## Environmental Matters

Our business and operations are subject to environmental laws in various jurisdictions around the world, including the Waste Electrical and Electronic Equipment (WEEE) and Restriction of the Use of Certain Hazardous Substances in Electrical and Electronic Equipment (RoHS) regulations adopted by the European Union. We are also subject to disclosure and related requirements that apply to the presence of “conflict minerals” in our products or supply chain. We seek to operate our business in compliance with such laws relating to the materials and content of our products and product takeback and recycling. Environmental regulation is increasing, particularly outside of the United States, and we expect that our domestic and international operations may be subject to additional environmental compliance requirements, which could expose us to additional costs. To date, our compliance costs relating to environmental regulations have not resulted in a material cost or effect on our business, results of operations or financial condition.

## Employees

As of October 31, 2015, we had a global workforce consisting of 5,345 employees. We have not experienced any work stoppages, and we consider the relationships with our employees to be good. While we have been able to recruit and retain key personnel with the capabilities required by our business and markets, competition for highly skilled technical, engineering and other personnel with experience in our industry is intense. We believe that our future success depends in critical part on our continued ability to recruit, motivate and retain such qualified personnel.



Table of Contents

## Directors and Executive Officers

The table below sets forth certain information concerning our directors and executive officers:

Name	Age	Position
Patrick H. Nettles, Ph.D.	72	Executive Chairman of the Board of Directors
Gary B. Smith	55	President, Chief Executive Officer and Director
Stephen B. Alexander	56	Senior Vice President and Chief Technology Officer
James A. Frodsham	49	Senior Vice President and Chief Strategy Officer
François Locoh-Donou	44	Senior Vice President and Chief Operating Officer
James E. Moylan, Jr.	64	Senior Vice President, Finance and Chief Financial Officer
Andrew C. Petrik	52	Vice President and Controller
David M. Rothenstein	47	Senior Vice President, General Counsel and Secretary
Marcus Starke	54	Senior Vice President and Chief Marketing Officer
Harvey B. Cash (1)(3)	77	Director
Bruce L. Claflin (1)(2)	64	Director
Lawton W. Fitt (2)	62	Director
Patrick T. Gallagher (1)(3)	60	Director
T. Michael Nevens (2)	66	Director
Judith M. O'Brien (1)(3)	65	Director
Michael J. Rowny (2)	65	Director

(1)Member of the Compensation Committee

(2)Member of the Audit Committee

(3)Member of the Governance and Nominations Committee

Our Directors hold staggered terms of office, expiring as follows: Ms. Fitt, Dr. Nettles and Mr. Rowny in 2016; Ms. O'Brien and Messrs. Cash and Smith in 2017; and Messrs. Claflin, Nevens and Gallagher in 2018.

Patrick H. Nettles, Ph.D. has served as a Director of Ciena since April 1994 and as Executive Chairman of the Board of Directors since May 2001. From October 2000 to May 2001, Dr. Nettles was Chairman of the Board of Directors and Chief Executive Officer of Ciena, and he was President and Chief Executive Officer from April 1994 to October 2000. Dr. Nettles serves as a Trustee for the California Institute of Technology and serves on the board of directors of Axcelis Technologies, Inc. and The Progressive Corporation. Dr. Nettles has previously served on the board of directors of Appttrigger, Inc., formerly known as Carrius Technologies, Inc., and on the board of directors of Optiwind Corp, a privately held company

Gary B. Smith joined Ciena in 1997 and has served as President and Chief Executive Officer since May 2001. Mr. Smith has served on Ciena's Board of Directors since October 2000. Prior to his current role, his positions with Ciena included Chief Operating Officer, and Senior Vice President, Worldwide Sales. Mr. Smith previously served as Vice President of Sales and Marketing for INTELSAT and Cray Communications, Inc. Mr. Smith also serves on the boards of directors of Avaya Inc. and CommVault Systems, Inc. Mr. Smith is a member of the President's National Security Telecommunications Advisory Committee, the Global Information Infrastructure Commission and the Center for Corporate Innovation (CCI).

Stephen B. Alexander joined Ciena in 1994 and has served as Chief Technology Officer since September 1998 and as a Senior Vice President since January 2000. Mr. Alexander has previously served as General Manager of Products & Technology and General Manager of Transport and Switching & Data Networking.

James A. Frodsham joined Ciena in May 2004 and has served as Senior Vice President and Chief Strategy Officer since March 2010 with responsibility for our strategic planning and corporate development activities. Mr. Frodsham has previously served as General Manager of Ciena's former Broadband Access Group and Metro and Enterprise Solutions Group. Prior to joining Ciena, from August 2000 to January 2003, Mr. Frodsham served as chief operating officer of Innovance Networks, an optical networking company. Prior to that, Mr. Frodsham was employed for more than ten years in senior level positions with Nortel Networks in product development and marketing strategy.

Mr. Frodsham serves on the board of directors of Innovance Networks.

18

---

Table of Contents

François Locoh-Donou has served as Ciena's Senior Vice President and Chief Operating Officer since November 2015. In this capacity, Mr. Locoh-Donou leads Ciena's Global Field Organization, including the global sales and services functions, as well as Ciena's engineering, supply chain, product line management, quality/customer advocacy organizations on a global basis. Mr. Locoh-Donou previously served as Ciena's Senior Vice President, Global Products Group from August 2011 to October 2015. Mr. Locoh-Donou joined Ciena in August 2002 and served as Ciena's Vice President and General Manager, EMEA from June 2005 to August 2011.

James E. Moylan, Jr. has served as Senior Vice President, Finance and Chief Financial Officer since December 2007.

Andrew C. Petrik joined Ciena in 1996 and has served as Vice President, Controller since August 1997 and served as Treasurer from August 1997 to October 2008.

David M. Rothenstein joined Ciena in January 2001 and has served as Senior Vice President, General Counsel and Secretary since November 2008. Mr. Rothenstein served as Vice President and Associate General Counsel from July 2004 to October 2008 and previously as Assistant General Counsel.

Marcus Starke joined Ciena in February 2015, and currently serves as Senior Vice President and Chief Marketing Officer where he oversees all global marketing and external communications activities. From May 2014 to January 2015, Mr. Starke served as Chief Marketing Officer at MicroStrategy, a leading global provider of enterprise-ready platforms for business analytics and mobile analytics. From November 2009 to April 2014, Mr. Starke was Senior Vice President, Worldwide Marketing and Communications at SAP, the global market leader in enterprise application software. Prior to that, he was President and CEO (Europe, Middle East and Africa) for Wunderman, as well as Chairman and CEO of the German arm of Publicis Worldwide.

Harvey B. Cash has served as a Director of Ciena since April 1994. Mr. Cash is a general partner of InterWest Partners, a venture capital firm in Menlo Park, California, which he joined in 1985. Mr. Cash serves on the boards of directors of First Acceptance Corp., Silicon Laboratories, Inc. and Argonaut Group, Inc. and has previously served on the boards of directors of i2 Technologies, Inc., Voyence, Inc. and Staktek Holdings, Inc.

Bruce L. Claflin has served as a Director of Ciena since August 2006. Mr. Claflin served as President and Chief Executive Officer of 3Com Corporation from January 2001 until his retirement in February 2006. Mr. Claflin joined 3Com as President and Chief Operating Officer in August 1998. Prior to 3Com, Mr. Claflin served as Senior Vice President and General Manager, Sales and Marketing, for Digital Equipment Corporation. Mr. Claflin also worked for 22 years at IBM, where he held various sales, marketing and management positions, including general manager of IBM PC Company's worldwide research and development, product and brand management, as well as president of IBM PC Company Americas. Mr. Claflin serves on the boards of directors of Advanced Micro Devices (AMD), where he is currently Chairman of the Board and Chairman of its Nominating and Governance Committee, and IDEXX Laboratories, Inc.

Lawton W. Fitt has served as a Director of Ciena since November 2000. From October 2002 to March 2005, Ms. Fitt served as Director of the Royal Academy of Arts in London. From 1979 to October 2002, Ms. Fitt was an investment banker with Goldman Sachs & Co., where she was a partner from 1994 to October 2002, and a managing director from 1996 to October 2002. In addition to her service as a director of non-profit organizations, Ms. Fitt currently serves on the boards of directors of The Carlyle Group LP and The Progressive Corporation, and she has previously served on the boards of directors of Thomson Reuters, Overture Acquisition Corporation and Frontier Communications Company. She also serves as a director or trustee of several non-profit organizations.

Patrick T. Gallagher has served as a Director of Ciena since May 2009. Mr. Gallagher currently serves as Chairman of Harmonic Inc, a global provider of high-performance video solutions to the broadcast, cable, telecommunications and managed service provider sectors. From March 2008 until April 2012, Mr. Gallagher was Chairman of Ubiquisys Ltd., a leading developer and supplier of femtocells for the global 3G mobile wireless market. From January 2008 until February 2009, Mr. Gallagher was Chairman of Macro 4 plc, a global software solutions company, and from May 2006 until March 2008, served as Vice Chairman of Golden Telecom Inc., a leading facilities-based provider of integrated communications in Russia and the CIS. From 2003 until 2006, Mr. Gallagher was Executive Vice Chairman and served as Chief Executive Officer of FLAG Telecom Group and, prior to that role, held various senior management positions at British Telecom. Mr. Gallagher is also Chairman of Intercloud SAS, a Paris-headquartered

provider of global private cloud connectivity services. Mr. Gallagher also serves on the board of directors of Sollers JSC.

T. Michael Nevens has served as a Director of Ciena since February 2014. Since 2006, Mr. Nevens has served as senior adviser to Permira Advisers, LLC, an international private equity fund. From 1980 to 2002, Mr. Nevens held various leadership positions at McKinsey & Co., most recently as a director (senior partner) and as managing partner of the firm's Global Technology Practice. He also served on the board of the McKinsey Global Institute, which conducts research on economic and policy issues. Mr. Nevens is a member of the Advisory Council of the Mendoza College of Business at the University of Notre

Table of Contents

Dame, where he has been an adjunct professor of Corporate Governance and Strategy. Mr. Nevens serves on the boards of directors of NetApp, Inc. and Altera Corporation.

Judith M. O'Brien has served as a Director of Ciena since July 2000. Since November 2012, Ms. O'Brien has served as a partner and head of the Emerging Company Practice Group at the law firm of King & Spalding. Ms. O'Brien served as Executive Vice President and General Counsel of Obopay, Inc., a provider of mobile payment services, from November 2006 through December 2010. From February 2001 until October 2006, Ms. O'Brien served as a Managing Director at Incubic Venture Fund, a venture capital firm. From August 1980 until February 2001, Ms. O'Brien was a lawyer with Wilson Sonsini Goodrich & Rosati, where, from February 1984 to February 2001, she was a partner specializing in corporate finance, mergers and acquisitions and general corporate matters. Ms. O'Brien serves on the board of directors of privately-held companies, Theatro Labs, Inc. and Inform, Inc., and has previously served on the board of directors of Adaptec, Inc.

Michael J. Rowny has served as a Director of Ciena since August 2004. Mr. Rowny has been Chairman of Rowny Capital, a private equity firm, since 1999. From 1994 to 1999, and previously from 1983 to 1986, Mr. Rowny was with MCI Communications in positions including President and Chief Executive Officer of MCI's International Ventures, Alliances and Correspondent group, acting Chief Financial Officer, Senior Vice President of Finance, and Treasurer. Mr. Rowny's career in business and government has also included positions as Chairman and Chief Executive Officer of the Ransohoff Company, Chief Executive Officer of Hermitage Holding Company, Executive Vice President and Chief Financial Officer of ICF Kaiser International, Inc., Vice President of the Bendix Corporation, and Deputy Staff Director of the White House. Mr. Rowny serves on the board of directors of Neustar, Inc.

## Table of Contents

### Item 1A. Risk Factors

Investing in our securities involves a high degree of risk. In addition to the other information contained in this report, you should consider the following risk factors before investing in our securities.

#### Risks Relating to Our Business

Our revenue and operating results can fluctuate significantly and unpredictably from quarter to quarter. Our revenue and results of operations can fluctuate significantly and unpredictably from quarter to quarter. Our budgeted expense levels are based on our visibility into customer spending plans and our projections of future revenue and gross margin. Customer spending levels are uncertain and subject to change and reductions in our expense levels to react to deviations from our projections can take significant time to implement. Because the percentage of revenue that we generate from customer orders placed during that particular quarter has increased as compared to our historical periods, this may increase the likelihood of fluctuations in our results. Our revenue for a particular quarter is difficult to predict, and a shortfall in expected orders in a given quarter can materially adversely affect our revenue and results of operations for that quarter or future quarterly periods. Additional factors that contribute to fluctuations in our revenue and operating results include:

- broader macroeconomic conditions, including weakness and volatility in global markets, that affect our customers;
- changes in capital spending by large communications service providers;
- order timing, volume and cancellations;
- backlog levels;
- the level of competition and pricing pressure in our industry;
- the impact of commercial concessions or unfavorable commercial terms required to maintain incumbency or secure new opportunities with key customers;
- our level of success in achieving cost reductions and efficiencies in our supply chain;
- our incurrence of start-up costs required to support initial deployments, gain new customers or enter new markets;
- the timing of revenue recognition on sales, particularly relating to large orders;
- the mix of revenue by product segment, geography and customer in any particular quarter;
- installation service availability and readiness of customer sites;
- adverse impact of foreign exchange; and
- seasonal effects in our business.

Quarterly fluctuations from these and other factors may also cause our results of operations to fall short of or to exceed significantly the expectations of securities analysts or investors, which may cause volatility in our stock price.

A small number of large communications service providers account for a significant portion of our revenue, and the loss of any of these customers, a significant reduction in their spending, or a material change in their networking or procurement strategies could have a material adverse effect on our business and results of operations.

While our customer base has diversified in recent years to include a number of network operators and new customer verticals, including Web-scale providers and cable and multiservice operators, a significant portion of our revenue remains concentrated among a few, large global communications service providers. By way of example, AT&T accounted for approximately 19.9% of fiscal 2015 revenue, and our largest ten customers contributed 52.5% of fiscal 2015 revenue. Consequently, our financial results are closely correlated with the spending of a relatively small number of customers and can be significantly affected by market, industry or competitive dynamics affecting their businesses. The loss of a significant customer could have a material adverse effect on our business and results of operations. Our business and results of operations can also be materially adversely impacted by reductions in spending

or capital expenditure budgets by our largest service provider customers. Because the terms of our framework contracts do not obligate customers to purchase any minimum or guaranteed order quantities, and customers often have the right to modify or cancel orders, there can be no assurance as to spending levels, and spending levels can be unpredictable.

Our reliance upon a relatively small number of customers also increases our exposure to changes in their spending levels, network priorities and purchasing strategies. Our customers have previously undertaken, and may undertake in the future, procurement initiatives or adopt network strategies adverse to our business. These initiatives may seek to achieve reductions in capital expenditure, require commercial concessions from suppliers or reduce the number of direct suppliers of networking technology. During fiscal 2015, AT&T and other service provider customers announced initiatives to reduce capital expenditures in future periods, including on network infrastructure, and there can be no assurance that we will be able to maintain the sales

## Table of Contents

levels we achieved during fiscal 2015. Moreover, AT&T and other customers, including service providers, are pursuing network strategies that seek to utilize enhanced software programmability, management and control of networks and to deploy off-the-shelf or commoditized hardware technology, referred to as "white box" hardware, in lieu of existing solutions. These strategies may present challenges and opportunities for our business, particularly where we are an incumbent equipment vendor. As a result, we expect our competitive landscape to broaden and competition to increase in the markets in which we compete for sales to service provider customers. The loss of a significant customer, a significant reduction in their spending, or a material change in their networking or procurement strategies could have a material adverse effect on our business, financial condition and results of operations.

We face intense competition that could hurt our sales and results of operations, and we expect the competitive landscape in which we operate to continue to broaden to include additional solutions providers.

We face a competitive market for sales of communications networking equipment, software and services, and this level of competition could result in pricing pressure, reduced demand, commercial concessions, lower gross margins and loss of market share that could harm our business and results of operations. Competition is intense on a global basis, as we and our competitors aggressively seek to displace incumbent equipment vendors at large service providers and secure new customers. In an effort to maintain our incumbency and secure additional customer opportunities, we have in the past, and may in the future, agree to aggressive pricing, commercial concessions and other unfavorable terms that reduce our revenue and result in low or negative gross margins on a particular order or group of orders. These commercial concessions can also place a disproportionate amount of risk on us.

We expect the competitive landscape in which we operate to broaden, as multinational equipment vendors seek to promote adoption of competing architectural approaches for next-generation networks and retain incumbent positions with large customers globally. As we expand our solutions offering, and, as network technologies, features and layers converge, we expect that our business will overlap more directly with additional networking solution suppliers, including IP router vendors and data center switch providers. In addition, as demands for software programmability, management and control increase, we expect to increasingly compete with software vendors and other information technology vendors and system integrators. We may also face increased competition from companies, including our suppliers, who develop networking products based on off-the-shelf or commoditized hardware technology, referred to as "white box" hardware, particularly where our customer's network strategies seek to emphasize deployment of those product offerings. The expansion of our competitive landscape, and entry of new competitors into our markets and customers, may adversely impact our business and results of operations.

Generally, competition in our markets is based on any one or a combination of the following factors:

- product functionality, speed, capacity, scalability and performance;
- price and total cost of ownership of our solutions;
- incumbency and existing business relationships;
- ability to offer comprehensive networking solutions, consisting of equipment, software and network consulting services;
- product development plans and the ability to meet customers' immediate and future network requirements;
- flexibility and openness of platforms, including ease of integration, interoperability and integrated software programmability and management;
  - manufacturing and lead-time capability; and
- services and support capabilities.

A small number of very large companies have historically dominated our industry, many of which have substantially greater financial and marketing resources, broader product offerings and more established relationships with service providers and other customer segments than we do. Because of their scale and resources, they may be perceived to be



a better fit for the procurement or network operating and management strategies of large service providers. We also compete with a number of smaller companies that provide significant competition for a specific product, application, customer segment or geographic market. Due to the narrower focus of their efforts, these competitors may achieve commercial availability of their products more quickly or may be more attractive to customers in a particular product niche. If competitive pressures increase, or if we fail to compete successfully in our markets, our business and results of operations could suffer.

Our business and operating results could be adversely affected by unfavorable changes in macroeconomic and market conditions and reductions in the level of spending by customers in response to these conditions.

Our business and operating results, which depend significantly on general economic conditions and demand for our products and services, could be materially adversely affected by unfavorable or uncertain macroeconomic and market

## Table of Contents

conditions, globally or with respect to a particular region or country where we operate. Broad macroeconomic weakness and market volatility have previously resulted in sustained periods of decreased demand for our products and services that have adversely affected our operating results. Macroeconomic and market conditions could be adversely affected by a variety of political, economic or other factors in the United States and international markets that could adversely affect spending levels of our customers and their end users, and create volatility or deteriorating conditions in the markets in which we operate. Macroeconomic uncertainty or weakness could result in:

- reductions in customer spending and delay, deferral or cancellation of network infrastructure initiatives;
- increased competition for fewer network projects and sales opportunities;
- increased pricing pressure that may adversely affect revenue, gross margin and profitability;
- difficulty forecasting operating results and making decisions about budgeting, planning and future investments;
- increased overhead and production costs as a percentage of revenue;
- tightening of credit markets needed to fund capital expenditures by Ciena or our customers;
- customer financial difficulty, including longer collection cycles and difficulties collecting accounts receivable or write-offs of receivables; and
- increased risk of charges relating to excess and obsolete inventories and the write-off of other intangible assets.

Reductions in customer spending in response to unfavorable or uncertain macroeconomic and market conditions, globally or with respect to a particular region where we operate, would adversely affect our business, results of operations and financial condition.

Our reliance upon third party component suppliers, including sole and limited source suppliers, exposes our business to additional risk and could limit our sales, increase our costs and harm our customer relationships.

We maintain a global sourcing strategy and depend on third party suppliers for support in our product design and development, and in the sourcing of key product components and subsystems. Our products include optical and electronic components for which reliable, high-volume supply is often available only from sole or limited sources. Increases in market demand or scarcity of resources or manufacturing capability have previously resulted in shortages in availability of important components for our solutions, allocation challenges and increased lead times. We are exposed to risks relating to unfavorable economic conditions or other similar challenges affecting the businesses and results of operations of our component providers that can affect their liquidity levels, ability to continue investing in their businesses, ability to meet development commitments and manufacturing capability. These and other challenges affecting our suppliers could expose our business to increased costs, loss or lack of supply, or discontinuation of components that can result in lost revenue, additional product costs, increased lead times and deployment delays that could harm our business and customer relationships. We do not have any guarantees of supply from these third parties, and in certain cases are relying upon temporary commercial arrangements or standard purchase orders. As a result, there is no assurance that we will be able to secure the components or subsystems that we require, in sufficient quantity and quality, and on reasonable terms. The loss of a source of supply, or lack of sufficient availability of key components, could require that we locate an alternate source or redesign our products, either of which could result in business interruption, increased costs and negatively affect our product gross margin and results of operations. Our business and results of operations would be negatively affected if we were to experience any significant disruption or difficulties with key suppliers affecting the price, quality, availability or timely delivery of required components.

Investment of research and development resources in communications networking technologies for which there is not a matching market opportunity, or failure to sufficiently or timely invest in technologies for which there is market demand, would adversely affect our revenue and profitability.

The market for communications networking hardware and software solutions is characterized by rapidly evolving technologies, changes in market demand and increasing adoption of software-based networking solutions. We

continually invest in research and development to sustain or enhance our existing hardware and software solutions and to develop or acquire new technologies including new software platforms. There is often a lengthy period between commencing these development initiatives and bringing new or improved solutions to market. During this time, technology preferences, customer demand and the markets for our solutions, or those introduced by our competitors, may move in directions we had not anticipated. There is no guarantee that our new products, including our Blue Planet software platform, or enhancements to other solutions will achieve market acceptance or that the timing of market adoption will be as predicted. There is a significant possibility, therefore, that some of our development decisions, including significant expenditures on acquisitions, research and development costs, or investments in technologies, will not meet our expectations, and that our investment in some projects will be unprofitable. There is also a possibility that we may miss a market opportunity because we failed to invest, or invested too late, in a technology, product or enhancement sought by our customers. Changes in market demand or investment priorities may also cause us to

## Table of Contents

discontinue existing or planned development for new products or features, which can have a disruptive effect on our relationships with customers. If we fail to make the right investments or fail to make them at the right time, our competitive position may suffer, and our revenue and profitability could be harmed.

Network equipment sales to communications service providers, Web-scale providers and other large customers often involve lengthy sales cycles and protracted contract negotiations and may require us to agree to commercial terms or conditions that negatively affect pricing, risk allocation, payment and the timing of revenue recognition.

Our sales initiatives, particularly with communications service providers, Web-scale providers and other large customers, often involve lengthy sales cycles. These selling efforts often involve a significant commitment of time and resources by us and our customers that may include extensive product testing, laboratory or network certification, network or region-specific product certification and homologation requirements for deployment in networks. Even after a customer awards its business or decides to purchase our solutions, the length of deployment time can vary depending upon the customer's schedule, site readiness, the size of the network deployment, the degree of custom configuration required and other factors. Additionally, these sales also often involve protracted and sometimes difficult contract negotiations in which we may deem it necessary to agree to unfavorable contractual or commercial terms that adversely affect pricing, expose us to penalties for delays or non-performance, and require us to assume a disproportionate amount of risk. To maintain incumbency with key customers for existing and future business opportunities, we may be required to offer discounted pricing, make commercial concessions or offer less favorable terms as compared to our historical business arrangements with these customers. We may also be requested to provide deferred payment terms, vendor or third-party financing or other alternative purchase structures that extend the timing of payment and revenue recognition. Alternatively, customers may insist upon terms and conditions that we deem too onerous or not in our best interest, and we may be unable to reach a commercial agreement. As a result, we may incur substantial expense and devote time and resources to potential sales opportunities that never materialize or result in lower than anticipated sales.

We may experience delays in the development of our products that may negatively affect our competitive position and business.

Our hardware and software networking solutions are based on complex technology, and we can experience unanticipated delays in developing, manufacturing and introducing these solutions to market. Delays in product development efforts by us or our supply chain may affect our reputation with customers, affect our ability to seize market opportunities and impact the timing and level of demand for our products. The development of new technologies may increase the complexity of supply chain management or require the acquisition, licensing or interworking with the technology of third parties. As a result, each step in the development cycle of our products presents serious risks of failure, rework or delay, any one of which could adversely affect the cost-effectiveness and timely development of our products. We may encounter delays relating to engineering development activities and software, design, sourcing and manufacture of critical components, and the development of prototypes. In addition, intellectual property disputes, failure of critical design elements, and other execution risks may delay or even prevent the release of these products. If we do not successfully develop products in a timely manner, our competitive position may suffer, and our business, financial condition and results of operations could be harmed.

Product performance problems and undetected errors affecting the performance, reliability or security of our products could damage our business reputation and negatively affect our results of operations.

The development and production of sophisticated hardware and software for communications network equipment is highly complex. Some of our products can be fully tested only when deployed in communications networks or when carrying traffic with other equipment, and software products may contain bugs that can interfere with expected performance. As a result, undetected defects or errors, and product quality, interoperability, reliability and performance problems are often more acute for initial deployments of new products and product enhancements. We have recently launched, and are in the process of launching, a number of new hardware and software platforms, including our Blue Planet software platform, and other solutions targeting metro network applications or Web-scale

operators or enterprise end users. Unanticipated product performance problems can relate to the design, manufacturing, installation, operation and interoperability of our products. Undetected errors can also arise as a result of defects in components, software or manufacturing, installation or maintenance services supplied by third parties, and technology acquired from or licensed by third parties. From time to time we have had to replace certain components, provide software remedies or other remediation in response to defects or bugs, and we may have to do so again in the future. There can be no assurance that such remediation would not have a material impact on our business and results of operations. In addition, unanticipated security vulnerabilities relating to our products or the activities of our supply chain, including any actual or perceived exposure of our solutions to malicious software or cyber-attacks, could adversely affect our business and reputation. Product performance, reliability, security and quality problems can negatively affect our business, and may result in some or all of the following effects:

Table of Contents

- damage to our reputation, declining sales and order cancellations;
- increased costs to remediate defects or replace products;
- payment of liquidated damages, contractual or similar penalties, or other claims for performance failures or delays;
- increased warranty expense or estimates resulting from higher failure rates, additional field service obligations or other rework costs related to defects;
- increased inventory obsolescence;
- costs and claims that may not be covered by liability insurance coverage or recoverable from third parties; and
- delays in recognizing revenue or collecting accounts receivable.

These and other consequences relating to undetected errors affecting the quality, reliability and security of our products could negatively affect our business and results of operations.

Efforts by us or by our strategic third party channel partners to sell our solutions into targeted geographic markets and customer segments may be unsuccessful.

In order to sell our products into new geographic markets, diversify our customer base beyond our traditional customers and broaden the application for our solutions in communications networks, we continue to promote sales initiatives and foster strategic channel sales relationships, including the packet-optical resale element of our strategic relationship with Ericsson. Specifically, we are targeting sales opportunities with Web-scale providers, cloud infrastructure providers, communications service providers, enterprises, wireless operators, cable and multiservice operators, submarine network operators, research and education institutions, and federal, state and local governments. We also seek to expand our geographic reach and increase market share in international markets, including Brazil and India. To succeed in some of these geographic markets and customer segments we often need to leverage strategic sales channels and distribution arrangements, and we expect these relationships to be an important part of our business. There can be no assurance we will realize the expected benefits of these third party sales partners. In some cases we compete in certain business areas with our third party channel partners or may have divergent interests. Our efforts to manage and drive the intended benefits of such sales relationships may ultimately be unsuccessful, and difficulties selling through our third party channels could limit our growth and could harm our results of operations.

The international scale of our sales and operations exposes us to additional risk and expense that could adversely affect our results of operations.

We market, sell and service our products globally, maintain personnel in numerous countries and rely upon a global supply chain for sourcing important components and manufacturing our products. Our international sales and operations are subject to inherent risks, including:

- the impact of economic conditions in countries outside the United States;
- effects of adverse changes in currency exchange rates;
- greater difficulty in collecting accounts receivable and longer collection periods;
- difficulty and cost of staffing and managing foreign operations;
- less protection for intellectual property rights in some countries;
- adverse tax and customs consequences, particularly as related to transfer-pricing issues;
- social, political and economic instability;
- compliance with certain testing, homologation or customization of products to conform to local standards;
- higher incidence of corruption or unethical business practices that could expose us to liability or damage our reputation;
- trade protection measures, export compliance, domestic preference procurement requirements, qualification to transact business and additional regulatory requirements; and
- natural disasters, epidemics and acts of war or terrorism.

Our international operations are also subject to complex foreign and U.S. laws and regulations, including anti-corruption laws, antitrust or competition laws, environmental regulations, and data privacy laws, among others. Violations of these laws and regulations could result in fines and penalties, criminal sanctions against us or our employees, prohibitions on the conduct of our business and on our ability to offer our products and services in certain geographies, and significant harm to our business reputation. There can be no assurance that any individual employee, contractor, agent or other business partner will not violate these legal requirements or our policies to mitigate these risks. Additionally, the costs of complying with these laws (including the costs of investigations, auditing and monitoring) could also adversely affect our current or future business.

The success of our international sales and operations will depend, in large part, on our ability to anticipate and manage effectively these risks. Our failure to manage any of these risks could harm our international operations, reduce our international sales, and could give rise to liabilities, costs or other business difficulties that could adversely affect our operations and financial results.

Table of Contents

We may be required to write off significant amounts of inventory as a result of our inventory purchase practices, the obsolescence of product lines or unfavorable market conditions.

To avoid delays and meet customer demand for shorter delivery terms, we place orders with our contract manufacturers and component suppliers based on forecasts of customer demand. Our practice of buying inventory based on forecasted demand exposes us to the risk that our customers ultimately may not order the products we have forecast or will purchase fewer products than forecast. As a result, we may purchase inventory in anticipation of sales that ultimately do not occur. Market uncertainty can also limit our visibility into customer spending plans and compound the difficulty of forecasting inventory at appropriate levels. Moreover, our customer purchase agreements generally do not include any minimum purchase commitment. Also, customers often have the right to modify, reduce or cancel purchase quantities, and spending levels can be uncertain and subject to significant fluctuation. As we introduce new products with overlapping feature sets or application, it is increasingly possible that customers may forgo purchases of certain products we have inventoried in favor of next-generation products with similar or increased functionality. We may also be exposed to the risk of inventory write offs as a result of certain supply chain initiatives, including consolidation and transfer of key manufacturing activities. If we are required to write off or write down a significant amount of inventory, our results of operations for the applicable period would be materially adversely affected.

Our intellectual property rights may be difficult and costly to enforce.

We generally rely on a combination of patents, copyrights, trademarks and trade secret laws to establish and maintain proprietary rights in our products and technology. Although we have been issued numerous patents and other patent applications are currently pending, there can be no assurance that any of these patents or other proprietary rights will not be challenged, invalidated or circumvented, or that our rights will provide us with any competitive advantage. In addition, there can be no assurance that patents will be issued from pending applications or that claims allowed on any patents will be sufficiently broad to protect our technology. Further, the laws of some foreign countries may not protect our proprietary rights to the same extent as do the laws of the United States.

We are subject to the risk that third parties may attempt to access, divert or use our intellectual property without authorization. Protecting against the unauthorized use of our products, technology and other proprietary rights is difficult, time-consuming and expensive, and we cannot be certain that the steps that we are taking will prevent or minimize the risks of such unauthorized use. Litigation may be necessary to enforce or defend our intellectual property rights or to determine the validity or scope of the proprietary rights of others. Such litigation could result in substantial cost and diversion of management time and resources, and there can be no assurance that we will obtain a successful result. Any inability to protect and enforce our intellectual property rights could harm our ability to compete effectively.

We may incur significant costs in response to claims by others that we infringe their intellectual property rights. From time to time third parties may assert claims or initiate litigation or other proceedings related to patent, copyright, trademark and other intellectual property rights to technologies and related standards that are relevant to our business. The rate of infringement assertions by patent assertion entities is increasing, particularly in the United States. Generally, these patent owners neither manufacture nor use the patented invention directly, and they seek solely to derive value from their ownership through royalties from patent licensing programs.

We could be adversely affected by litigation, other proceedings or claims against us, as well as claims against our manufacturers, suppliers or customers, alleging infringement of third party proprietary rights by our products and technology, or components thereof. Regardless of the merit of these claims, they can be time-consuming, divert the time and attention of our technical and management personnel, and result in costly litigation. These claims, if successful, could require us to:

- pay substantial damages or royalties;
- comply with an injunction or other court order that could prevent us from offering certain of our products;
- seek a license for the use of certain intellectual property, which may not be available on commercially reasonable terms or at all;
-



develop non-infringing technology, which could require significant effort and expense and ultimately may not be successful; and

• indemnify our customers or other third parties pursuant to contractual obligations to hold them harmless or pay expenses or damages on their behalf.

Any of these events could adversely affect our business, results of operations and financial condition. Our exposure to risks associated with the use of intellectual property may be increased as a result of acquisitions, as we have a lower level of visibility into the development process with respect to such technology and the steps taken to safeguard against the risks of infringing the rights of third parties.

## Table of Contents

Our products incorporate software and other technology under license from third parties, and our business would be adversely affected if this technology were no longer available to us on commercially reasonable terms.

We integrate third party software and other technology into our operating system, network management and control platforms and other products. As networks adopt open software control and virtualized network functions, we believe that we will be increasingly required to work with third party technology providers. As a result, we may be required to license certain software or technology from third parties, including competitors. Licenses for software or other technology may not be available or may not continue to be available to us on commercially reasonable terms. Third party licensors may insist on unreasonable financial or other terms in connection with our use of such technology. Our failure to comply with the terms of any license may result in our inability to continue to use such license, which may result in significant costs, harm our market opportunities and require us to obtain or develop a substitute technology.

Our solutions, including our Blue Planet software platform, utilize elements of open source or publicly available software. As networks become more open and software programmable, we expect that we and other communications networking solutions vendors will increasingly contribute to and use technology or open source software developed by standards settings bodies or other industry forums that seek to promote the integration of network layers and functions. The terms of such licenses could be construed in a manner that could impose unanticipated conditions or restrictions on our ability to commercialize our products. This increases our risks associated with our use of such software and may require us to seek licenses from third parties, to re-engineer our products or to discontinue the sale of such solutions. Difficulty obtaining and maintaining technology licenses with third parties may disrupt development of our products, increase our costs and adversely affect our business.

If our contract manufacturers do not perform as we expect, our business and results of operations may be adversely affected.

We rely on third party contract manufacturers to perform the manufacturing of our products, and our future success will depend on our ability to manage these manufacturing resources and ensure sufficient volumes and quality of our products. There are a number of risks associated with our dependence on contract manufacturers, including:

- reduced control over delivery schedules and planning;
- reliance on the quality assurance procedures of third parties;
- potential uncertainty regarding manufacturing yields and costs;
- availability of manufacturing capability and capacity, particularly during periods of high demand;
- risks and uncertainties relating to the locations and geographies of our international contract manufacturing sites;
- limited warranties provided to us;
- potential misappropriation of our intellectual property; and
- potential manufacturing disruptions, including disruptions caused by geopolitical events or environmental factors affecting the locations and geographies of our international contract manufacturing sites.

These and other risks could impair our ability to fulfill orders, harm our sales and impact our reputation with customers. If our contract manufacturers are unable or unwilling to continue manufacturing our products or components of our products, or if our contract manufacturers discontinue operations, we would be required to identify and qualify alternative manufacturers, which could cause us to be unable to meet our supply requirements to our customers and result in the breach of our customer agreements. The process of qualifying a new contract manufacturer and commencing volume production is expensive and time-consuming, and if we are required to change or qualify a new contract manufacturer, we would likely lose sales revenue and damage our existing customer relationships.

Data security breaches and cyber-attacks could compromise our intellectual property or other sensitive information and cause significant damage to our business and reputation.

In the ordinary course of our business, we maintain on our network systems certain information that is confidential, proprietary or otherwise sensitive in nature. This information includes intellectual property, financial information and confidential business information relating to Ciena and our customers, suppliers and other business partners. We also produce networking equipment solutions and software used by network operators to ensure security and reliability in their management and transmission of data. Our customers, particularly those in regulated industries, are increasingly focused on the security features of our technology solutions, and maintaining the security of information sensitive to Ciena and our business partners is critical to our business and reputation. Companies in the technology industry have been increasingly subject to a wide variety of security incidents, cyber-attacks and other attempts to gain unauthorized access to networks or sensitive information. Our network systems and storage applications, and the technology solutions that we offer to end customers, may be subject to unauthorized access by hackers or breached due to operator error, malfeasance or other system disruptions. In some cases, it is

## Table of Contents

difficult to anticipate or to detect immediately such incidents and the damage caused thereby. If an actual or perceived breach of network security occurs in our network or in the network of a business partner, the market perception of our products could be harmed. While we continually work to safeguard our products and internal network systems to mitigate these potential risks, there is no assurance that such actions will be sufficient to prevent cyber-attacks or security breaches. Security incidents involving access or improper use of our systems, networks or products could compromise confidential or otherwise protected information, destroy or corrupt data, or otherwise disrupt our operations. These security events could also negatively impact our reputation and our competitive position and could result in litigation with third parties, regulatory action, loss of business, potential liability and increased remediation costs, any of which could have a material adverse effect on our financial condition and results of operations.

Our failure to manage effectively our relationships with third party service partners could adversely impact our financial results and relationship with customers.

We rely on a number of third party service partners, both domestic and international, to complement our global service and support resources. We rely upon these partners for certain installation, maintenance and support functions. In addition, as network operators increasingly seek to rely on vendors to perform additional services relating to the design, construction and operation of their networks, the scope of work performed by our support partners is likely to increase and may include areas where we have less experience providing or managing such services. We must successfully identify, assess, train and certify qualified service partners in order to ensure the proper installation, deployment and maintenance of our products, as well as the skillful performance of other services associated with expanded solutions offerings, including site assessment and construction-related services. Vetting and certification of these partners can be costly and time-consuming, and certain partners may not have the same operational history, financial resources and scale as Ciena. Moreover, certain service partners may provide similar services for other companies, including our competitors. We may not be able to manage effectively our relationships with our service partners, and we cannot be certain that they will be able to deliver services in the manner or time required or that we will be able to maintain the continuity of their services. We may also be exposed to a number of risks or challenges relating to the performance of our service partners, including:

- delays in recognizing revenue;
- liability for injuries to persons, damage to property or other claims relating to the actions or omissions of our service partners;
- our services revenue and gross margin may be adversely affected; and
- our relationships with customers could suffer.

If we do not manage effectively our relationships with third party service partners, or if they fail to perform these services in the manner or time required, our financial results and relationships with customers could be adversely affected.

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

As a company with global operations, we face exposure to adverse movements in foreign currency exchange rates. Due to our global presence, a significant percentage of our revenue, operating expense and assets and liabilities are non-U.S. dollar denominated and therefore subject to foreign currency fluctuation. We face exposure to currency exchange rates as a result of the growth in our non-U.S. dollar denominated operating expense in Canada, Europe, Asia and Latin America. 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 where we sell in dollars, and a weakened dollar could increase the cost of local operating expenses and procurement of materials or service that we purchase in foreign currencies. From time to time, we may hedge against currency exposure associated with anticipated foreign currency cash flows or assets and liabilities denominated in foreign currency. Such attempts to offset the impact of currency fluctuations are costly, and no amount of hedging can be effective against all circumstances. Losses associated with these hedging

instruments and the adverse effect of foreign currency exchange rate fluctuation may negatively affect our results of operations.

We may be exposed to unanticipated risks and additional obligations in connection with our resale of complementary products or technology of other companies.

We have entered into agreements with strategic supply partners that permit us to distribute their products or technology. We may rely upon these relationships to add complementary products or technologies, diversify our product portfolio, or address a particular customer or geographic market. We may enter into additional original equipment manufacturer (OEM), resale or similar strategic arrangements in the future. We may incur unanticipated costs or difficulties relating to our resale of third party products. Our third party relationships could expose us to risks associated with the business, financial condition, intellectual property rights and supply chain continuity of such partners, as well as delays in their development, manufacturing or delivery of

## Table of Contents

products or technology. We may also be required by customers to assume warranty, indemnity, service and other commercial obligations, including potential liability to customers, greater than the commitments, if any, made to us by our technology partners. Some of our strategic supply partners are relatively small companies with limited financial resources. If they are unable to satisfy their obligations to us or our customers, we may have to expend our own resources to satisfy these obligations. Exposure to these risks could harm our reputation with key customers and could negatively affect our business and our results of operations.

Our exposure to the credit risks of our customers and resellers may make it difficult to collect receivables and could adversely affect our revenue and operating results.

In the course of our sales to customers and resale channel partners, we may have difficulty collecting receivables, and our business and results of operations could be exposed to risks associated with uncollectible accounts. Lack of liquidity in the capital markets, macroeconomic weakness and market volatility may increase our exposure to these credit risks. Our attempts to monitor customer payment capability and to take appropriate measures to protect ourselves may not be sufficient, and it is possible that we may have to write down or write off accounts receivable. Such write-downs or write-offs could negatively affect our operating results for the period in which they occur, and, if large, could have a material adverse effect on our revenue and operating results.

Our business is dependent upon the proper functioning of our internal business processes and information systems, and modification or interruption of such systems or external factors may disrupt our business, processes and internal controls.

We rely upon a number of internal business processes and information systems to support key business functions, and the efficient operation of these processes and systems is critical to managing our business. Our business processes and information systems must be sufficiently scalable to support the growth of our business and may require modifications or upgrades that expose us to a number of operational risks. We have commenced a significant upgrade of our company-wide enterprise resource planning platform that will impact multiple locations, functions and processes. We are also currently pursuing initiatives to transform and optimize our business operations through the reengineering of certain other processes, investment in automation, and engagement of strategic partners or resources to assist with certain business functions. These changes will require a significant investment of capital and human resources and may be costly and disruptive to our operations, and could impose substantial demands on management time. These changes may also require changes in our information systems, modification of internal control procedures and significant training of employees or third party resources. There can be no assurance that our business and operations will not experience disruption in connection with this transition. Even if we do not encounter these adverse effects or disruption in our business, the design and implementation of these new systems may be more costly than anticipated.

Our information technology systems, and those of third party information technology providers or business partners, may also be vulnerable to damage or disruption caused by circumstances beyond our control, including catastrophic events, power anomalies or outages, natural disasters, viruses or malware, and computer system or network failures. We may also be exposed to cyber-security related incidents, including unauthorized access of information systems and disclosure or diversion of intellectual property or confidential data. There can be no assurance that our business systems or those of our third party business partners would not be subject to similar incidents, exposing us to significant cost, reputational harm and disruption or damage to our business.

Outstanding indebtedness under our convertible notes and senior secured credit facilities may adversely affect our liquidity and results of operations and could limit our business.

At October 31, 2015, indebtedness on our outstanding convertible notes totaled approximately \$1.0 billion in aggregate principal. In the event that some or all of these notes are converted into common stock, the ownership

interests of our existing stockholders will be diluted, and any sales of such shares in the public market following conversion may adversely affect the market price for our common stock. We are also a party to credit agreements relating to a \$200 million senior secured asset-based revolving credit facility and a \$250 million senior secured term loan. The agreements governing these credit facilities contain certain covenants that limit our ability, among other things, to incur additional debt, create liens and encumbrances, pay cash dividends, redeem or repurchase stock, enter into certain acquisition transactions or transactions with affiliates, repay certain indebtedness, make investments or dispose of assets. The agreements also include customary remedies, including the right of the lenders to take action with respect to the collateral securing the loans, that would apply should we default or otherwise be unable to satisfy our debt obligations.

Our indebtedness could have important negative consequences, including:

29

---

Table of Contents

• increasing our vulnerability to adverse economic and industry conditions;  
• limiting our ability to obtain additional financing, particularly in unfavorable capital and credit market conditions;  
• debt service and repayment obligations that may adversely impact our results of operations and reduce the availability of cash resources for other business purposes;  
• limiting our flexibility in planning for, or reacting to, changes in our business and the markets; and  
• placing us at a possible competitive disadvantage to competitors that have better access to capital resources.

We may also enter into additional transactions or credit facilities, including equipment loans, working capital lines of credit and other long-term debt, which may increase our indebtedness and result in additional restrictions upon our business. In addition, major debt rating agencies regularly evaluate our debt based on a number of factors. There can be no assurance that we will be able to maintain our existing debt ratings, and failure to do so could adversely affect our cost of funds, liquidity and access to capital markets.

Significant volatility and uncertainty in the capital markets may limit our access to funding on favorable terms or at all.

The operation of our business requires significant capital. We have accessed the capital markets in the past and have successfully raised funds, including through the issuance of equity, convertible notes and other indebtedness, to increase our cash position, support our operations and undertake strategic growth initiatives. We regularly evaluate our liquidity position, debt obligations, and anticipated cash needs to fund our long-term operating plans, and we may consider it necessary or advisable to raise additional capital or incur additional indebtedness in the future. If we raise additional funds through further issuance of equity or securities convertible into equity, or undertake certain transactions intended to address our existing indebtedness, our existing stockholders could suffer dilution in their percentage ownership of our company or our leverage and outstanding indebtedness could increase. Global capital markets have undergone periods of significant volatility and uncertainty in recent years, and there can be no assurance that such financing alternatives would be available to us on favorable terms or at all, should we determine it necessary or advisable to seek additional cash resources.

Facilities transitions could be disruptive to our operations and may result in unanticipated expense and adverse effects to our cash position and cash flows.

We have recently undertaken and expect to undertake in the future a number of significant facilities transitions affecting a large number of our employees. The lease term for our Lab 10 building on the Carling Campus in Ottawa, Canada will expire in fiscal 2018, and the lease term for our development facility in Gurgaon, India will expire in fiscal 2017. Both locations house sophisticated research and development lab equipment and significant headcount including key engineering personnel. We will be transitioning our operations in Ottawa to new facilities in contemplation of the expiration of the Lab 10 lease. Relocating our engineering operations may be costly, and there can be no assurance that the transition of key engineering functions to a successor facility will not be disruptive or adversely affect productivity. Significant facilities transitions could be disruptive to our operations and may result in unanticipated expense and adverse effects on our cash position and cash flows.

Restructuring activities could disrupt our business and affect our results of operations.

We have previously taken steps, including reductions in force, office closures, and internal reorganizations to reduce the size and cost of our operations, improve efficiencies, or realign our organization and staffing to better match our market opportunities and our technology development initiatives. We may take similar steps in the future as we seek to realize operating synergies, optimize our operations to achieve our target operating model and profitability objectives, or better reflect changes in the strategic direction of our business. These changes could be disruptive to our business, including our research and development efforts, and could result in significant expense, including



accounting charges for inventory and technology-related write-offs, workforce reduction costs and charges relating to consolidation of excess facilities. Substantial expense or charges resulting from restructuring activities could adversely affect our results of operations and use of cash in those periods in which we undertake such actions.

If we are unable to attract and retain qualified personnel, we may be unable to manage our business effectively.

Competition to attract and retain highly skilled technical, engineering and other personnel with experience in our industry is intense, and our employees have been the subject of targeted hiring by our competitors. Competition is particularly intense in certain jurisdictions where we have research and development centers, including the Silicon Valley area of northern California, and we may experience difficulty retaining and motivating existing employees and attracting qualified personnel to fill key positions. Because we rely upon equity awards as a significant component of compensation, particularly for our executive team, a lack of positive performance in our stock price, reduced grant levels, or changes to our compensation program may adversely

Table of Contents

affect our ability to attract and retain key employees. In addition, none of our executive officers is bound by an employment agreement for any specific term. The loss of members of our management team or other key personnel could be disruptive to our business, and, were it necessary, it could be difficult to replace members of our management team or other key personnel. If we are unable to attract and retain qualified personnel, we may be unable to manage our business effectively, and our operations and financial results could suffer.

Strategic acquisitions and investments could disrupt our operations and may expose us to increased costs and unexpected liabilities.

We may acquire or make investments in other technology companies, or enter into other strategic relationships, to expand the markets we address, diversify our customer base or acquire, or accelerate the development of, technology or products. To do so, we may use cash, issue equity that could dilute our current stockholders, or incur debt or assume indebtedness. These transactions, including our recently completed acquisition of Cyan, involve numerous risks, including:

- failure to achieve the anticipated transaction benefits or the projected financial results and operational synergies;
- greater than expected acquisition and integration costs;
- disruption due to the integration and rationalization of operations, products, technologies and personnel;
- diversion of management attention;
- difficulty completing projects of the acquired company and costs related to in-process projects;
- difficulty managing customer transitions or entering into new markets;
- loss of key employees;
- ineffective internal controls over financial reporting;
- dependence on unfamiliar suppliers or manufacturers;
- assumption of or exposure to unanticipated liabilities, including intellectual property infringement claims; and
- adverse tax or accounting effects including amortization expense related to intangible assets and charges associated with impairment of goodwill.

As a result of these and other risks, our acquisitions, investments or strategic transactions may not reap the intended benefits and may ultimately have a negative impact on our business, results of operation and financial condition.

Changes in government regulation affecting the communications industry and the businesses of our customers could harm our prospects and operating results.

The Federal Communications Commission, or FCC, has jurisdiction over the U.S. communications industry, and similar agencies have jurisdiction over the communication industries in other countries. Many of our largest customers, including service providers and multiservice network operators, are subject to the rules and regulations of these agencies. On February 26, 2015, the FCC approved rules that would regulate Internet service providers as telecommunications service carriers under Title II of the Telecommunications Act. The impact of these rules are uncertain, and challenges to these rules are expected. These and similar changes in regulatory requirements covering access to, management of, or carriage of traffic on the Internet in the United States or other internationally could serve as a disincentive to certain wireline or wireless network operators, including certain of our customers, to invest in their network infrastructures or introduce new services. Such changes could adversely affect the sale of our products and services. Similarly, changes in regulatory tariff requirements or other regulations relating to pricing or terms of carriage on communications networks could slow the development or expansion of network infrastructures and adversely affect our business, operating results, and financial condition.

Government regulations affecting the use, import or export of products could adversely affect our operations, negatively affect our revenue and increase our costs.

The United States and various foreign governments have imposed controls, license requirements and other restrictions on the usage, import or export of some of the technologies that we sell. Government regulation of usage, import or export of our products, or our technology within our products, or our failure to obtain required approvals for our products, could harm our international and domestic sales and adversely affect our revenue and costs of sales. Failure to comply with such regulations could result in enforcement actions, fines, penalties or restrictions on export privileges. In addition, costly tariffs on our equipment, restrictions on importation, trade protection measures and domestic preference requirements of certain countries could limit our access to these markets and harm our sales. For example, India's government has implemented security regulations applicable to network equipment vendors and has previously imposed significant tariffs on certain communications equipment. These and other regulations could adversely affect the sale or use of our products, substantially increase our cost of sales and adversely affect our business and revenue.

## Table of Contents

Government regulations related to the environment, potential climate change and other social initiatives could adversely affect our business and operating results.

Our operations are regulated under various federal, state, local and international laws relating to the environment and potential climate change. If we were to violate or become liable under these laws or regulations, we could incur fines, costs related to damage to property or personal injury, and costs related to investigation or remediation activities. Our product design efforts and the manufacturing of our products are also subject to evolving requirements relating to the presence of certain materials or substances in our equipment, including regulations that make producers for such products financially responsible for the collection, treatment and recycling of certain products. For example, our operations and financial results may be negatively affected by environmental regulations, such as the Waste Electrical and Electronic Equipment (WEEE) and Restriction of the Use of Certain Hazardous Substances in Electrical and Electronic Equipment (RoHS) that have been adopted by the European Union. Compliance with these and similar environmental regulations may increase our cost of designing, manufacturing, selling and removing our products. The SEC has adopted disclosure requirements regarding the use of “conflict minerals” mined from the Democratic Republic of Congo and adjoining countries (“DRC”) and procedures regarding a manufacturer’s efforts to prevent the sourcing of such minerals from the DRC. Certain of these minerals are present in our products. SEC rules implementing these requirements may have the effect of reducing the pool of suppliers who can supply DRC “conflict free” components and parts, and we may not be able to obtain conflict free products or supplies in sufficient quantities for our operations. Because our supply chain is complex, we may face reputational challenges with our customers, stockholders and other stakeholders if we are unable to verify sufficiently the origins for the “conflict minerals” used in our products and cannot assert that our products are “conflict free”. Environmental or similar social initiatives may also make it difficult to obtain supply of compliant components or may require us to write off non-compliant inventory, which could have an adverse effect on our business and operating results.

We may be required to write down goodwill or long-lived assets, and these impairment charges would adversely affect our operating results.

As of October 31, 2015, our balance sheet includes \$256.4 million of goodwill on our balance sheet. This amount primarily represents the remaining excess of the total purchase price of our acquisition of Cyan over the fair value of the net assets acquired. Ciena tests each reporting unit for impairment of goodwill on an annual basis, and between annual tests if an event occurs or circumstances change that would, more likely than not, reduce the fair value of the reporting unit below its carrying value. As of October 31, 2015, our balance sheet also includes \$449.9 million in long-lived assets, which includes \$202.7 million of intangible assets. Valuation of our long-lived assets requires us to make assumptions about future sales prices and sales volumes for our products. These assumptions are used to forecast future, undiscounted cash flows upon which our estimates are based. Periods of significant uncertainty or instability of macroeconomic conditions can make forecasting future business difficult. If actual market conditions differ or our forecasts change, we may be required to reassess goodwill or long-lived assets and could record an impairment charge. Any impairment charge relating to goodwill or long-lived assets would have the effect of decreasing our earnings or increasing our losses in such period. If we are required to take a substantial impairment charge, our operating results would be materially adversely affected in such period.

Failure to maintain effective internal controls over financial reporting could have a material adverse effect on our business, operating results and stock price.

Section 404 of the Sarbanes-Oxley Act of 2002 requires that we include in our annual report a report containing management’s assessment of the effectiveness of our internal controls over financial reporting as of the end of our fiscal year and a statement as to whether or not such internal controls are effective. Compliance with these requirements has resulted in, and is likely to continue to result in, significant costs and the commitment of time and operational resources. Certain ongoing initiatives, including a significant upgrade of our company-wide enterprise

resource planning platform that is underway, will necessitate modifications to our internal control systems, processes and related information systems. Similarly, other efforts to transform business processes, including our supply chain operations, or to transition certain functions to third party resources or providers, will require further changes to our control environment as we optimize our business and operations. Our expansion into new regions could pose further challenges to our internal control systems. We cannot be certain that our current design for internal control over financial reporting, or any additional changes to be made, will be sufficient to enable management to determine that our internal controls are effective for any period, or on an ongoing basis. If we are unable to assert that our internal controls over financial reporting are effective, market perception of our financial condition and the trading price of our stock may be adversely affected, and customer perception of our business may suffer.

Our stock price is volatile.

## Table of Contents

Our common stock price has experienced substantial volatility in the past and may remain volatile in the future. Volatility in our stock price can arise as a result of a number of the factors discussed in this “Risk Factors” section. During fiscal 2015, our closing stock price ranged from a high of \$26.50 per share to a low of \$14.69 per share. The stock market has experienced significant price and volume fluctuation that has affected the market price of many technology companies, with such volatility often unrelated to the operating performance of these companies. Divergence between our actual or anticipated financial results and published expectations of analysts, or the expectations of the market generally, can cause significant swings in our stock price. Our stock price can also be affected by market conditions in our industry as well as announcements that we, our competitors, vendors or our customers may make. These may include announcements of financial results or changes in estimated financial results, technological innovations, the gain or loss of customers or key opportunities. Our common stock is also included in certain market indices, and any change in the composition of these indices to exclude our company would adversely affect our stock price. These and other factors affecting macroeconomic conditions or financial markets may materially adversely affect the market price of our common stock in the future.

### Risks Relating to Our Acquisition of Cyan, Inc.

We may fail to realize the anticipated benefits of the merger.

The success of the merger will depend on, among other things, our ability to gain market adoption for our Blue Planet software platform and derive long-term revenue growth based on Cyan’s software capabilities. If the SDN and NFV markets do not develop as we anticipate, or if we are unable to increase market awareness and adoption of our Blue Planet solutions as the preferred solution within those markets, demand for our Blue Planet solutions may not grow, and our future results would be adversely affected. As a result, the success of the merger and our long-term success will depend to a significant extent on potential customers recognizing the benefits of our next-generation software solutions, and the willingness of service providers and high-performance data center and other network operators to increase their use of SDN and NFV solutions in their networks. The market for SDN and NFV solutions is at an early stage, and it is difficult to predict important trends, including the potential growth, if any, of this market. If the market for SDN and NFV solutions does not evolve in the way we anticipate or if customers do not adopt our solutions, we may not be able to increase sales of our Blue Planet platform. If we are not able to successfully achieve these objectives, the anticipated benefits of the merger may not be realized fully, or at all, or may take longer to realize than expected. There may also be additional unanticipated liabilities or costs in connection with the merger. These costs and expenses could reduce the realization of efficiencies, strategic benefits and growth that we expect to achieve from the merger.

The failure to integrate successfully the business and operations of Cyan in the expected time frame may adversely affect our future results.

There can be no assurances that we will successfully integrate Cyan's business. It is possible that the integration process could result in the loss of key Ciena or former Cyan employees, the loss of customers, the disruption of either company’s or both companies’ ongoing businesses, or in unexpected integration issues, greater than expected integration costs and an overall post-completion integration process that takes longer than originally anticipated. Specifically, the following issues, among others, must be addressed in integrating our operations with those of Cyan in order to realize the anticipated benefits of the merger so the combined company performs as expected:

- combining our business with Cyan’s business in a manner that permits us to achieve the cost savings or revenue synergies anticipated to result from the merger;
- integrating the companies’ technologies and unifying the hardware and software solutions offerings and services available to customers;
- identifying and eliminating redundant costs;
- harmonizing the companies’ operating practices, employee-related policies and compensation programs, internal controls and other policies, procedures and processes;
- maintaining existing agreements with customers, distributors and vendors and avoiding delays in entering into new agreements with prospective customers, distributors and vendors;
- addressing possible differences in business backgrounds, corporate cultures and management philosophies; and

- coordinating distribution and marketing efforts.

In addition, at times, the attention of certain members of our management and resources may be focused on the integration of the businesses of the two companies and diverted from day-to-day business operations, which may disrupt our ongoing business and the business of the combined company.

Table of Contents

Lawsuits have been filed against us and Cyan challenging the merger and an adverse ruling may adversely affect Ciena's operations and liquidity.

From May 15 through June 3, 2015, five separate putative class action lawsuits in connection with Ciena's acquisition of Cyan, Inc. ("Cyan") were filed in the Court of Chancery of the State of Delaware:

Łuvishis v. Cyan, Inc., et al., C.A. No. 11027-CB, filed May 15, 2015

Łoll v. Cyan, Inc., et al., C.A. No. 11028-CB, filed May 15, 2015

Łanzano v. Floyd, et al., C.A. No. 11052-CB, filed May 20, 2015

Łassis v. Cyan, Inc., et al., C.A. No. 11069-CB, filed May 27, 2015

Łenske v. Cyan, Inc., et al., C.A. No. 11090-CB, filed June 3, 2015

Each of the complaints named Cyan (except for the Canzano complaint), Ciena, Neptune Acquisition Subsidiary, Inc., a Ciena subsidiary created solely for the purpose of effecting the acquisition ("Merger Sub"), and the members of Cyan's board of directors as defendants. On June 23, 2015, each of these lawsuits was consolidated into a single case captioned In Re Cyan, Inc. Shareholder Litigation, Consol. C.A. No. 11027-CB. On July 9, 2015, the plaintiffs filed a verified amended class action complaint, which named as defendants Ciena, Merger Sub, and the members of Cyan's board of directors. On August 5, 2015, the defendants filed motions to dismiss the amended complaint. On October 1, 2015, the plaintiffs filed a second amended complaint which named as defendants the members of Cyan's board of directors. Cyan, Ciena, and Merger Sub were not named as defendants. The second amended complaint generally alleges that the Cyan board members breached their fiduciary duties by engaging in a conflicted and unfair sales process, failing to maximize stockholder value in the acquisition, taking steps to preclude competitive bidding, and failing to disclose material information necessary for stockholders to make an informed decision regarding the acquisition. The second amended complaint seeks (i) a declaration that the plaintiffs are entitled to a quasi-appraisal remedy, (ii) rescissory damages, (iii) recovery through an accounting of all damages caused as a result of the alleged breaches of fiduciary duties, (iv) compensatory damages, and (v) costs including attorneys' fees and experts' fees. The actions also seek to recover costs, including attorneys' fees and experts' fees. On October 15, 2015, the defendants filed a renewed motion to dismiss. A briefing schedule for these motions has been set, with briefing to be completed in March 2016. The outcome of the consolidated action described above or any other lawsuit that may be brought challenging the merger is uncertain.

Third parties with whom Cyan had a business relationship may terminate or alter existing contracts or relationships with us.

As a result of the merger, Ciena assumed Cyan's contracts with customers, suppliers, vendors, landlords, licensors and other business partners. Certain of these contracts require consent from these other parties in connection with the merger. If these consents cannot be obtained, Ciena may suffer a loss of potential future revenue and may lose rights that are material to its business and the business of the combined company. In addition, third parties with whom we have (or Cyan had) relationships may terminate or otherwise reduce the scope of their relationship with us now that the merger is complete. Any such disruptions could limit our ability to achieve the anticipated benefits of the merger. We may be unable to retain Cyan personnel successfully now that the merger has been completed.

The success of the merger will significantly depend on our ability to retain the talents and dedication of key professionals formerly employed by Cyan. It is possible that these employees may decide not to remain with the combined company. If key employees terminate their employment, or if an insufficient number of employees is retained to maintain effective operations, the combined company's business activities may be adversely affected and management's attention may be diverted from successfully integrating Cyan to hiring suitable replacements, all of which may cause the combined company's business to suffer. In addition, we and Cyan may not be able to locate suitable replacements for any key employees that leave either company or offer employment to potential replacements on reasonable terms.





Table of Contents

Item 1B. Unresolved Staff Comments

Not applicable.

Item 2. Properties

Overview. As of October 31, 2015, all of our properties are leased and we do not own any real property. We lease facilities globally related to the ongoing operations of our four business segments and related functions. Our principal executive offices are located in two buildings in Hanover, Maryland.

Our largest facility is our research and development center located at Lab 10 on the former Nortel Carling Campus in Ottawa, Canada. See below for information regarding the lease associated with this engineering facility and our planned future relocation from this facility. We also have engineering and/or service facilities located in San Jose, California; Petaluma, California; Alpharetta, Georgia; Spokane, Washington; Kanata, Canada; and Gurgaon, India. In addition, we lease various smaller offices in the United States, Mexico, South America, Europe, the Middle East and the Asia-Pacific region to support our sales and services operations. We believe the facilities we are now using are adequate and suitable for our business requirements.

Hanover, Maryland Headquarters Lease. Ciena entered into an agreement dated November 3, 2011, with W2007 RDG Realty, L.L.C. relating to a 15-year lease of office space for its corporate headquarters in Hanover, Maryland, consisting of an agreed-upon rentable area of approximately 154,100 square feet.

Ottawa Lease and Planned Relocation. Ciena Canada, Inc., a subsidiary of Ciena, and Public Works and Government Services Canada (PWGSC) are parties to a lease agreement relating to Ciena's lease of the Lab 10 building on the former Nortel Carling Campus in Ottawa, Canada. Our Lab 10 facility houses sophisticated research and development lab equipment and significant headcount including key engineering personnel. This facility consists of a rentable area of 265,000 square feet. This lease will terminate on December 31, 2017.

In contemplation of the termination of the Lab 10 lease, on October 23, 2014, Ciena Canada, Inc. entered into an agreement to lease the office building located at 5050 Innovation Drive, Ottawa, Canada, consisting of an agreed-upon rentable area of 170,582 square feet. Ciena occupied approximately 102,000 square feet of this facility during fiscal 2015 and expects to occupy the remaining amount during fiscal 2016. In addition, on April 15, 2015, Ciena Canada, Inc. entered into a work letter and a lease agreement related to the construction and lease of two new office buildings in Ottawa, Canada, consisting of a rentable area of approximately 254,318 square feet, that will be built adjacent to the premises subject to the October 2014 lease. Ciena expects to occupy these buildings by September 2017. These three facilities are expected to be part of a future campus that will replace the Lab 10 building. The October 2014 lease also provides Ciena a right of first offer to lease additional space in the building adjacent to the premises located at 4000 Innovation Drive, for so long as landlord owns the building and subject to any existing rights of the current tenant. The development of our new facilities and the transition of our operations in Ottawa will require significant effort, time and cost in advance of the expiration of the Lab 10 lease.

For additional information regarding our lease obligations, see Note 23 to the Consolidated Financial Statements in Item 8 of Part II of this annual report.

Table of Contents

## Item 3. Legal Proceedings

From May 15 through June 3, 2015, five separate putative class action lawsuits in connection with Ciena's then-pending acquisition of Cyan, Inc. ("Cyan") were filed in the Court of Chancery of the State of Delaware:

• *Luvishis v. Cyan, Inc., et al.*, C.A. No. 11027-CB, filed May 15, 2015

• *Poll v. Cyan, Inc., et al.*, C.A. No. 11028-CB, filed May 15, 2015

• *Canzano v. Floyd, et al.*, C.A. No. 11052-CB, filed May 20, 2015

• *Kassis v. Cyan, Inc., et al.*, C.A. No. 11069-CB, filed May 27, 2015

• *Fenske v. Cyan, Inc., et al.*, C.A. No. 11090-CB, filed June 3, 2015

Each of the complaints named Cyan (except for the Canzano complaint), Ciena, Neptune Acquisition Subsidiary, Inc., a Ciena subsidiary created solely for the purpose of effecting the acquisition ("Merger Sub"), and the members of Cyan's board of directors as defendants. On June 23, 2015, each of these lawsuits was consolidated into a single case captioned *In Re Cyan, Inc. Shareholder Litigation*, Consol. C.A. No. 11027-CB. On July 9, 2015, the plaintiffs filed a verified amended class action complaint, which named as defendants Ciena, Merger Sub, and the members of Cyan's board of directors. On August 5, 2015, the defendants filed motions to dismiss the amended complaint. On October 1, 2015, the plaintiffs filed a second amended complaint which named as defendants the members of Cyan's board of directors. Cyan, Ciena, and Merger Sub were not named as defendants. The second amended complaint generally alleges that the Cyan board members breached their fiduciary duties by engaging in a conflicted and unfair sales process, failing to maximize stockholder value in the acquisition, taking steps to preclude competitive bidding, and failing to disclose material information necessary for stockholders to make an informed decision regarding the acquisition. The second amended complaint seeks (i) a declaration that the plaintiffs are entitled to a quasi-appraisal remedy, (ii) rescissory damages, (iii) recovery through an accounting of all damages caused as a result of the alleged breaches of fiduciary duties, (iv) compensatory damages, and (v) costs including attorneys' fees and experts' fees. On October 15, 2015, the defendants filed a renewed motion to dismiss. A briefing schedule for these motions has been set, with briefing to be completed in March 2016.

As a result of our acquisition of Cyan in August 2015, we became a defendant in a securities class action lawsuit. On April 1, 2014, a purported stockholder class action lawsuit was filed in the Superior Court of California, County of San Francisco, against Cyan, the members of Cyan's board of directors, Cyan's former Chief Financial Officer, and the underwriters of Cyan's initial public offering. On April 30, 2014, a substantially similar lawsuit was filed in the same court against the same defendants. The two cases have been consolidated as *Beaver County Employees Retirement Fund, et al. v. Cyan, Inc. et al.*, Case No. CGC-14-538355. The consolidated complaint alleges violations of federal securities laws on behalf of a purported class consisting of purchasers of Cyan's common stock pursuant or traceable to the registration statement and prospectus for Cyan's initial public offering in April 2013, and seeks unspecified compensatory damages and other relief. In July 2014, the defendants filed a demurrer to the consolidated complaint, which the court overruled in October 2014 and allowed the case to proceed. On May 19, 2015, the proposed class was certified. On August 25, 2015, the defendants filed a motion for judgment on the pleadings based on an alleged lack of subject matter jurisdiction over the case, which motion was denied on October 23, 2015. Ciena believes that the consolidated lawsuit is without merit and intends to defend it vigorously.

On May 29, 2008, Graywire, LLC filed a complaint in the United States District Court for the Northern District of Georgia against Ciena and four other defendants, alleging, among other things, that certain of the parties' products infringe U.S. Patent 6,542,673 (the "673 Patent"), relating to an identifier system and components for optical assemblies. The complaint seeks injunctive relief and damages. In July 2009, upon request of Ciena and certain other defendants, the U.S. Patent and Trademark Office ("PTO") granted the defendants' inter partes application for reexamination with respect to certain claims of the '673 Patent, and the district court granted the defendants' motion to stay the case pending reexamination of all of the patents-in-suit. In December 2010, the PTO confirmed the validity of some claims and rejected the validity of other claims of the '673 Patent, to which Ciena and other defendants filed an appeal. On March 16, 2012, the PTO on appeal rejected multiple claims of the '673 Patent, including the two claims on which Ciena is alleged to infringe. Subsequently, the plaintiff requested a reopening of the prosecution of the '673

Patent, which request was denied by the PTO on April 29, 2013. Thereafter, on May 28, 2013, the plaintiff filed an amendment with the PTO in which it canceled the claims of the '673 Patent on which Ciena is alleged to infringe. The case currently remains stayed, and there can be no assurance as to whether or when the stay will be lifted.

In addition to the matters described above, Ciena is subject to various legal proceedings and claims arising in the ordinary course of business, including claims against third parties that may involve contractual indemnification obligations on the part of Ciena. Ciena does not expect that the ultimate costs to resolve these matters will have a material effect on its results of operations, financial position or cash flows.

Table of Contents

Item 4. Mine Safety Disclosures

Not applicable.

PART II

37

---

Table of Contents

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

(a) Our common stock is traded on the New York Stock Exchange under the stock symbol “CIEN.”

The following table sets forth the high and low sales prices of our common stock, as reported on the New York Stock Exchange for the fiscal periods indicated.

	High	Low
Fiscal Year 2014		
First Quarter ended January 31	\$24.37	\$20.93
Second Quarter ended April 30	\$27.16	\$18.88
Third Quarter ended July 31	\$22.94	\$18.00
Fourth Quarter ended October 31	\$20.98	\$13.77
Fiscal Year 2015		
First Quarter ended January 31	\$20.32	\$14.69
Second Quarter ended April 30	\$22.50	\$17.86
Third Quarter ended July 31	\$26.50	\$20.67
Fourth Quarter ended October 31	\$25.49	\$17.97

As of December 11, 2015, there were approximately 775 holders of record of our common stock and 135,790,185 shares of common stock outstanding. We have never paid cash dividends on our capital stock. We currently intend to retain earnings for use in our business, and we do not anticipate paying any cash dividends in the foreseeable future. The following graph shows a comparison of cumulative total returns for an investment in our common stock, the S&P Telecom Select Index and the S&P Global SmallCap Index from October 31, 2010 to October 31, 2015. The S&P Telecom Select Industry Index comprises stocks in the S&P Total Market Index that are classified in the Global Industry Classification Standard as alternative carriers, communications equipment, integrated telecom services, and wireless telecom services sub-industries. The S&P Global SmallCap Index comprises the stocks representing the lowest 15% of float-adjusted market cap in each developed and emerging country. This graph is not deemed to be “filed” with the SEC or subject to the liabilities of Section 18 of the Securities Exchange Act of 1934, as amended (the “Exchange Act”), and the graph shall not be deemed to be incorporated by reference into any prior or subsequent filing by us under the Securities Act of 1933, as amended, or the Exchange Act.

Assumes \$100 invested in Ciena Corporation, the S&P Telecom Select Index and the S&P Global SmallCap Index, respectively, on October 31, 2010 with all dividends reinvested at month-end.

Table of Contents

(b) Not applicable.

(c) Not applicable.

39

---

Table of Contents

## Item 6. Selected Consolidated Financial Data

The following selected consolidated financial 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 included in Item 8, “Financial Statements and Supplementary Data” in Part II of this annual report. We have a 52 or 53-week fiscal year, which ends on the Saturday nearest to the last day of October in each year. For purposes of financial statement presentation, each fiscal year is described as having ended on October 31. Fiscal 2011, 2013, 2014 and 2015 consisted of 52 weeks, and fiscal 2012 consisted of 53 weeks.

	Year Ended October 31,				
	(in thousands)				
	2011	2012	2013	2014	2015
Cash and cash equivalents	\$541,896	\$642,444	\$346,487	\$586,720	\$790,971
Short-term investments	\$—	\$50,057	\$124,979	\$140,205	\$135,107
Long-term investments	\$50,264	\$—	\$15,031	\$50,057	\$95,105
Total assets	\$1,951,418	\$1,881,143	\$1,802,770	\$2,072,632	\$2,695,051
Short-term debt	\$—	\$216,210	\$—	\$190,063	\$2,500
Long-term debt	\$1,442,364	\$1,225,806	\$1,212,019	\$1,274,791	\$1,271,639
Total liabilities	\$1,937,545	\$1,970,115	\$1,885,447	\$2,142,247	\$2,074,175
Stockholders’ equity (deficit)	\$13,873	\$(88,972 )	\$(82,677 )	\$(69,615 )	\$620,876



Table of Contents

## Statement of Operations Data:

	Year Ended October 31,				
	(in thousands, except per share data)				
	2011	2012	2013	2014	2015
Revenue	\$1,741,970	\$1,833,923	\$2,082,546	\$2,288,289	\$2,445,669
Cost of goods sold	1,032,824	1,109,699	1,217,371	1,339,937	1,370,106
Gross profit	709,146	724,224	865,175	948,352	1,075,563
Operating expenses:					
Research and development	379,862	364,179	383,408	401,180	414,201
Selling and marketing	251,990	266,338	304,170	328,325	333,836
General and administrative	126,242	114,002	122,432	126,824	123,402
Amortization of intangible assets	69,665	51,697	49,771	45,970	69,511
Acquisition and integration costs	42,088	—	—	—	25,539
Restructuring costs	5,781	7,854	7,169	349	8,626
Change in fair value of contingent consideration	(3,289)	) —	—	—	—
Total operating expenses	872,339	804,070	866,950	902,648	975,115
Income (loss) from operations	(163,193)	) (79,846)	) (1,775)	) 45,704	100,448
Interest and other income (loss), net	6,022	(15,200)	) (5,744)	) (25,262)	) (25,505)
Interest expense	(37,926)	) (39,653)	) (44,042)	) (47,115)	) (51,179)
Gain on cost method investments	7,249	—	—	—	—
Loss on extinguishment of debt	—	—	(28,630)	) —	—
Income (loss) before income taxes	(187,848)	) (134,699)	) (80,191)	) (26,673)	) 23,764
Provision for income taxes	7,673	9,322	5,240	13,964	12,097
Net income (loss)	\$(195,521)	) \$(144,021)	) \$(85,431)	) \$(40,637)	) \$11,667
Basic net income (loss) per common share	\$(2.04)	) \$(1.45)	) \$(0.83)	) \$(0.38)	) \$0.10
Diluted net income (loss) per potential common share	\$(2.04)	) \$(1.45)	) \$(0.83)	) \$(0.38)	) \$0.10
Weighted average basic common shares outstanding	95,854	99,341	102,350	105,783	118,416
Weighted average diluted potential common shares outstanding	95,854	99,341	102,350	105,783	120,101

Table of Contents

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

The following discussion and analysis should be read in conjunction with our "Selected Consolidated Financial Data" and consolidated financial statements and notes thereto included elsewhere in this annual report.

Overview

We are a network specialist focused on providing communications networking solutions that enable a wide range of network operators to adopt next-generation architectures. We have optimized our business and solutions to enable network operators to create and deliver the broad array of high-bandwidth services relied upon by enterprise and consumer end users. We provide equipment, software and services that support the transport, switching, aggregation, service delivery and management of voice, video and data traffic on communications networks. In addition to our high-capacity hardware platforms, we offer network management and control software platforms that help network operators simplify and automate their networks and virtualize certain network functions. Our solutions are designed to enable network operators to adopt open, multi-vendor, software-programmable network infrastructures that improve automation, reduce network complexity and flexibly support changing service requirements. Our solutions yield business and operational value for our customers by enabling them to introduce new, revenue-generating services and to reduce network complexity and expense.

Our Converged Packet Optical, Packet Networking and Optical Transport products are used, individually or as part of an integrated solution, by communications service providers, cable and multiservice operators, Web-scale providers, submarine network operators, governments, enterprises, research and education (R&E) institutions and other network operators across the globe. Our products, which support applications from the network core to network access points, allow network operators to scale capacity, increase transmission speeds, allocate traffic and adapt dynamically to changing end-user service demands. Our software solutions are oriented around our Blue Planet software platform, a modular, network virtualization, service orchestration and network management software platform designed to simplify the creation, automation and delivery of services across multi-vendor and multi-domain network environments. To complement our hardware and software solutions, we offer a broad range of network transformation and related support services that help our customers design, optimize, deploy, manage and maintain their networks.

The rapid proliferation of communications services and devices, together with increased mobility, growth in video, cloud-based services and data center interconnection, have fundamentally affected the bandwidth and service demands placed upon communications networks. As the capacity of their network infrastructures are pressured, many network operators also face a rapidly changing business environment and shifting competitive landscape. Newer market entrants, such as cloud service and over-the-top content providers, are challenging certain traditional business models. Our OP<sup>n</sup> Architecture, which enables increased network scalability, flexibility and programmability, is designed to meet these challenges. It allows for network-level software applications to control and configure the network dynamically, while flexible interfaces integrate computing, storage and other network resources. This approach enables highly configurable network infrastructures that can meet the "on-demand" service requirements of both our customers and their end-users. By enhancing software-based management and control, enabling network functions to be provided virtually, and reducing required network elements, our OP<sup>n</sup> approach optimizes network infrastructures. At the same time, it increases network scale at reduced cost and simplifies the management, deployment and orchestration of multi-vendor hardware and software elements. Our OP<sup>n</sup> Architecture, which underpins our solutions offering and guides our research and development strategy, is described more fully in the "Strategy" section of the description of our business in Item 1 of Part I of this report.

Our quarterly reports on Form 10-Q, annual reports on Form 10-K, and current reports on Form 8-K filed with the SEC are available through the SEC's website at [www.sec.gov](http://www.sec.gov) or free of charge on our website as soon as reasonably

practicable after we file these documents. We routinely post the reports above, recent news and announcements, financial results and other information about Ciena that is important to investors in the "Investors" section of our website at [www.ciena.com](http://www.ciena.com). Investors are encouraged to review the "Investors" section of our website because, as with the other disclosure channels that we use, from time to time we may post material information on that site that is not otherwise disseminated by us.

#### Acquisition of Cyan, Inc.

On August 3, 2015, we acquired Cyan, Inc. ("Cyan"), a leading provider of software-defined networking (SDN), network function virtualization (NFV) and metro packet-optical solutions, in a cash and stock transaction. Subject to the terms and conditions of the merger agreement, at closing each outstanding Cyan share was exchanged for 0.19936 shares of Ciena common stock and \$0.63 in cash, resulting in an exchange of all of the outstanding shares of Cyan common stock for approximately \$33.6 million in cash and 10.6 million shares of Ciena common stock. Ciena assumed all then-outstanding Cyan stock options and unvested

## Table of Contents

restricted stock unit awards and substituted for them approximately 1.0 million Ciena restricted stock unit awards and stock options exercisable for approximately 2.4 million shares of Ciena common stock. See Note 2 to our Consolidated Financial Statements included in Item 8 of Part II of this report for more information relating to this transaction.

Our acquisition of Cyan is intended to advance a strategy that started with the introduction of our OP<sup>n</sup> Architecture and was extended with the launch of our Agility software division in fiscal 2014. We believe that Cyan's best-in-class Blue Planet software solutions portfolio will significantly strengthen our software offering. Complementing Ciena's network control and application software technologies, Cyan adds multi-vendor network virtualization, service orchestration and next-generation network management software. The Blue Planet portfolio offers a carrier-grade, multi-vendor SDN and NFV platform designed to automate, orchestrate, and manage the lifecycle of virtualized services across data centers and the wide area network (WAN). Further strengthening our leadership in packet-optical hardware products, Cyan brings a metro packet-optical business with a complementary base of key customers for its family of Z-Series high-capacity, multi-layer switching and transport platforms. We believe that this strategic acquisition will accelerate our availability to offer a complete, on-demand solution for virtualized networks and services in an open ecosystem, and will increase our opportunity to play a leading role in the transformation of the network from the delivery of capacity to the creation of service capability on-demand.

In connection with our acquisition of Cyan, during the fourth quarter of fiscal 2015, we unified the software resources and activities of both companies under a single brand and comprehensive set of resources known as the "Blue Planet" division. This division, which includes Ciena's former Agility division, is focused on providing next-generation, multi-vendor network virtualization, service orchestration and management solutions. For fiscal 2015, revenue from Cyan's packet-optical solutions is included in our Converged Packet Optical operating segment and revenue from its Blue Planet software solutions is included in our Software and Services operating segment. See Note 24 to our Consolidated Financial Statements included in Item 8 of Part II of this report for information relating to our operating segments for fiscal 2016.

During fiscal 2015, we incurred approximately \$25.5 million of acquisition-related costs associated with this transaction. These costs and expenses include fees associated with financial, legal and accounting advisors, facilities and systems consolidation costs, and severance and other employment-related costs, including payments to certain former Cyan executives and approximately \$7.6 million of non-cash share-based compensation expense. We also expect our future financial results to be impacted, in a number of ways, as a result of the purchase accounting for the Cyan transaction. We recorded finite-lived intangible assets such as developed technology, customer relationships, trademarks, and trade names, the amortization of which will increase our expense during the useful life of these assets.

### Market Opportunity

The markets in which we sell our communications networking solutions have been subject to significant changes in recent years, including rapid growth in network traffic, increased mobility, and evolving cloud-based service offerings and end-user service demands. These conditions have placed significant demands on network infrastructures. They have also created market opportunities and challenged the business models and competitive landscapes of network operators, and the vendors that support them. Existing and emerging network operators are competing to distinguish their service offerings and rapidly introduce differentiated, revenue-generating services. At the same time, network operators continue to seek to manage the costs of their networks and to ensure a profitable business model. These dynamics are driving technology convergence of network features, functions and layers, virtualization of certain network functions, and solutions that leverage increased software-based network control and programmability. We believe that these dynamics, and the need to adapt to changing business conditions, are creating an environment that will cause network operators to adopt infrastructures that are more open, programmable and automated. We also believe that these conditions will require network operators and vendors alike to utilize an ecosystem of physical and virtual network resources provided by a variety of third parties, driving increased openness and interoperability of network infrastructures.

During fiscal 2015, we saw certain of our service provider customers increase efforts to constrain capital expenditure budgets, which adversely impacted certain segments of our market, including in the U.S. Notwithstanding these market dynamics, which together with certain customer-specific factors affecting spending, impacted our markets, our revenue increased during fiscal 2015. Increased revenue benefited from our efforts to diversify our customer base to include additional customer segments, such as Web-scale providers, cable and multiservice operators, and additional service providers in geographies including Brazil and India, and our strategy of focusing on certain higher growth segments of the network infrastructure market, including Webscale providers. Our fiscal 2015 revenue also benefited from the addition of revenue from our acquisition of Cyan during the fourth quarter of fiscal 2015. Our corporate strategy to capitalize on these market dynamics, promote operational efficiency and drive profitable growth of our business includes the initiatives set forth in the "Strategy" section of the description of our business in Item 1 of Part 1 of this annual report.

Competitive Landscape

43

---

Table of Contents

The markets in which we compete are characterized by rapidly advancing technologies, introduction of new networking solutions and intense selling efforts to displace incumbent vendors and to capture market share. We continue to encounter a highly competitive and fragmented marketplace for our solutions. Our sales of Converged Packet Optical solutions face an intense competitive environment as we and our competitors introduce new, high-capacity, high-speed network solutions and seek adoption of these solutions and our network architectural approach. We expect the competitive landscape in which we operate to continue to broaden and to remain challenging and dynamic. As we expand our solutions offering, including our sales of Packet Networking solutions such as our 8700 Packetwave Platform, and our Waveserver data center interconnect (DCI) platform, we expect that our business will overlap more directly with additional networking solution suppliers, including IP router vendors, data center switch providers and other suppliers or integrators of networking technology traditionally geared toward different network applications, layers or functions. In addition, as we seek adoption of our Blue Planet software platform, and network operator demands for software programmability, management and control increase, we expect increasingly to compete with software vendors, information technology vendors or integrators of these solutions to promote our network architectural approach. We may also face increased competition from companies, including those in our supply chain, who develop networking products based on off-the-shelf or commoditized hardware technology, referred to as “white box” hardware, particularly where our customer's network strategies seek to emphasize deployment of those product offerings.

Against the backdrop of these competitive dynamics, maintaining incumbency with key customers around the globe, and securing new opportunities with a diverse set of network operators, often requires that we agree to aggressive pricing, significant commercial concessions or other unfavorable commercial terms. These terms have previously and may in the future adversely affect our quarterly results of operations and contribute to fluctuations in our results. These terms can also lengthen our revenue recognition or cash collection cycles, add start-up costs to initial sales or deployment of our solutions, require financial commitments or performance bonds, and include onerous contractual commitments that place a disproportionate allocation of risk upon us.

#### Convertible Notes Indebtedness

**Maturity of 4.0% Convertible Senior Notes due 2015.** On March 15, 2015, our outstanding 4.0% Convertible Senior Notes due 2015 (the “2015 Notes”) matured. As a result of conversion elections made by holders of a substantial majority of the outstanding 2015 Notes under the terms of the indenture governing the 2015 Notes, together with certain private exchange transactions conducted by us prior to maturity, approximately \$180.6 million in aggregate principal amount of the 2015 Notes, representing 96.3% of the outstanding aggregate principal amount of the 2015 Notes, was settled through the issuance of Ciena common stock at or prior to maturity. In total, we issued approximately 8.9 million shares of Ciena common stock as a result of the conversion elections and private exchange transactions in respect of the 2015 Notes. We repaid in cash approximately \$6.9 million in aggregate principal amount of the 2015 Notes at maturity.

**Assumption and Conversion of Cyan Convertible Notes.** Upon the closing of our acquisition of Cyan, we assumed its \$50.0 million in outstanding principal amount of 8.0% Convertible Senior Secured Notes due 2019 (the “2019 Notes”). Under the terms of the indenture governing the 2019 notes, following the closing of the acquisition, the note holders were given the right to convert the 2019 Notes at an increased conversion rate of approximately 91.79 shares of Ciena common stock and \$290.08 in cash for each \$1,000 principal amount of the 2019 Notes. During the fourth quarter of fiscal 2015, holders representing all of the outstanding aggregate principal amount of the 2019 Notes surrendered their notes for conversion and, accordingly, there are no remaining 2019 Notes outstanding. In satisfaction of such conversions, during the fourth quarter of fiscal 2015, we issued approximately 4.6 million shares of Ciena common stock and paid \$14.5 million in cash.

See Note 15 to our Consolidated Financial Statements included in in Item 8 of Part II of this report for more information relating to our outstanding convertible notes.

#### Financial Results for Fourth Quarter of Fiscal 2015

Revenue for the fourth quarter of fiscal 2015 was \$692.0 million, representing a sequential increase of 14.8% from \$602.9 million in the third quarter of fiscal 2015. Fourth quarter revenue includes \$84.4 million from products and services relating to the Cyan business acquired on August 3, 2015. Revenue-related details reflecting sequential changes from the third quarter of fiscal 2015 include the following:

Product revenue for the fourth quarter of fiscal 2015 increased by \$80.4 million, primarily reflecting increases of \$76.3 million in Converged Packet Optical and \$6.5 million in Packet Networking. These increases were partially offset by a decrease of \$1.7 million in software. Increased Converged Packet Optical revenue reflects \$81.0 million

Table of Contents

relating to the Z-Series Packet-Optical Platform acquired from Cyan. Sales of this platform primarily benefited from significantly increased sales to Windstream Corporation, which has been participating in certain U.S. government-supported funding programs at levels that we do not expect to recur. Accordingly, we expect quarterly revenue for this product during fiscal 2016 to decrease considerably from the level attained in the fourth quarter. Service revenue for the fourth quarter of fiscal 2015 increased by \$8.7 million, inclusive of \$3.4 million from the acquired Cyan business.

Revenue from North America for the fourth quarter of fiscal 2015 was \$480.0 million, an increase from \$389.6 million in the third quarter of fiscal 2015. This primarily reflects increases of \$75.7 million in Converged Packet Optical, \$7.6 million in Packet Networking, and \$6.8 million in Software and Services.

Europe, Middle East and Africa ("EMEA") revenue for the fourth quarter of fiscal 2015 was \$94.0 million, a slight increase from \$93.2 million in the third quarter of fiscal 2015. This primarily reflects an increase of \$2.3 million in Converged Packet Optical, partially offset by a decrease of \$1.0 million in Software and Services.

Caribbean and Latin America ("CALA") revenue for the fourth quarter of fiscal 2015 was \$45.7 million, a decrease from \$65.1 million in the third quarter of fiscal 2015. This primarily reflects a decrease of \$21.4 million in Converged Packet Optical offset by an increase of \$2.5 million in Software and Services.

Asia Pacific ("APAC") revenue for the fourth quarter of fiscal 2015 was \$72.3 million, an increase from \$55.0 million in the third quarter of fiscal 2015. This primarily reflects an increase of \$19.7 million in Converged Packet Optical, partially offset by a decrease of \$1.5 million in Software and Services.

For the fourth quarter of fiscal 2015, AT&T and Windstream Corporation accounted for 19.1% and 10.5%, respectively, of total revenue. For the third quarter of fiscal 2015, AT&T accounted for 20.2% of total revenue and no other customer accounted for 10% or more of revenue.

Gross margin for the fourth quarter of fiscal 2015 was 43.8%, a decrease from 44.8% in the third quarter of fiscal 2015. Gross margin for the fourth quarter of fiscal 2015 was adversely affected by the strong sales volume of lower margin Z-Series Packet-Optical Platform and the impact of certain items relating to the purchase accounting for the Cyan acquisition that increased costs of goods sold during the quarter. These items included the revaluation of the acquired Cyan inventory and increased expense for amortization of acquired intangible assets.

Operating expense was \$293.6 million for the fourth quarter of fiscal 2015, a \$68.2 million increase from \$225.4 million in the third quarter of fiscal 2015. This increase principally reflects \$60.2 million of operating expense resulting from the Cyan acquisition, including \$25.4 million related to amortization of acquired intangible assets, \$19.6 million in acquisition and integration costs, \$8.2 million in research and development expense, and \$7.0 million in selling and marketing expense. The remaining operating expense increase of \$8.0 million primarily reflects increases of \$4.4 million in selling and marketing expense, due to incentive compensation, and \$4.1 million in general and administrative expense, primarily due to increased performance-based stock compensation expense.

Reflecting the increases in operating expense above, income from operations for the fourth quarter of fiscal 2015 was \$9.4 million, as compared to \$44.5 million during the third quarter of fiscal 2015. Due primarily to the fluctuation in foreign currency exchange rates, net of hedging, we incurred losses in interest and other income, net of \$6.2 million and \$5.5 million during the fourth quarter of fiscal 2015 and the third quarter of fiscal 2015, respectively. Our net loss for the fourth quarter of fiscal 2015 was \$13.8 million, or \$0.10 per diluted common share. This compares to a net income of \$23.6 million or \$0.19 per diluted common share, for the third quarter of fiscal 2015.

We generated \$84.6 million of cash from operations during the fourth quarter of fiscal 2015. This compares with \$117.5 million in cash generated from operations during the third quarter of fiscal 2015. As of October 31, 2015, we had \$791.0 million in cash and cash equivalents, \$135.1 million of short-term investments in U.S. treasury securities and commercial paper and \$95.1 million of long-term investments in U.S. treasury securities. This compares to \$697.1 million in cash and cash equivalents, \$160.1 million of short-term investments in U.S. treasury securities and commercial paper, and \$70.2 million of long-term investments in U.S. treasury securities at July 31, 2015.



As of October 31, 2015, we had 5,345 employees, an increase from 5,196 as of July 31, 2015 and an increase from 5,161 and 4,754 at October 31, 2014 and 2013, respectively.

Table of Contents

## Consolidated Results of Operations

## Operating Segments

For the periods covered by this report, Ciena's internal organizational structure and the management of its business were grouped into the following operating segments, each of which is more fully described in the "Products and Services" section of the description of our business in Item 1 of Part I of this annual report:

**Converged Packet Optical** — includes the 6500 Packet-Optical Platform and the 5430 Reconfigurable Switching System, which feature our WaveLogic coherent optical processors. Products also include Waveserver, the family of CoreDirector® Multiservice Optical Switches and the OTN configuration for the 5410 Reconfigurable Switching System. Revenue from sales of the Z-Series Packet-Optical Platform acquired from Cyan is included in our Converged Packet Optical segment. This segment also includes sales of operating system software and enhanced software features embedded in each of these products. Revenue from this segment is included in product revenue on the Consolidated Statement of Operations.

**Packet Networking** — includes the 3000 family of service delivery switches and service aggregation switches and the 5000 family of service aggregation switches. This segment also includes the 8700 Packetwave Platform and the Ethernet packet configuration for the 5410 Service Aggregation Switch. This segment also includes sales of operating system software and enhanced software features embedded in each of these products. Revenue from this segment is included in product revenue on the Consolidated Statement of Operations.

**Optical Transport** — includes the 4200 Advanced Services Platform, Corestream® Agility Optical Transport System, 5100/5200 Advanced Services Platform, Common Photonic Layer (CPL) and 6100 Multiservice Optical Platform. This segment includes sales from SONET/SDH, transport and data networking products, as well as certain enterprise-oriented transport solutions that support storage and LAN extension, interconnection of data centers, and virtual private networks. This segment also includes operating system software and enhanced software features embedded in each of these products. Revenue from this segment is included in product revenue on the Consolidated Statement of Operations.

**Software and Services** — includes the sale of network management solutions, including the OneControl Unified Management System, ON-Center® Network & Service Management Suite, Ethernet Services Manager, Optical Suite Release and Planet Operate. This segment includes sales of Ciena's Blue Planet software platform, a modular network virtualization, service orchestration and network management software solution, and Ciena's SDN Multilayer WAN Controller and its related applications. This segment includes a broad range of services for consulting and network design, installation and deployment, software subscription, maintenance support and training activities. Except for revenue from the software portion of this segment, which is included in product revenue, revenue from this segment is included in services revenue on the Consolidated Statement of Operations.

Fiscal 2014 compared to Fiscal 2015

## Revenue

During fiscal 2015, the U.S. dollar strengthened against a number of foreign currencies, including the Canadian Dollar and the Euro, in which we have our most significant foreign currency revenue exposure. Consequently, our total revenue reported in U.S. dollars during fiscal 2015 was adversely impacted by approximately \$48.4 million, or 1.9%, as compared to fiscal 2014. The table below (in thousands, except percentage data) sets forth the changes in our operating segment revenue for the periods indicated:

Fiscal Year				Increase	
2014	%*	2015	%*	(decrease)	%**

Edgar Filing: CIENA CORP - Form 10-K

Revenue:

Converged Packet Optical	\$1,455,501	63.6	\$1,661,702	67.9	\$206,201	14.2
Packet Networking	244,116	10.7	229,223	9.4	(14,893 )	(6.1 )
Optical Transport	127,215	5.6	73,004	3.0	(54,211 )	(42.6 )
Software and Services	461,457	20.1	481,740	19.7	20,283	4.4
Consolidated revenue	\$2,288,289	100.0	\$2,445,669	100.0	\$157,380	6.9

46

---

Table of Contents


---

\* Denotes % of total revenue

\*\* Denotes % change from 2014 to 2015

Converged Packet Optical revenue increased, reflecting a \$139.7 million increase in sales of our 6500 Packet-Optical Platform, largely driven by service provider demand for high-capacity, optical transport for coherent 40G and 100G network infrastructures, and a \$19.1 million increase in sales of the OTN configuration for the 5410 Reconfigurable Switching System. Increased revenue also reflects the addition of \$81.0 million relating to the Z-Series Packet-Optical Platform acquired from Cyan. These increases were partially offset by decreases of \$16.8 million in sales of our CoreDirector® Multiservice Optical Switches and \$16.8 million in sales of our 5430 Reconfigurable Switching System. The strong performance of this segment, particularly as compared to the expected and continued revenue declines in Optical Transport segment revenue, reflects the preference of network operators to adopt next-generation architectures that enable the convergence of high-capacity, coherent optical transport with integrated OTN switching and control plane functionality.

Packet Networking revenue decreased, reflecting decreases of \$15.8 million in sales of our 3000 and 5000 families of service delivery and aggregation switches and \$2.6 million in sales of our legacy broadband products. These decreases were offset by a \$3.8 million increase in sales of our 8700 Packetwave Platform, which became available for sale in the fourth quarter of fiscal 2014.

Optical Transport revenue decreased, reflecting decreases of \$20.5 million in sales of our 4200 Advanced Services Platform, \$16.9 million in sales of our 5100/5200 Advanced Services Platform and \$16.8 million in sales of our other stand-alone transport products. Revenue for our Optical Transport segment, which currently consists principally of stand-alone WDM and SONET/SDH-based transport platforms, has experienced meaningful declines in annual revenue in recent years. We expect this trend to continue, reflecting network operators' transition toward next-generation network architectures as described above.

Software and Services revenue increased, reflecting increases of \$18.8 million in maintenance and support services sales and \$3.1 million in installation and deployment services sales partially offset by a decrease of \$1.1 million in network transformation consulting sales.

Our operating segments each engage in business and operations across four geographic regions: North America; EMEA; CALA; and APAC. Results for North America include only activities in the United States and Canada. Part of our business and growth strategy is to secure additional communications service provider customers outside of North America, including in high-growth geographies such as Brazil and India. We believe that this is an important part of our strategy and required for continued revenue growth. The following table reflects our geographic distribution of revenue principally based on the relevant location for our delivery of products and performance of services. Our revenue, particularly when considered by geographic distribution, can fluctuate significantly from quarter to quarter. Among other things, the timing of revenue recognition for large network projects, particularly outside of North America, can result in large variations in geographic revenue results in any particular quarter. The table below (in thousands, except percentage data) sets forth the changes in geographic distribution of revenue for the periods indicated:

	Fiscal Year		2015	%*	Increase (decrease)	%**	
	2014	%*					
North America	\$1,477,329	64.6	\$1,598,328	65.4	\$120,999	8.2	
EMEA	417,399	18.2	400,294	16.4	(17,105)	(4.1)	)
CALA	212,018	9.3	201,499	8.2	(10,519)	(5.0)	)
APAC	181,543	7.9	245,548	10.0	64,005	35.3	
Total	\$2,288,289	100.0	\$2,445,669	100.0	\$157,380	6.9	

---

\* Denotes % of total revenue

\*\* Denotes % change from 2014 to 2015

Table of Contents

North America revenue includes sales to AT&T for fiscal 2014 and fiscal 2015 of \$423.5 million and \$487.8 million, respectively. Revenues reflect increases of \$184.0 million in Converged Packet Optical sales and \$6.2 million in Software and Services sales, partially offset by decreases of \$38.2 million in Optical Transport sales and \$31.0 million in sales of Packet Networking. Converged Packet Optical sales principally reflect a \$106.8 million increase in sales of our 6500 Packet-Optical Platform on increased sales to AT&T, cable and multiservice operators and Web-scale providers, and a \$76.3 million increase due to sales of our Z-Series Packet-Optical Platform acquired from Cyan during the fourth quarter.

EMEA revenue reflects decreases of \$13.2 million in Optical Transport sales and \$6.5 million in Software and Services sales. These decreases were partially offset by an increase of \$2.2 million in sales of Converged Packet Optical sales.

CALA revenue reflects a \$20.6 million decrease in Converged Packet Optical sales. This decrease was partially offset by an increase of \$9.7 million in Software and Services sales. Converged Packet Optical sales reflect a \$41.3 million decrease in sales of our 5430 Reconfigurable Switching System, partially offset primarily by a \$15.5 million increase in sales of our 6500 Packet-Optical Platform primarily to certain communications service providers. Software and Services sales reflect increases of \$5.7 million in installation and deployment services sales and \$2.3 million of network transformation consulting sales.

APAC revenue reflects increases of \$40.6 million in Converged Packet Optical sales, \$16.0 million in Packet Networking sales and \$10.8 million in Software and Services sales. These increases were partially offset by a decrease of \$3.4 million in sales of Optical Transport. Converged Packet Optical sales reflect increases of \$18.7 million of sales of our 6500 Packet-Optical Platform, \$18.6 million of sales of our 5430 Reconfigurable Switching System, principally to communication service providers and submarine network operators, and \$1.3 million of the Cyan acquired Z-Series Packet-Optical Platform. Sales of our 6500 Packet-Optical Platform reflect increased sales to communication service providers, sales through our strategic relationship with Ericsson and sales to submarine network providers.

While we have benefited from the diversification of our business and customer base, our largest ten customers contributed 56.4% of fiscal 2014 revenue and 52.5% of fiscal 2015 revenue. A sizable portion of our revenue continues to be derived from sales to service provider customers. Consequently, our financial results are closely correlated with the spending of a relatively small number of customers and can be significantly affected by market, industry or competitive dynamics affecting their businesses. Our reliance upon a relatively small number of customers also increases our exposure to changes in their spending levels, network priorities and purchasing strategies. The loss of a significant customer could have a material adverse effect on our business and results of operations and our results of operations can fluctuate quarterly depending upon sales volumes and purchasing priorities with these large customers.

Sales to AT&T were \$423.5 million, or 18.5% of total revenue, in fiscal 2014 and \$487.8 million, or 19.9% of total revenue, in fiscal 2015. During fiscal 2015, AT&T and other service provider customers announced initiatives to reduce capital expenditures in future periods, including on network infrastructure, and there can be no assurance that we will be able to maintain the sales levels we achieved during fiscal 2015. Moreover, AT&T and other customers, including service providers, are pursuing network strategies that seek to utilize enhanced software programmability, management and control of networks and to deploy off-the-shelf or commoditized hardware technology, referred to as "white box" hardware, in lieu of existing solutions. These strategies may present challenges and opportunities for our business, particularly where we are an incumbent equipment vendor. We did not have any other customers accounting for greater than 10% of our revenue in fiscal 2014 or fiscal 2015.

As our business has diversified, we have taken a number of steps to increase the velocity of our business and improve our operating efficiency, including through inventory management and lead time reduction. As a result, the percentage of product revenue that we generate from customer orders placed during that particular quarter has increased meaningfully, as compared to our historical periods. Our increased reliance upon orders placed during a particular

quarter may make it harder to predict our revenue and results of operations, and may further increase the likelihood of fluctuations in our results.

#### Cost of Goods Sold and Gross Profit

Product cost of goods sold consists primarily of amounts paid to third party contract manufacturers, component costs, employee-related costs and overhead, shipping and logistics costs associated with manufacturing-related operations, warranty and other contractual obligations, royalties, license fees, amortization of intangible assets, cost of excess and obsolete inventory and, when applicable, estimated losses on committed customer contracts.

Table of Contents

Services cost of goods sold consists primarily of direct and third party costs, including employee-related costs, associated with our provision of services including installation, deployment, maintenance support, consulting and training activities and, when applicable, estimated losses on committed customer contracts.

Our gross profit as a percentage of revenue, or “gross margin,” is susceptible to fluctuations due to a number of factors. In any given period, gross margin can vary significantly depending upon the mix and concentration of revenue by segment, product line within a particular segment, geography and customers. Gross margin can also be affected by our concentration of lower margin "common" equipment sales and higher margin products including channel cards, the mix of lower margin installation services within our service revenue, our introduction of new products, and changes in expense for excess and obsolete inventory and warranty obligations. We regularly encounter market-based price erosion, and we expect that our gross margins will be subject to fluctuation and significantly dependent upon on our level of success in driving product cost reductions relative to the price reductions that we encounter. Accordingly, gross margin can be adversely affected by the level of pricing pressure and competition that we encounter in the market. In an effort to retain or secure customers, enter new markets or capture market share, we may agree to pricing or other unfavorable commercial terms that result in lower or negative gross margins on a particular order or group of orders. Gross margin can also be affected as a result of our degree of success in implementing certain optimization initiatives focused on rationalizing our supply chain and consolidating third party contract manufacturers and distribution sites. These factors and market dynamics may result in fluctuation in our results of operations and can adversely affect our gross margin and results of operations in certain periods.

Service gross margin can be affected by the mix of customers and services, particularly the mix between deployment and maintenance services, geographic mix and the timing and extent of any investments in internal resources to support this business.

The tables below (in thousands, except percentage data) set forth the changes in revenue, cost of goods sold and gross profit for the periods indicated:

	Fiscal Year				Increase (decrease)	%**
	2014	%*	2015	%*		
Total revenue	\$2,288,289	100.0	\$2,445,669	100.0	\$157,380	6.9
Total cost of goods sold	1,339,937	58.6	1,370,106	56.0	30,169	2.3
Gross profit	\$948,352	41.4	\$1,075,563	44.0	\$127,211	13.4

\* Denotes % of total revenue

\*\* Denotes % change from 2014 to 2015

	Fiscal Year				Increase (decrease)	%**
	2014	%*	2015	%*		
Product revenue	\$1,865,826	100.0	\$2,002,395	100.0	\$136,569	7.3
Product cost of goods sold	1,083,022	58.0	1,120,373	56.0	37,351	3.4
Product gross profit	\$782,804	42.0	\$882,022	44.0	\$99,218	12.7

\* Denotes % of product revenue

\*\* Denotes % change from 2014 to 2015





Table of Contents

	Fiscal Year		2015	%*	Increase (decrease)	%**	
	2014	%*					
Service revenue	\$422,463	100.0	\$443,274	100.0	\$20,811	4.9	
Service cost of goods sold	256,915	60.8	249,733	56.3	(7,182)	(2.8)	)
Service gross profit	\$165,548	39.2	\$193,541	43.7	\$27,993	16.9	

\* Denotes % of service revenue

\*\* Denotes % change from 2014 to 2015

Gross profit as a percentage of revenue increased as a result of the factors described below.

Gross profit on products as a percentage of product revenue increased as a result of our relative success in driving product cost reductions and realizing improved manufacturing efficiencies as compared to the market-based price erosion we encountered during the period.

Gross profit on services as a percentage of services revenue increased, primarily due to increased sales of higher margin software subscription services and reduced repair costs to support maintenance service contracts.

#### Operating Expense

We expect operating expense to increase in fiscal 2016 from the level reported for fiscal 2015, in part relating to the acquisition of the Cyan business during the fourth quarter of fiscal 2015 and the addition of its personnel and operations. We also expect operating expense to increase in order to fund our research and development initiatives, to provide for investments in the re-engineering of company-wide enterprise resource planning platforms, and to fund the transition of key facilities. In particular, the development of our new facilities and the transition of our operations in Ottawa will require significant effort, time and cost in advance of the expiration of the lease for our Lab 10 facility. For additional information regarding this lease and the facility transition, see Item 2 of Part I of this annual report.

Operating expense consists of the component elements described below.

Research and development expense primarily consists of salaries and related employee expense (including share-based compensation expense), prototype costs relating to design, development, and testing of our products, depreciation expense and third party consulting costs.

Selling and marketing expense primarily consists of salaries, commissions and related employee expense (including share-based compensation expense), and sales and marketing support expense, including travel, demonstration units, trade show expense and third party consulting costs.

General and administrative expense primarily consists of salaries and related employee expense (including share-based compensation expense), and costs for third party consulting and other services.

Acquisition and integration costs consist of expenses for financial, legal and accounting advisors, facilities and systems consolidation costs, and severance and other employment-related costs related to our recent acquisition of Cyan.

Amortization of intangible assets primarily reflects the amortization of purchased technology and the value of customer relationships derived from our acquisitions.

Restructuring costs primarily reflect actions Ciena has taken to better align its workforce, facilities and operating costs with perceived market opportunities, business strategies and changes in market and business conditions.

The table below (in thousands, except percentage data) sets forth the changes in operating expense for the periods indicated:

50

---

Table of Contents

	Fiscal Year		2015	%*	Increase (decrease)	%**
	2014	%*				
Research and development	\$401,180	17.5	\$414,201	16.9	\$13,021	3.2
Selling and marketing	328,325	14.3	333,836	13.7	5,511	1.7
General and administrative	126,824	5.5	123,402	5.0	(3,422)	(2.7)
Amortization of intangible assets	45,970	2.0	69,511	2.8	23,541	51.2
Acquisition and integration costs	—	—	25,539	1.0	25,539	—
Restructuring costs	349	—	8,626	0.4	8,277	2,371.6
Total operating expenses	\$902,648	39.3	\$975,115	39.8	\$72,467	8.0

\* Denotes % of total revenue

\*\* Denotes % change from 2014 to 2015

Research and development expense benefited by \$28.0 million as a result of foreign exchange rates, net of hedging, primarily due to a stronger U.S. dollar in relation to the Canadian dollar. Including the effect of foreign exchange rates, research and development expenses increased by \$13.0 million, primarily reflecting increases of \$8.6 million in facilities and information systems expense, \$6.3 million in employee compensation and related costs, \$1.2 million in technology and related expense and \$1.1 million in depreciation expense. These increases were partially offset by decreases of \$7.0 million in professional services and \$2.3 million in prototype expense. Research and development expense also reflects a \$4.5 million reduction in reimbursements from our strategic jobs investment fund grant from the province of Ontario as the maximum funding limit under this grant was met in the second quarter of fiscal 2015. Selling and marketing expense benefited by \$16.9 million as a result of foreign exchange rates, primarily due to a stronger U.S. dollar in relation to the Euro and the Canadian Dollar. Including the effect of foreign exchange rates, selling and marketing expenses increased by \$5.5 million, primarily reflecting increases of \$10.4 million in employee compensation and related costs and \$1.2 million in customer demonstration equipment. These increases were partially offset by decreases of \$2.2 million in trade show and related costs, \$2.2 million in travel and related costs and \$1.5 million in professional services.

General and administrative expense benefited by \$4.4 million as a result of foreign exchange rates, primarily due to a stronger U.S. dollar in relation to the Euro and the Canadian Dollar. Including the effect of foreign exchange rates, general and administrative expense decreased by \$3.4 million, reflecting an \$8.5 million decrease in legal fees, primarily due to certain patent litigation costs incurred during fiscal 2014. This decrease was partially offset by increases of \$4.5 million in employee compensation and related costs and \$1.0 million in facilities and information systems expense.

Acquisition and integration costs increased, reflecting financial, legal and accounting advisors, facilities and systems consolidation costs, and severance and other employment-related costs related to our acquisition of Cyan during fiscal 2015.

Amortization of intangible assets increased due to expense related to acquired intangible assets from our acquisition of Cyan during the fourth quarter of fiscal 2015.

Restructuring costs primarily reflect certain severance and related expense associated with headcount reductions and initiatives to improve efficiency. During fiscal 2015, we incurred approximately \$8.6 million in restructuring costs, primarily reflecting a global workforce reduction of approximately 125 employees in the first quarter of fiscal 2015 as part of our business optimization strategy to improve our gross margin, constrain operating expense and redesign certain business processes, systems, and resources. As we look to manage operating expense and drive further efficiency and leverage from our operations, we will continue to assess allocation of headcount, facilities and other resources to ensure that they are optimized toward key growth opportunities.

#### Other items

The table below (in thousands, except percentage data) sets forth the changes in other items for the periods indicated:



Table of Contents

	Fiscal Year				Increase (decrease)	%**
	2014	%*	2015	%*		
Interest and other income (loss), net	\$ (25,262 )	(1.1 )	\$ (25,505 )	(1.0 )	\$ (243 )	(1.0 )
Interest expense	\$ 47,115	2.1	\$ 51,179	2.1	\$ 4,064	8.6
Provision for income taxes	\$ 13,964	0.6	\$ 12,097	0.5	\$ (1,867 )	(13.4 )

\* Denotes % of total revenue

\*\* Denotes % change from 2014 to 2015

Interest and other income (loss), net reflects a \$2.9 million increase in losses related to foreign exchange rates on assets and liabilities denominated in a currency other than the relevant functional currency, net of hedging activity, offset by a \$2.7 million non-cash gain related to the change in fair value of the embedded redemption feature associated with our 2015 Notes, which matured during the second quarter of fiscal 2015.

Interest expense increased, primarily due to a higher level of outstanding debt in fiscal 2015 as compared to fiscal 2014. See Note 15 to our Consolidated Financial Statements included in Item 8 of Part II of this report for more information.

Provision for income taxes decreased primarily due to foreign and state taxes.

Fiscal 2013 compared to Fiscal 2014

Revenue

The table below (in thousands, except percentage data) sets forth the changes in our operating segment revenue for the periods indicated:

	Fiscal Year				Increase (decrease)	%**
	2013	%*	2014	%*		
Revenue:						
Converged Packet Optical	\$ 1,187,231	57.0	\$ 1,455,501	63.6	\$ 268,270	22.6
Packet Networking	222,898	10.7	244,116	10.7	21,218	9.5
Optical Transport	233,821	11.2	127,215	5.6	(106,606 )	(45.6 )
Software and Services	438,596	21.1	461,457	20.1	22,861	5.2
Consolidated revenue	\$ 2,082,546	100.0	\$ 2,288,289	100.0	\$ 205,743	9.9

\* Denotes % of total revenue

\*\* Denotes % change from 2013 to 2014

Converged Packet Optical revenue increased significantly, reflecting a \$258.2 million increase in sales of our 6500 Packet-Optical Platform, largely driven by service provider and Web-scale provider demand for high-capacity, optical transport for coherent 40G and 100G network infrastructures. In addition, sales of our 5430 reconfigurable switching system and the OTN configuration for the 5410 Reconfigurable Switching System increased by \$25.6 million and \$6.0 million respectively. These increases were partially offset by a \$21.5 million decrease in sales of our CoreDirector® Multiservice Optical Switches. The strong performance of this segment, particularly as compared to the expected declines in Optical Transport segment revenue, reflects the preference of network operators to adopt next-generation architectures that enable the convergence of high-capacity, coherent optical transport with integrated OTN switching and control plane functionality.

Packet Networking revenue increased, reflecting a \$30.4 million increase in sales of our 3000 and 5000 families of service delivery and aggregation switches. This increase was largely driven by the expansion of Ethernet business services by AT&T, our largest service provider customer. Segment revenue also benefited from \$1.7 million in initial sales of our 8700 Packetwave Platform. These increases were partially offset by decreases of \$5.3 million in sales of our 5410 Service Aggregation Switch and \$5.1 million in sales of our older, stand-alone broadband products.



Table of Contents

Optical Transport revenue decreased, reflecting sales decreases of \$46.6 million in other stand-alone transport products, \$36.2 million of 5100/5200 Advanced Services Platform and \$23.8 million in our 4200 Advanced Services Platform. Revenue for our Optical Transport segment, which currently consists principally of stand-alone WDM and SONET/SDH-based transport platforms, has experienced meaningful declines in annual revenue in recent years, reflecting network operators' transition toward next-generation converged network architectures as described above. Software and Services revenue increased, reflecting increases of \$10.4 million in maintenance and support services revenue, \$8.4 million in installation and deployment services revenue, \$2.8 million in software sales and \$1.2 million in networking transformation consulting revenue.

The table below (in thousands, except percentage data) sets forth the changes in geographic distribution of revenue for the periods indicated:

	Fiscal Year				Increase (decrease)	%**
	2013	%*	2014	%*		
North America	\$1,360,169	65.3	\$1,477,329	64.6	\$117,160	8.6
EMEA	376,405	18.1	417,399	18.2	40,994	10.9
CALA	174,360	8.4	212,018	9.3	37,658	21.6
APAC	171,612	8.2	181,543	7.9	9,931	5.8
Total	\$2,082,546	100.0	\$2,288,289	100.0	\$205,743	9.9

\* Denotes % of total revenue

\*\* Denotes % change from 2013 to 2014

North America revenue includes sales to AT&T for fiscal 2013 and fiscal 2014 of \$373.6 million and \$423.5 million, respectively. Revenues reflect increases of \$145.6 million in Converged Packet Optical sales, \$21.4 million in Software and Services sales and \$20.2 million in sales of Packet Networking. These increases were partially offset by a decrease of \$70.1 million in Optical Transport sales.

EMEA revenue reflects increases of \$58.4 million in Converged Packet Optical sales, \$5.4 million in Software and Services Sales and \$2.3 million in Packet Networking sales. These increases were partially offset by a decrease of \$25.0 million in Optical Transport sales.

CALA revenue reflects increases of \$41.3 million in Converged Packet Optical sales and \$2.5 million in Software and Services sales. These increases was partially offset by a decrease of \$6.1 million in Optical Transport sales.

APAC revenue reflects an increase of \$23.0 million in Converged Packet Optical sales. This increase was partially offset by decreases of \$6.5 million in Software and Services sales, \$5.3 million in Optical Transport sales and \$1.3 million in Packet Networking sales. Software and Services sales reflect decreases of \$3.4 million in maintenance and support services sales, \$1.2 million in installation and deployment services sales and \$1.0 million in software sales. Maintenance and support services sales reflect decreases in sales to certain service providers. Installation and deployment services sales reflect a decrease in sales to submarine network operators.

#### Cost of Goods Sold and Gross Profit

The tables below (in thousands, except percentage data) set forth the changes in revenue, cost of goods sold and gross profit for the periods indicated:

	Fiscal Year				Increase (decrease)	%**
	2013	%*	2014	%*		
Total revenue	\$2,082,546	100.0	\$2,288,289	100.0	\$205,743	9.9
Total cost of goods sold	1,217,371	58.5	1,339,937	58.6	122,566	10.1



Edgar Filing: CIENA CORP - Form 10-K

Gross profit	\$865,175	41.5	\$948,352	41.4	\$83,177	9.6
--------------	-----------	------	-----------	------	----------	-----

---

53

---

Table of Contents

\* Denotes % of total revenue

\*\* Denotes % change from 2013 to 2014

	Fiscal Year		2014	%*	Increase (decrease)	%**
	2013	%*				
Product revenue	\$1,680,125	100.0	\$1,865,826	100.0	\$185,701	11.1
Product cost of goods sold	967,510	57.6	1,083,022	58.0	115,512	11.9
Product gross profit	\$712,615	42.4	\$782,804	42.0	\$70,189	9.8

\* Denotes % of product revenue

\*\* Denotes % change from 2013 to 2014

	Fiscal Year		2014	%*	Increase (decrease)	%**
	2013	%*				
Service revenue	\$402,421	100.0	\$422,463	100.0	\$20,042	5.0
Service cost of goods sold	249,861	62.1	256,915	60.8	7,054	2.8
Service gross profit	\$152,560	37.9	\$165,548	39.2	\$12,988	8.5

\* Denotes % of service revenue

\*\* Denotes % change from 2013 to 2014

Gross profit as a percentage of revenue remained relatively unchanged.

Gross profit on products as a percentage of product revenue decreased slightly, due to lower margins on Packet Networking and Optical Transport products. The decline was largely offset by improved mix of higher-margin packet platforms with software content within our Converged Packet Optical segment, and greater leverage from efforts to streamline and optimize our supply chain activities.

Gross profit on services as a percentage of services revenue increased primarily due to increased maintenance and consulting services revenues and increased margin due to improved efficiencies for managed spares projects.

Operating expense

The table below (in thousands, except percentage data) sets forth the changes in operating expense for the periods indicated:

	Fiscal Year		2014	%*	Increase (decrease)	%**
	2013	%*				
Research and development	\$383,408	18.4	\$401,180	17.5	\$17,772	4.6
Selling and marketing	304,170	14.6	328,325	14.3	24,155	7.9
General and administrative	122,432	5.9	126,824	5.5	4,392	3.6
Amortization of intangible assets	49,771	2.4	45,970	2.0	(3,801)	(7.6)
Restructuring costs	7,169	0.3	349	—	(6,820)	(95.1)
Total operating expenses	\$866,950	41.6	\$902,648	39.3	\$35,698	4.1

\* Denotes % of total revenue

\*\* Denotes % change from 2013 to 2014

Table of Contents

Research and development expense benefited by \$15.4 million as a result of foreign exchange rates, primarily due to strengthening of the U.S. dollar in relation to the Canadian Dollar. The \$17.8 million increase primarily reflects increases of \$8.1 million in professional services expense, \$6.9 million in employee compensation and related costs, \$5.3 million in prototype expense, partially offset by a decrease of \$2.6 million in technology and related costs. Selling and marketing expense benefited by \$1.9 million as a result of foreign exchange rates, primarily due to strengthening of the U.S. dollar in relation to the Canadian Dollar. The \$24.2 million increase primarily reflects increases of \$20.6 million in employee compensation and related costs, \$3.3 million of travel and related costs and \$1.2 million in facilities and information technology costs. These increases were partially offset by a decrease of \$1.4 million in customer demonstration equipment.

General and administrative expense increased by \$4.4 million, primarily reflecting an increase in legal fees and settlements and consulting services.

Amortization of intangible assets decreased due to certain intangible assets having reached the end of their economic lives.

Restructuring costs primarily reflect certain severance and related expense associated with headcount reductions and restructuring activities to align our workforce and resources with market opportunities and research and development initiatives. Restructuring costs for fiscal 2013 also include the consolidation of certain facilities located within Maryland associated with the transition of our headquarters facility.

Other items

The table below (in thousands, except percentage data) sets forth the changes in other items for the periods indicated:

	Fiscal Year				Increase (decrease)	%**
	2013	%*	2014	%*		
Interest and other income (loss), net	\$(5,744 )	(0.3 )	\$(25,262 )	(1.1 )	\$(19,518 )	(339.8 )
Interest expense	\$44,042	2.1	\$47,115	2.1	\$3,073	7.0
Loss on extinguishment of debt	\$(28,630 )	(1.4 )	\$—	—	\$28,630	(100.0 )
Provision for income taxes	\$5,240	0.3	\$13,964	0.6	\$8,724	166.5

\* Denotes % of total revenue

\*\* Denotes % change from 2013 to 2014

Interest and other income (loss), net reflects a \$5.7 million non-cash loss related to the change in fair value of the embedded redemption feature associated with our 2015 Notes and a \$13.5 million increase in losses related to foreign exchange rates on assets and liabilities denominated in a currency other than the relevant functional currency, net of hedging activity.

Interest expense increased, primarily due to a higher level of outstanding debt in fiscal 2014 as compared to fiscal 2013. See Note 15 to our Consolidated Financial Statements included in Item 8 of Part II of this report for more information.

Loss on extinguishment of debt for fiscal 2013 reflects a non-cash loss of \$28.6 million relating to the exchange transactions during the first quarter of fiscal 2013. Upon issuance, the 4.0% convertible senior notes due December 15, 2020 (the "2020 Notes") were recorded at a fair value of \$213.6 million. The exchange transactions resulted in the retirement of outstanding 2015 Notes with a carrying value of \$187.9 million and the write-off of unamortized debt issuance costs of \$2.3 million and \$0.6 million relating to the redemption feature on the 2015 Notes, which was accounted for as a separate embedded derivative.

Provision for income taxes increased primarily due to foreign and state tax expenses.

Segment Profit



Table of Contents

The table below (in thousands, except percentage data) sets forth the changes in our segment profit for the respective periods:

	Fiscal Year		Increase (decrease)	%*
	2014	2015		
Segment profit:				
Converged Packet Optical	\$353,942	\$471,484	\$117,542	33.2
Packet Networking	\$19,467	\$28,136	\$8,669	44.5
Optical Transport	\$38,974	\$15,930	\$(23,044)	(59.1)
Software and Services	\$134,789	\$145,812	\$11,023	8.2

\* Denotes % change from 2014 to 2015

Converged Packet Optical segment profit increased, primarily due to increased sales volume and improved gross margin, partially offset by increased research and development expense. Increased sales volume is largely driven by service provider demand for convergence of high-capacity, coherent 40G and 100G network infrastructures with integrated OTN switching and control plane functionality.

Packet Networking segment profit increased due to lower research and development costs and improved gross margin partially offset by lower sales volume.

Optical Transport segment profit decreased, primarily due to reduced sales volume and decreased gross margin.

Revenue for our Optical Transport segment, which currently consists principally of stand-alone WDM and SONET/SDH-based transport platforms, has experienced meaningful declines in annual revenue in recent years, reflecting network operators' transition toward next-generation network architectures as described above.

Software and Services segment profit increased, primarily due to increases in sales of maintenance and support services, installation and deployment services, software subscription services and increased margin due to lower repair costs to support maintenance service contracts. These increases were partially offset by increased software research and development costs.

The table below (in thousands, except percentage data) sets forth the changes in our segment profit for the respective periods:

	Fiscal Year		Increase (decrease)	%*
	2013	2014		
Segment profit:				
Converged Packet Optical	\$242,335	\$353,942	\$111,607	46.1
Packet Networking	\$22,740	\$19,467	\$(3,273)	(14.4)
Optical Transport	\$89,754	\$38,974	\$(50,780)	(56.6)
Software and Services	\$126,938	\$134,789	\$7,851	6.2

\* Denotes % change from 2013 to 2014

Converged Packet Optical segment profit increased, primarily due to increased sales volume and improved gross margin. The increased sales volume is largely driven by service provider and Web-scale provider demand for high-capacity, coherent 40G and 100G network infrastructures with integrated OTN switching and control plane functionality. The improved gross margin is primarily due to sales reflecting a greater mix of higher-margin packet platforms with software content within the segment. These increases were partially offset by increased research and development expense.

Packet Networking segment profit decreased due to lower margins on our 3000 and 5000 families of service delivery and aggregation switches, reflecting increased pricing pressure and competitive dynamics, and increased research and development expense. Decreased segment profit was partially offset by increased sales volume.



Table of Contents

Optical Transport segment profit decreased, primarily due to reduced sales volume and lower gross margin, partially offset by lower research and development expense. The decrease in gross margin is primarily due to an increase in obsolete and excess inventory expense for the discontinuance of certain parts and components used in the manufacture of our Optical Transport products, including our Corestream® Agility Optical Transport platform. Revenue for our Optical Transport segment, which currently consists principally of stand-alone WDM and SONET/SDH-based transport platforms, has experienced meaningful declines in annual revenue in recent years, reflecting network operators' transition toward next-generation network architectures as described above.

Software and Services segment profit increased slightly, due to higher sales for software and consulting services and improved efficiencies for managed spares projects. These increases were partially offset by higher software research and development expense.

**Liquidity and Capital Resources**

At October 31, 2015, our principal sources of liquidity were cash and cash equivalents and investments in marketable debt securities, representing U.S. treasuries and commercial paper, and our ABL Credit Facility. The following table sets forth changes in our cash and cash equivalents and investments in marketable debt securities (in thousands):

	October 31, 2014	2015	Increase (decrease)
Cash and cash equivalents	\$586,720	\$790,971	\$204,251
Short-term investments in marketable debt securities	140,205	135,107	(5,098)
Long-term investments in marketable debt securities	50,057	95,105	45,048
Total cash and cash equivalents and investments in marketable debt securities	\$776,982	\$1,021,183	\$244,201

The change in total cash and cash equivalents and investments in marketable debt securities during fiscal 2015 was primarily related to the following:

- \$262.1 million cash provided by operations, consisting of \$274.9 million provided by net income adjusted for non-cash charges offset by \$12.8 million used in working capital;
- \$62.1 million used for purchases of equipment, furniture, fixtures and intellectual property;
- \$24.1 million provided by the settlement of foreign currency forward contracts, net;
- \$8.0 million used to pay capital lease obligations;
- \$2.0 million used for the purchase of a cost method investment;
- \$37.2 million from the acquisition of Cyan, net of cash acquired;
- \$29.9 million used for the repayment of long-term debt;
- \$30.3 million from proceeds of stock issuances under our employee stock purchase plan and the exercise of stock options; and
- \$6.7 million decrease due to the effect of exchange rate changes on cash and cash equivalents.

Ciena and certain of its subsidiaries are parties to a senior secured asset-based revolving credit facility (the “ABL Credit Facility”) providing for a total commitment of \$200.0 million with a maturity date of December 31, 2016. Ciena principally uses the ABL Credit Facility to support the issuance of letters of credit that arise in the ordinary course of its business and thereby to reduce its use of cash required to collateralize these instruments. As of October 31, 2015, letters of credit totaling \$63.4 million were collateralized by our ABL Credit Facility. There were no borrowings outstanding under the ABL Credit Facility as of October 31, 2015. Ciena and certain of its subsidiaries are also parties to a Credit Agreement providing for senior secured term loans in an aggregate principal amount of \$250 million (the “Term Loan”) with a maturity date of July 15, 2019. For additional information about our Term Loan and ABL Credit Facility, see Note 15 and Note 16, respectively, to our Consolidated Financial Statements included in in Item 8 of Part II of this report.

We regularly evaluate our liquidity position, debt obligations, and anticipated cash needs to fund our operating plans and may consider capital raising and other market opportunities that may be available to us. Based on past performance and current expectations, we believe that our cash, cash equivalents, investments and other sources of

liquidity, including our ABL Credit Facility, will satisfy the working capital needs, capital expenditures, and other liquidity requirements associated with our operations through at least the next 12 months.

The following sections set forth the components of our \$262.1 million of cash provided by operating activities for fiscal 2015:

57

---



Table of Contents

Net income adjusted for non-cash charges

The following tables set forth (in thousands) our net income adjusted for non-cash charges during fiscal 2015:

	Year ended October 31, 2015
Net income	\$11,667
Adjustments for non-cash charges:	
Depreciation of equipment, building, furniture and fixtures, and amortization of leasehold improvements	55,901
Share-based compensation costs	55,340
Amortization of intangible assets	79,866
Provision for inventory excess and obsolescence	26,846
Provision for warranty	17,881
Other	27,373
Net income adjusted for non-cash charges	\$274,874

### Working Capital

Our working capital used \$12.8 million of cash during fiscal 2015. The following tables set forth (in thousands) the major components of the reduction in working capital:

	Year ended October 31, 2015	
Cash used in accounts receivable	\$(37,297	)
Cash provided by inventories	46,898	
Cash used in prepaid expenses and other	(46,383	)
Cash used in accounts payable, accruals and other obligations	(10,505	)
Cash provided by deferred revenue	34,525	
Cash provided by a reduction in working capital	\$(12,762	)

The \$37.3 million of cash used in accounts receivable during fiscal 2015 reflects the higher sales volume in the fourth quarter of fiscal 2015 compared to the fourth quarter of fiscal 2014. Our days sales outstanding (DSOs) remained relatively flat from 82 days for fiscal 2014 to 81 days for fiscal 2015. The \$46.9 million in cash generated from reductions in inventory during fiscal 2015 reflects, in part, certain supply chain initiatives to improve manufacturing efficiencies and inventory management and the reduction of deferred costs of sales. The reduction of the deferred costs of sales relates to the completion of certain submarine network projects. As a result, our inventory turns increased from 4.3 turns during fiscal 2014 to 5.9 turns during fiscal 2015. Cash used in prepaid expense and other during fiscal 2015 was \$46.4 million, primarily reflecting a \$30.0 million financing receivable with an 18-month term. The \$10.5 million of cash used in accounts payable, accruals and other obligations during fiscal 2015 reflects shorter vendor payment cycles. The \$34.5 million of cash provided by deferred revenue represents either payments received in advance of shipment or payments received after shipment but before revenue recognition.

### Cash paid for interest

The \$274.9 million of cash provided by our net income adjusted for non-cash charges during fiscal 2015 reflects interest payments by Ciena of \$40.8 million. The following tables set forth (in thousands) our interest paid during fiscal 2015:

Table of Contents

	Year ended October 31, 2015
4.0% Convertible Senior Notes, due March 15, 2015 <sup>(1)</sup>	\$3,750
0.875% Convertible Senior Notes due June 15, 2017 <sup>(2)</sup>	4,375
3.75% Convertible Senior Notes, due October 15, 2018 <sup>(3)</sup>	13,125
4.0% Convertible Senior Notes, due December 15, 2020 <sup>(4)</sup>	7,500
Term Loan Payable due July 15, 2019 <sup>(5)</sup>	9,475
Interest rate swap <sup>(6)</sup>	793
ABL Credit Facility <sup>(7)</sup>	1,754
Cash paid during the fiscal year for interest	\$40,772

(1) The final interest payment owing on our 4.0% convertible senior notes, due March 15, 2015, was paid during the second fiscal quarter of 2015.

(2) Interest on our outstanding 0.875% convertible senior notes, due June 15, 2017, is payable on June 15 and December 15 of each year.

(3) Interest on our outstanding 3.75% convertible senior notes, due October 15, 2018, is payable on April 15 and October 15 of each year.

(4) Interest on our outstanding 4.0% convertible senior notes, due December 15, 2020, is payable on June 15 and December 15 of each year.

(5) Interest on our outstanding Term Loan, due July 15, 2019, is payable periodically based on the underlying market index rate selected for borrowing. The Term Loan bears interest at LIBOR plus a spread of 300 basis points subject to a minimum LIBOR rate of 0.75%. During fiscal 2015, the interest rate on our Term Loan was 3.75%.

(6) Payments on our interest rate swap arrangement are variable and effectively fix the total interest rate under the Term Loan at 5.004% from July 20, 2015 through July 19, 2018.

(7) During fiscal 2015, we utilized the ABL Credit Facility to collateralize certain standby letters of credit and paid \$1.8 million in commitment fees, interest expense and other administrative charges relating to our ABL Credit Facility.

For additional information about our convertible notes, Term Loan, ABL Credit Facility and interest rate swap see Note 15 and 16 to our Consolidated Financial Statements included in Item 8 of Part II of this report and Item 7A of Part II of this report.

### Contractual Obligations

On October 23, 2014, Ciena Canada, Inc., a subsidiary of Ciena, entered into a lease agreement to lease an office building located at 5050 Innovation Drive, Ottawa, Canada. On April 15, 2015, Ciena Canada, Inc. entered into a work letter and a lease agreement related to the construction and lease of two new office buildings consisting of a rentable area of approximately 254,318 square feet that will be built adjacent to the premises subject to the October 2014 lease. These facilities are expected to be part of a future campus that will replace Ciena's largest facility and a key research and development center located in the Lab 10 building on the former Nortel Carling Campus in Ottawa, Canada. With respect to the lease entered into in the second quarter of fiscal 2015, the future minimum rental commitments to be paid over the 15-year lease term are approximately CAD\$112.9 million. The following is a summary of our future minimum payments under contractual obligations as of October 31, 2015 (in thousands):

Table of Contents

	Total	Less than one year	One to three years	Three to five years	Thereafter
Principal due at maturity on convertible notes (1)	\$1,061,291	\$—	\$844,164	\$—	\$217,127
Principal due on Term Loan	246,875	2,500	5,000	239,375	—
Interest due on convertible notes	89,375	25,000	45,625	15,000	3,750
Interest due on Term Loan (2)	34,619	9,354	18,474	6,791	—
Payments due under interest rate swap (2)	8,525	3,136	5,389	—	—
Operating leases (3)	149,754	32,480	48,840	21,985	46,449
Purchase obligations (4)	204,075	204,075	—	—	—
Capital leases - equipment	5,101	4,764	337	—	—
Capital leases - buildings (5)	127,826	1,938	10,396	14,909	100,583
Other obligations	3,184	2,944	240	—	—
Total (6)	\$1,930,625	\$286,191	\$978,465	\$298,060	\$367,909

(1) Includes the accretion of the principal amount on the 2020 Notes payable at maturity at a rate of 1.85% per year compounded semi-annually, commencing December 27, 2012.

Interest on the Term Loan and payments under the interest rate swap are variable and were calculated using the rate in effect on the balance sheet date. For additional information about our Term Loan and the interest rate swap, see (2) Note 15 to our Consolidated Financial Statements included in in Item 8 of Part II of this report and Item 7A of Part II of this report.

(3) Does not include variable insurance, taxes, maintenance and other costs that may be required by the applicable operating lease. These costs are not expected to have a material future impact.

Purchase obligations relate to purchase order commitments to our contract manufacturers and component suppliers (4) for inventory. In certain instances, we are permitted to cancel, reschedule or adjust these orders. Consequently, only a portion of the amount reported above relates to firm, non-cancelable and unconditional obligations.

This represents the total minimum lease payments due for all buildings that are subject to capital lease accounting, as well as buildings that are expected to be recorded as capital leases upon the commencement of the lease term.

(5) Payment timing is based on the expected commencement of the lease term. Does not include variable insurance, taxes, maintenance and other costs required by the applicable capital lease. These costs are not expected to have a material future impact.

As of October 31, 2015, we also had approximately \$13.3 million of other long-term obligations on our

(6) Consolidated Balance Sheet for unrecognized tax positions that are not included in this table because the timing or amount of any cash settlement with the respective tax authority cannot be reasonably estimated.

Some of our commercial commitments, including some of the future minimum payments in operating leases set forth above and certain commitments to customers, are secured by standby letters of credit collateralized under our ABL Credit Facility or restricted cash. Restricted cash balances are included in other current assets or other long-term assets depending upon the duration of the underlying letter of credit obligation. The following is a summary of our commercial commitments secured by standby letters of credit by commitment expiration date as of October 31, 2015 (in thousands):

	Total	Less than one year	One to three years	Three to five years	Thereafter
Standby letters of credit	\$65,886	\$31,606	\$15,299	\$6,008	\$12,973

## Off-Balance Sheet Arrangements

We do not engage in any off-balance sheet financing arrangements. In particular, we do not have any equity interests in so-called limited purpose entities, which include special purpose entities (SPEs) and structured finance entities.

#### Critical Accounting Policies and Estimates

The preparation of our consolidated financial statements requires that we make estimates and judgments that affect the reported amounts of assets, liabilities, revenue and expense, and related disclosure of contingent assets and liabilities. By their

60

---

## Table of Contents

nature, these estimates and judgments are subject to an inherent degree of uncertainty. On an ongoing basis, we reevaluate our estimates, including those related to share-based compensation, bad debts, inventories, intangible and other long-lived assets, goodwill, income taxes, warranty obligations, restructuring, derivatives and hedging, and contingencies and litigation. We base our estimates on historical experience and on various other assumptions that we believe to be reasonable under the circumstances. Among other things, these estimates form the basis for judgments about the carrying values of assets and liabilities that are not readily apparent from other sources. Actual results may differ from these estimates under different assumptions or conditions. To the extent that there are material differences between our estimates and actual results, our consolidated financial statements will be affected.

We believe that the following critical accounting policies reflect those areas where significant judgments and estimates are used in the preparation of our consolidated financial statements.

### Revenue Recognition

We recognize revenue when all of the following criteria are met: persuasive evidence of an arrangement exists; delivery has occurred or services have been rendered; the price to the buyer is fixed or determinable; and collectibility is reasonably assured. Customer purchase agreements and customer purchase orders are generally used to determine the existence of an arrangement. Shipping documents and evidence of customer acceptance, when applicable, are used to verify delivery or services rendered. We assess whether the price is fixed or determinable based on the payment terms associated with the transaction and whether the sales price is subject to refund or adjustment. We assess collectibility based primarily on the creditworthiness of the customer as determined by credit checks and analysis, as well as the customer's payment history. Revenue for maintenance services is deferred and recognized ratably over the period during which the services are to be performed. Shipping and handling fees billed to customers are included in revenue, with the associated expenses included in product cost of goods sold.

We apply the percentage-of-completion method to long-term arrangements where we are required to undertake significant production, customization or modification engineering, and reasonable and reliable estimates of revenue and cost are available. Utilizing the percentage-of-completion method, we recognize revenue based on the ratio of actual costs incurred to date to total estimated costs expected to be incurred. In instances that do not meet the percentage-of-completion method criteria, recognition of revenue is deferred until there are no uncertainties regarding customer acceptance. Unbilled percentage-of-completion revenues recognized are included in accounts receivable, net. Billings in excess of revenues recognized on these contracts are recorded within deferred revenue. The percentage of total revenue recognized using the percentage-of-completion method for the fiscal years ended October 31, 2013, October 31, 2014 and October 31, 2015 were 4.5%, 4.0% and 1.8%, respectively.

Software revenue is recognized when persuasive evidence of an arrangement exists, delivery has occurred, the fee is fixed or determinable, and collectibility is probable. In instances where final acceptance criteria of the software are specified by the customer, revenue is deferred until there are no uncertainties regarding customer acceptance

We limit the amount of revenue recognition for delivered elements to the amount that is not contingent on the future delivery of products or services, future performance obligations or subject to customer-specified return or refund privileges.

Revenue for multiple element arrangements is allocated to each unit of accounting based on the relative selling price of each delivered element, with revenue recognized for each delivered element when the revenue recognition criteria are met. We determine the selling price for each deliverable based upon the selling price hierarchy for multiple-deliverable arrangements. Under this hierarchy, we use vendor-specific objective evidence ("VSOE") of selling price, if it exists, or third party evidence ("TPE") of selling price if VSOE does not exist. If neither VSOE nor TPE of selling price exists for a deliverable, we use our best estimate of selling price ("BESP") for that deliverable.

For multiple element software arrangements where VSOE of undelivered maintenance does not exist, revenue for the entire arrangement is recognized over the maintenance term.

VSOE, when determinable, is established based on our pricing and discounting practices for the specific product or service when sold separately. In determining whether VSOE exists, we require that a substantial majority of the selling prices for a product or service fall within a reasonably narrow pricing range. We have generally been unable to establish TPE of selling price because our go-to-market strategy differs from that of others in our markets, and the extent of customization and differentiated features and functions varies among comparable products or services from our peers. We determine BESP based upon management-approved pricing guidelines, which consider multiple factors including the type of product or service, gross margin objectives, competitive and market conditions, and the go-to-market strategy, all of which can affect pricing practices.

Our total deferred revenue for products was \$50.5 million and \$66.5 million as of October 31, 2014 and October 31, 2015, respectively. Our services revenue is deferred and recognized ratably over the period during which the services are to be

## Table of Contents

performed. Our total deferred revenue for services was \$95.2 million and \$122.5 million as of October 31, 2014 and October 31, 2015, respectively.

### Business Combinations

We record acquisitions using the purchase method of accounting. All of the assets acquired, liabilities assumed, contractual contingencies and contingent consideration are recognized at their fair value as of the acquisition date. The excess of the purchase price over the estimated fair values of the net tangible and net intangible assets acquired is recorded as goodwill. The application of the purchase method of accounting for business combinations requires management to make significant estimates and assumptions in the determination of the fair value of assets acquired and liabilities assumed in order to properly allocate purchase price consideration between assets that are depreciated and amortized from goodwill. These assumptions and estimates include a market participant's use of the asset and the appropriate discount rates for a market participant. Our estimates are based on historical experience, information obtained from the management of the acquired companies and, when appropriate, includes assistance from independent third-party appraisal firms. Our significant assumptions and estimates can include, but are not limited to, the cash flows that an asset is expected to generate in the future, the appropriate weighted-average cost of capital, and the cost savings expected to be derived from acquiring an asset. These estimates are inherently uncertain and unpredictable. In addition, unanticipated events and circumstances may occur which may affect the accuracy or validity of such estimates. During fiscal 2015, we completed the Cyan acquisition for a purchase price of \$335.7 million. See Note 2 to the Consolidated Financial Statements included in Item 8 of Part II of this report.

### Share-Based Compensation

We estimate the fair value of our restricted stock unit awards based on the fair value of our common stock on the date of grant. Our outstanding restricted stock unit awards are subject to service-based vesting conditions and/or performance-based vesting conditions. We recognize the estimated fair value of service-based awards, net of estimated forfeitures, as share-based expense ratably over the vesting period on a straight-line basis. Awards with performance-based vesting conditions require the achievement of certain financial or other performance criteria or targets as a condition to the vesting, or acceleration of vesting. We recognize the estimated fair value of performance-based awards, net of estimated forfeitures, as share-based expense over the performance period, using graded vesting, which considers each performance period or tranche separately, based upon our determination of whether it is probable that the performance targets will be achieved. At each reporting period, we reassess the probability of achieving the performance targets and the performance period required to meet those targets and the expense is adjusted accordingly. Determining whether the performance targets will be achieved involves judgment, and the estimate of expense may be revised periodically based on changes in the probability of achieving the performance targets. Revisions are reflected in the period in which the estimate is changed. If any performance goals are not met, no compensation cost is ultimately recognized against that goal and, to the extent previously recognized, compensation cost is reversed.

Because share-based compensation expense is based on awards that are ultimately expected to vest, the amount of expense takes into account estimated forfeitures. We estimate forfeitures at the time of grant and revise these estimates, if necessary, in subsequent periods if actual forfeitures differ from those estimates. Changes in these estimates and assumptions can materially affect the measurement of estimated fair value of our share-based compensation. See Note 20 to our Consolidated Financial Statements in Item 8 of Part II of this report for information regarding our assumptions related to share-based compensation and the amount of share-based compensation expense we incurred for the periods covered in this report. As of October 31, 2015, total unrecognized compensation expense was \$78.7 million: (i) \$2.8 million, which relates to unvested stock options and is expected to be recognized over a weighted-average period of 1.6 years; and (ii) \$75.9 million, which relates to unvested restricted stock units and is expected to be recognized over a weighted-average period of 1.5 years.

We recognize windfall tax benefits associated with the exercise of stock options or release of restricted stock units directly to stockholders' equity only when realized. A windfall tax benefit occurs when the actual tax benefit realized by us upon an employee's disposition of a share-based award exceeds the deferred tax asset, if any, associated with the award that we had recorded. When assessing whether a tax benefit relating to share-based compensation has been realized, we follow the "with-and-without" method. Under the with-and-without method, the windfall is considered realized and recognized for financial statement purposes only when an incremental benefit is provided after considering all other tax benefits including our net operating losses. The with-and-without method results in the windfall from share-based compensation awards always being effectively the last tax benefit to be considered. Consequently, the windfall attributable to share-based compensation will not be considered realized in instances where our net operating loss carryover (that is unrelated to windfalls) is sufficient to offset the current year's taxable income before considering the effects of current-year windfalls.

Reserve for Inventory Obsolescence



Table of Contents

We make estimates about future customer demand for our products when establishing the appropriate reserve for excess and obsolete inventory. We write down inventory that has become obsolete or unmarketable by an amount equal to the difference between the cost of inventory and the estimated market value based on assumptions about future demand and market conditions. Inventory write downs are a component of our product cost of goods sold. Upon recognition of the write down, 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 that newly established cost basis. In an effort to limit our exposure to delivery delays and to satisfy customer needs we purchase inventory based on forecasted sales across our product lines. In addition, part of our research and development strategy is to promote the convergence of similar features and functionalities across our product lines. Each of these practices exposes us to the risk that our customers will not order products for which we have forecasted sales, or will purchase less than we have forecasted. Historically, we have experienced write downs due to changes in our strategic direction, discontinuance of a product and declines in market conditions. We recorded charges for excess and obsolete inventory of \$32.3 million and \$26.8 million in fiscal 2014 and 2015, respectively. The charges in fiscal 2014 were primarily related to engineering design changes and the discontinuance of certain parts and components used in the manufacture of our Optical Transport, including our Corestream® Agility Optical Transport platform, and Converged Packet Optical products. The charges in fiscal 2015 were primarily related to the discontinuance of certain parts and components used in the manufacture of our Converged Packet Optical products and a decrease in the forecasted demand for both our legacy, stand-alone WDM and SONET/SDH-based transport platforms and our 5410 Service Aggregation Switch. Our inventory net of allowance for excess and obsolescence was \$254.7 million and \$191.2 million as of October 31, 2014 and October 31, 2015, respectively.

## Allowance for Doubtful Accounts Receivable

Our allowance for doubtful accounts receivable is based on management's assessment, on a specific identification basis, of the collectibility of customer accounts. We perform ongoing credit evaluations of our customers and generally have not required collateral or other forms of security from customers. In determining the appropriate balance for our allowance for doubtful accounts receivable, management considers each individual customer account receivable in order to determine collectibility. In doing so, we consider creditworthiness, payment history, account activity and communication with such customer. If a customer's financial condition changes, or if actual defaults are higher than our historical experience, we may be required to take a charge for an allowance for doubtful accounts receivable which could have an adverse impact on our results of operations. Our accounts receivable, net of allowance for doubtful accounts, was \$519.0 million and \$550.8 million as of October 31, 2014 and October 31, 2015, respectively. Our allowance for doubtful accounts was \$2.1 million and \$3.0 million as of October 31, 2014 and October 31, 2015, respectively.

## Goodwill

Goodwill is the excess of the purchase price over the fair values assigned to the net assets acquired in a business combination. We test goodwill for impairment on an annual basis, which we have determined to be the last business day of fiscal September each year. We also test goodwill for impairment between annual tests if an event occurs or circumstances change that would, more likely than not, reduce the fair value of the reporting unit below its carrying value.

The first step in the process of assessing goodwill impairment is to compare the fair value of the reporting unit with the unit's carrying amount, including goodwill. If this test indicates that the fair value is less than the carrying value, then step two is required to compare the implied fair value of the reporting unit's goodwill with the carrying amount of the reporting unit's goodwill. A non-cash goodwill impairment charge would have the effect of decreasing our earnings or increasing our losses in such period. If we are required to take a substantial impairment charge, our operating results would be materially adversely affected in such period. As of the end of fiscal 2014, there was no goodwill

balance. At the end of fiscal 2015, the goodwill balance was \$256.4 million as a result of our acquisition of Cyan. See Note 2 to the Consolidated Financial Statements included in Item 8 of Part II of this report.

#### Long-lived Assets

Our long-lived assets include: equipment; building; furniture and fixtures; finite-lived intangible assets and maintenance spares. As of October 31, 2014 and October 31, 2015 these assets totaled \$309.4 million and \$449.9 million, net, respectively. We test long-lived assets for impairment whenever events or changes in circumstances indicate that the assets' carrying amount is not recoverable from its undiscounted cash flows. Our long-lived assets are assigned to asset groups which represent the lowest level for which we identify cash flows. We measure impairment loss as the amount by which the carrying amount of the asset or asset group exceeds its fair value.

#### Deferred Tax Valuation Allowance

## Table of Contents

As of October 31, 2015, we have recorded a valuation allowance offsetting all our net deferred tax assets of \$1.5 billion. When measuring the need for a valuation allowance, we assess both positive and negative evidence regarding the realizability of these deferred tax assets. We record a valuation allowance to reduce our deferred tax assets to the amount that is more likely than not to be realized. In determining net deferred tax assets and valuation allowances, management is required to make judgments and estimates related to projections of profitability, the timing and extent of the utilization of net operating loss carryforwards, applicable tax rates, transfer pricing methodologies and tax planning strategies. The valuation allowance is reviewed quarterly and is maintained until sufficient positive evidence exists to support a reversal. Because evidence such as our operating results during the most recent three-year period is afforded more weight than forecasted results for future periods, our cumulative loss during this three-year period represents sufficient negative evidence regarding the need for nearly a full valuation allowance. We will release this valuation allowance when management determines that it is more likely than not that our deferred tax assets will be realized. Any future release of valuation allowance may be recorded as a tax benefit increasing net income or as an adjustment to paid-in capital, based on tax ordering requirements.

## Warranty

Our liability for product warranties, included in other accrued liabilities, was \$56.0 million and \$56.7 million as of October 31, 2014 and October 31, 2015, respectively. Our products are generally covered by a warranty for periods ranging from one to five years. We accrue for warranty costs as part of our cost of goods sold based on associated material costs, technical support labor costs and associated overhead. Material cost is estimated based primarily upon historical trends in the volume of product returns within the warranty period and the cost to repair or replace the equipment. Technical support labor cost is estimated based primarily upon historical trends and the cost to support the customer cases within the warranty period. The provision for product warranties was \$22.1 million and \$17.9 million for fiscal 2014 and 2015, respectively. See Note 12 to the Consolidated Financial Statements included in Item 8 of Part II of this report. The provision for warranty claims may fluctuate on a quarterly basis depending upon the mix of products and customers in that period. If actual product failure rates, material replacement costs, service or labor costs differ from our estimates, revisions to the estimated warranty provision would be required. An increase in warranty claims or the related costs associated with satisfying our warranty obligations could increase our cost of sales and negatively affect our gross margin.

## Effects of Recent Accounting Pronouncements

See Note 1 to our Consolidated Financial Statements in Item 8 of Part II of this report for information relating to our discussion of the effects of recent accounting pronouncements.

## Unaudited Quarterly Results of Operations

The tables below (in thousands, except per share data) set forth the operating results in our consolidated statements of operations for each of the eight quarters in the period ended October 31, 2015. This information is unaudited, but in our opinion reflects all adjustments (consisting only of normal recurring adjustments) that we consider necessary for a fair statement of such information in accordance with generally accepted accounting principles. The results for any quarter are not necessarily indicative of results for any future period.

Table of Contents

	Jan. 31, 2014	Apr. 30, 2014	Jul. 31, 2014	Oct. 31, 2014	Jan. 31, 2015	Apr. 30, 2015	Jul. 31, 2015	Oct. 31, 2015
Revenue:								
Products	\$432,941	\$460,821	\$495,889	\$476,175	\$422,315	\$511,880	\$493,919	\$574,281
Services	100,762	99,240	107,673	114,788	106,847	109,722	109,013	117,692
Total Revenue	533,703	560,061	603,562	590,963	529,162	621,602	602,932	691,973
Cost of goods sold:								
Products	245,216	257,632	275,003	305,171	236,548	286,898	273,837	323,090
Services	62,636	64,738	64,586	64,955	62,319	62,293	59,226	65,895
Total costs of goods sold	307,852	322,370	339,589	370,126	298,867	349,191	333,063	388,985
Gross profit	225,851	237,691	263,973	220,837	230,295	272,411	269,869	302,988
Operating expenses:								