

**UNITED STATES  
SECURITIES AND EXCHANGE COMMISSION  
Washington, DC 20549  
FORM 10-Q**

(Mark one)

**QUARTERLY REPORT PURSUANT TO SECTION 13 OR 15(d) OF THE SECURITIES EXCHANGE ACT OF 1934**  
For the quarterly period ended April 30, 2019

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)

**21076**  
(Zip Code)

**(410) 694-5700**

(Registrant's telephone number, including area code)

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

Title of each class	Trading Symbol	Name of each exchange on which registered
<b>Common Stock, \$0.01 par value</b>	<b>CIEN</b>	<b>New York Stock Exchange</b>

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 every Interactive Data File required to be submitted pursuant to Rule 405 of Regulation S-T 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 whether the registrant is a large accelerated filer, an accelerated filer, a non-accelerated filer, a smaller reporting company or an emerging growth company. See the definitions of "large accelerated filer," "accelerated filer," "smaller reporting company," and "emerging growth company" in Rule 12b-2 of the Exchange Act.

Large accelerated filer

Accelerated filer

Non-accelerated filer

Smaller reporting company

Emerging growth company

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

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

Indicate the number of shares outstanding of each of the issuer's classes of common stock, as of the latest practicable date:

Class	Outstanding at June 7, 2019
common stock, \$0.01 par value	155,088,524

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PART I – FINANCIAL INFORMATION

Item 1. Financial Statements

**CIENA CORPORATION**  
**CONDENSED CONSOLIDATED STATEMENTS OF OPERATIONS**  
(in thousands, except per share data)  
(unaudited)

	Quarter Ended April 30,		Six Months Ended April 30,	
	2019	2018	2019	2018
Revenue:				
Products	\$ 710,688	\$ 604,226	\$ 1,353,220	\$ 1,129,835
Services	154,323	125,752	290,318	246,278
Total revenue	865,011	729,978	1,643,538	1,376,113
Cost of goods sold:				
Products	411,050	372,568	791,492	685,688
Services	79,284	64,103	154,028	125,353
Total cost of goods sold	490,334	436,671	945,520	811,041
Gross profit	374,677	293,307	698,018	565,072
Operating expenses:				
Research and development	137,969	116,924	266,602	235,448
Selling and marketing	103,502	97,359	201,615	185,874
General and administrative	42,154	38,976	81,397	77,382
Amortization of intangible assets	5,529	3,623	11,057	7,246
Significant asset impairments and restructuring costs	4,068	4,359	6,341	10,320
Acquisition and integration costs	1,135	—	2,743	—
Total operating expenses	294,357	261,241	569,755	516,270
Income from operations	80,320	32,066	128,263	48,802
Interest and other income (loss), net	(244)	1,296	4,009	2,871
Interest expense	(9,471)	(13,031)	(18,912)	(26,765)
Income before income taxes	70,605	20,331	113,360	24,908
Provision for income taxes	17,867	6,475	27,006	484,415
Net income (loss)	\$ 52,738	\$ 13,856	\$ 86,354	\$ (459,507)
Basic net income (loss) per common share	\$ 0.34	\$ 0.10	\$ 0.55	\$ (3.19)
Diluted net income (loss) per potential common share	\$ 0.33	\$ 0.09	\$ 0.55	\$ (3.19)
Weighted average basic common shares outstanding	156,170	143,975	156,244	143,948
Weighted average dilutive potential common shares outstanding	158,289	147,973	158,211	143,948

The accompanying notes are an integral part of these Condensed Consolidated Financial Statements.

**CIENA CORPORATION**  
**CONDENSED CONSOLIDATED STATEMENTS OF COMPREHENSIVE INCOME (LOSS)**  
**(in thousands)**  
**(unaudited)**

	Quarter Ended April 30,		Six Months Ended April 30,	
	2019	2018	2019	2018
Net income (loss)	\$ 52,738	\$ 13,856	\$ 86,354	\$ (459,507)
Change in unrealized gain (loss) on available-for-sale securities, net of tax	112	(76)	413	(337)
Change in unrealized gain (loss) on foreign currency forward contracts, net of tax	(856)	(2,537)	704	(35)
Change in unrealized gain (loss) on forward starting interest rate swap, net of tax	(2,826)	2,299	(10,697)	5,248
Change in cumulative translation adjustments	(4,996)	(7,133)	(3,846)	1,069
Other comprehensive income (loss)	(8,566)	(7,447)	(13,426)	5,945
<b>Total comprehensive income (loss)</b>	<b>\$ 44,172</b>	<b>\$ 6,409</b>	<b>\$ 72,928</b>	<b>\$ (453,562)</b>

The accompanying notes are an integral part of these Condensed Consolidated Financial Statements.

**CIENA CORPORATION**  
**CONDENSED CONSOLIDATED BALANCE SHEETS**  
(in thousands, except share data)  
(unaudited)

	April 30, 2019	October 31, 2018
<b>ASSETS</b>		
Current assets:		
Cash and cash equivalents	\$ 699,148	\$ 745,423
Short-term investments	119,327	148,981
Accounts receivable, net of allowance for doubtful accounts of \$18.0 million and \$17.4 million as of April 30, 2019 and October 31, 2018, respectively.	756,607	786,502
Inventories	359,417	262,751
Prepaid expenses and other	243,669	198,945
Total current assets	2,178,168	2,142,602
Long-term investments	—	58,970
Equipment, building, furniture and fixtures, net	282,022	292,067
Goodwill	297,711	297,968
Other intangible assets, net	129,971	148,225
Deferred tax asset, net	715,968	745,039
Other long-term assets	82,938	71,652
Total assets	<u>\$ 3,686,778</u>	<u>\$ 3,756,523</u>
<b>LIABILITIES AND STOCKHOLDERS' EQUITY</b>		
Current liabilities:		
Accounts payable	\$ 366,932	\$ 340,582
Accrued liabilities and other short-term obligations	291,417	340,075
Deferred revenue	104,030	111,134
Current portion of long-term debt	7,000	7,000
Debt conversion liability	—	164,212
Total current liabilities	769,379	963,003
Long-term deferred revenue	40,992	58,323
Other long-term obligations	129,779	119,413
Long-term debt, net	683,429	686,450
Total liabilities	<u>\$ 1,623,579</u>	<u>\$ 1,827,189</u>
Commitments and contingencies (Note 19)		
Stockholders' equity:		
Preferred stock – par value \$0.01; 20,000,000 shares authorized; zero shares issued and outstanding	—	—
Common stock – par value \$0.01; 290,000,000 shares authorized; 155,566,701 and 154,318,531 shares issued and outstanding	1,556	1,543
Additional paid-in capital	6,892,342	6,881,223
Accumulated other comprehensive loss	(19,206)	(5,780)
Accumulated deficit	(4,811,493)	(4,947,652)
Total stockholders' equity	2,063,199	1,929,334
Total liabilities and stockholders' equity	<u>\$ 3,686,778</u>	<u>\$ 3,756,523</u>

The accompanying notes are an integral part of these Condensed Consolidated Financial Statements.

**CIENA CORPORATION**  
**CONDENSED CONSOLIDATED STATEMENTS OF CASH FLOWS**  
(in thousands)  
(unaudited)

	Six Months Ended April 30,	
	2019	2018
<b>Cash flows provided by operating activities:</b>		
Net income (loss)	\$ 86,354	\$ (459,507)
<b>Adjustments to reconcile net income (loss) to net cash provided by operating activities:</b>		
Depreciation of equipment, building, furniture and fixtures, and amortization of leasehold improvements	42,995	41,400
Share-based compensation costs	29,362	26,559
Amortization of intangible assets	17,778	11,824
Deferred taxes	18,293	481,401
Provision for inventory excess and obsolescence	10,245	14,977
Provision for warranty	9,276	10,565
Other	(2,259)	12,645
<b>Changes in assets and liabilities:</b>		
Accounts receivable	43,174	(28,055)
Inventories	(109,554)	20,420
Prepaid expenses and other	(33,241)	2,623
Accounts payable, accruals and other obligations	(26,971)	(55,986)
Deferred revenue	4,560	(5,736)
Net cash provided by operating activities	<u>90,012</u>	<u>73,130</u>
<b>Cash flows provided by (used in) investing activities:</b>		
Payments for equipment, furniture, fixtures and intellectual property	(35,289)	(31,946)
Restricted cash	—	54
Purchase of available for sale securities	(97,897)	(198,026)
Proceeds from maturities of available for sale securities	90,000	200,000
Proceeds from sales of available for sale securities	98,263	—
Settlement of foreign currency forward contracts, net	(2,741)	132
Purchase of equity investment	(2,667)	(767)
Net cash provided by (used in) investing activities	<u>49,669</u>	<u>(30,553)</u>
<b>Cash flows used in financing activities:</b>		
Payment of long-term debt	(3,500)	(2,000)
Payment of capital lease obligations	(1,679)	(1,868)
Payment for debt conversion liability	(111,268)	—
Shares repurchased for tax withholdings on vesting of stock unit awards	(15,865)	—
Repurchases of common stock - repurchase program	(65,103)	(38,036)
Proceeds from issuance of common stock	11,235	11,804
Net cash used in financing activities	<u>(186,180)</u>	<u>(30,100)</u>
Effect of exchange rate changes on cash and cash equivalents	224	(894)
Net increase (decrease) in cash and cash equivalents	<u>(46,275)</u>	<u>11,583</u>
Cash and cash equivalents at beginning of period	745,423	640,513
Cash and cash equivalents at end of period	<u>\$ 699,148</u>	<u>\$ 652,096</u>
<b>Supplemental disclosure of cash flow information</b>		
Cash paid during the period for interest	\$ 19,978	\$ 21,843
Cash paid during the period for income taxes, net	\$ 9,258	\$ 15,136
<b>Non-cash investing activities</b>		
Purchase of equipment in accounts payable	\$ 2,793	\$ 3,226
<b>Non-cash financing activities</b>		
Repurchase of common stock in accrued liabilities from repurchase program	\$ 1,441	\$ 1,111
Conversion of debt conversion liability into 1,585,140 shares of common stock	\$ 52,944	\$ —

The accompanying notes are an integral part of these Condensed Consolidated Financial Statements.

**CIENA CORPORATION**  
**CONDENSED CONSOLIDATED STATEMENTS OF CHANGES IN STOCKHOLDERS' EQUITY**  
(in thousands, except share data)  
(unaudited)

	Common Stock Shares	Par Value	Additional Paid-in-Capital	Accumulated Other Comprehensive Income (Loss)	Accumulated Deficit	Total Stockholders' Equity
Balance at October 31, 2018	154,318,531	\$ 1,543	\$ 6,881,223	\$ (5,780)	\$ (4,947,652)	\$ 1,929,334
Effect of adoption of new accounting standard (Note 2)	—	—	—	—	49,805	49,805
Net income	—	—	—	—	86,354	86,354
Other comprehensive loss	—	—	—	(13,426)	—	(13,426)
Repurchase of common stock - repurchase program	(1,752,525)	(17)	(66,527)	—	—	(66,544)
Issuance of shares from employee equity plans	1,875,159	19	11,216	—	—	11,235
Share-based compensation expense	—	—	29,362	—	—	29,362
Settlement of debt conversion liability	1,585,140	16	52,928	—	—	52,944
Shares repurchased for tax withholdings on vesting of stock unit awards	(459,604)	(5)	(15,860)	—	—	(15,865)
Balance at April 30, 2019	<u>155,566,701</u>	<u>\$ 1,556</u>	<u>\$ 6,892,342</u>	<u>\$ (19,206)</u>	<u>\$ (4,811,493)</u>	<u>\$ 2,063,199</u>

	Common Stock Shares	Par Value	Additional Paid-in-Capital	Accumulated Other Comprehensive Income (Loss)	Accumulated Deficit	Total Stockholders' Equity
Balance at October 31, 2017	143,043,227	\$ 1,430	\$ 6,810,182	\$ (11,017)	\$ (4,664,253)	\$ 2,136,342
Effect of adoption of new accounting standards	—	—	832	—	61,291	62,123
Net loss	—	—	—	—	(459,507)	(459,507)
Other comprehensive income	—	—	—	5,945	—	5,945
Repurchase of common stock	(1,627,233)	(16)	(39,131)	—	—	(39,147)
Issuance of shares from employee equity plans	2,011,982	20	11,784	—	—	11,804
Share-based compensation expense	—	—	26,559	—	—	26,559
Balance at April 30, 2018	<u>143,427,976</u>	<u>\$ 1,434</u>	<u>\$ 6,810,226</u>	<u>\$ (5,072)</u>	<u>\$ (5,062,469)</u>	<u>\$ 1,744,119</u>

The accompanying notes are an integral part of these Condensed Consolidated Financial Statements.

**CIENA CORPORATION**  
**NOTES TO CONDENSED CONSOLIDATED FINANCIAL STATEMENTS**  
**(unaudited)**

**(1) INTERIM FINANCIAL STATEMENTS**

The interim financial statements included herein for Ciena Corporation and its wholly owned subsidiaries (“Ciena”) have been prepared by Ciena, without audit, pursuant to the rules and regulations of the U.S. Securities and Exchange Commission (the “SEC”). In the opinion of management, the financial statements included in this report reflect all normal recurring adjustments that Ciena considers necessary for the fair statement of the results of operations of Ciena for the interim periods covered and of the financial position of Ciena at the date of the interim balance sheets. Certain information and footnote disclosures normally included in the annual financial statements prepared in accordance with accounting principles generally accepted in the United States of America (“GAAP”) have been condensed or omitted pursuant to such rules and regulations. The Condensed Consolidated Balance Sheet as of October 31, 2018 was derived from audited financial statements, but does not include all disclosures required by GAAP. However, Ciena believes that the disclosures are adequate to understand the information presented herein. The operating results for interim periods are not necessarily indicative of the operating results for the entire year. These financial statements should be read in conjunction with Ciena’s audited consolidated financial statements and the notes thereto included in Ciena’s annual report on Form 10-K for the fiscal year ended October 31, 2018.

Ciena has a 52 or 53-week fiscal year, with quarters ending on the Saturday nearest to the last day of January, April, July and October, respectively, of each year. Fiscal 2019 is a 52-week fiscal year. Fiscal 2018 was a 53-week fiscal year with the additional week occurring in the fourth quarter. For purposes of financial statement presentation, each fiscal year is described as having ended on October 31, and the fiscal quarters are described as having ended on January 31, April 30 and July 31 of each fiscal year.

**(2) SIGNIFICANT ACCOUNTING POLICIES**

Except for the changes in certain policies described below, there have been no material changes to Ciena’s significant accounting policies, compared to the accounting policies described in Note 1, Ciena Corporation and Significant Accounting Policies and Estimates, in Notes to Consolidated Financial Statements in Item 8 of Part II of Ciena’s annual report on Form 10-K for the fiscal year ended October 31, 2018.

*Newly Issued Accounting Standards - Effective*

*Revenue Recognition*

In May 2014, the Financial Accounting Standards Board (“FASB”) issued Accounting Standards Codification (“ASC”) 606, *Revenue from Contracts with Customers*, a new accounting standard related to revenue recognition. ASC 606 supersedes nearly all U.S. GAAP standards on revenue recognition and eliminates industry-specific guidance. The underlying principle of ASC 606 is to recognize revenue when a customer obtains control of the promised products or services at an amount that reflects the consideration that is expected to be received in exchange for those products or services. ASC 606 also requires additional disclosures regarding the nature, amount, timing, and uncertainty of revenues and cash flows related to contracts with customers.

ASC 606 allows two methods of adoption: (i) retrospectively to each prior period presented (“full retrospective method”), or (ii) retrospectively with the cumulative effect recognized in retained earnings as of the date of adoption (“modified retrospective method”). Effective upon the start of its first quarter of fiscal 2019, Ciena adopted ASC 606 using the modified retrospective method and accordingly recognized the cumulative effect in accumulated deficit for those contracts that were not completed as of October 31, 2018. Accordingly, results for the reporting periods after October 31, 2018 are presented under ASC 606, while prior periods have not been adjusted and continue to be reported in accordance with Ciena’s historical revenue recognition practices. Refer to *Opening Balance Adjustments* below for the impact of ASC 606 adoption on Ciena’s Condensed Consolidated Financial Statements. In connection with its adoption of ASC 606, Ciena has implemented new accounting policies and processes, and incorporated such into its existing internal control environment as necessary to support the requirements of ASC 606.

*Revenue Recognition Timing Differences*

The adoption of ASC 606 requires Ciena to recognize revenue when the customer obtains control of promised products or services in an amount that reflects the consideration that Ciena would expect to receive in exchange for those products or services. Under the prior revenue standard, the timing of revenue recognition for delivered products or services was limited to



such amount not contingent upon future delivery of products or service or future performance obligations, or subject to customer-specified return or privileges. In the case of multiple element software arrangements for which vendor-specific objective evidence (“VSOE”) of undelivered maintenance did not exist, under the prior revenue standard, Ciena recognized revenue for the entire arrangement over the maintenance term. The adoption of ASC 606 requires Ciena to determine the stand-alone selling price for each of the software and software-related deliverables of such multiple element arrangements at contract inception. Consequently, under ASC 606, certain software deliverables will be recognized at a point in time rather than over a period of time. In addition, under ASC 606, certain installation and deployment, and consulting and network design services, will be recognized over a period of time rather than at a point in time.

#### *Revenue Recognition Policy Under ASC 606*

Ciena recognizes revenue when control of the promised products or services is transferred to its customer, in an amount that reflects the consideration that Ciena expects to be entitled to in exchange for those products or services.

Ciena determines revenue recognition by applying the following five-step approach:

- identification of the contract, or contracts, with a customer;
- identification of the performance obligations in the contract;
- determination of the transaction price;
- allocation of the transaction price to the performance obligations in the contract; and
- recognition of revenue when, or as, Ciena satisfies a performance obligation.

Generally, Ciena makes sales pursuant to purchase orders placed by customers under framework agreements that govern the general commercial terms and conditions of the sale of Ciena’s products and services. These purchase orders under framework agreements are used to determine the identification of the contract or contracts with this customer. Purchase orders typically include the description, quantity, and price of each product or service purchased. Purchase orders may include one-line bundled pricing for both products and services. Accordingly, purchase orders can include various combinations of products and services that are generally distinct and accounted for as separate performance obligations. Ciena evaluates each promised product and service offering to determine whether it represents a distinct performance obligation. In doing so, Ciena considers, among other things, customary business practices, whether the customer can benefit from the product or service on its own or together with other resources that are readily available, and whether Ciena’s commitment to transfer the product or service to the customer is separately identifiable from other obligations in the purchase order. For transactions where Ciena delivers the product or services, Ciena is typically the principal and records revenue and costs of goods sold on a gross basis.

Purchase orders are invoiced based upon the terms set forth either in the purchase order or the framework agreement, as applicable. Generally, sales of products and software licenses are invoiced upon shipment or delivery. Maintenance and software subscription services are invoiced quarterly or annually in advance of the service term. Ciena’s other service offerings are generally invoiced upon completion of the service. Payment terms and cash received typically range from 30 to 90 days from the invoicing date. Historically, Ciena has not provided any material financing arrangements to its customers. As a practical expedient, Ciena does not adjust the amount of consideration it will receive for the effects of a significant financing component as it expects, at contract inception, that the period between Ciena transfer of the products or services to the customer, and customer payment for the products or services will be one year or less. Shipping and handling fees invoiced to customers are included in revenue, with the associated expense included in product cost of goods sold. Ciena records revenue net of any associated sales taxes.

Ciena recognizes revenue upon the transfer of control of promised products or services to a customer. Transfer of control occurs once the customer has the contractual right to use the product, generally upon shipment or delivery to the customer. Transfer of control can also occur over time for services such as software subscription, maintenance, installation, and various professional services as the customer receives the benefit over the contract term.

#### *Significant Judgments*

Revenue is allocated among performance obligations based on standalone selling price (“SSP”). SSP reflects the price at which Ciena would expect to sell that product or service on a stand-alone basis at contract inception and that Ciena would expect to be entitled to receive for the promised products or services. SSP is estimated for each distinct performance obligation and judgment may be required in its determination. The best evidence of SSP is the observable price of a product or service when Ciena sells the products separately in similar circumstances and to similar customers. In instances where SSP is not directly observable, Ciena determines SSP using information that may include market conditions and other observable inputs.

Ciena applies judgment in determining the transaction price, as Ciena may be required to estimate variable consideration when determining the amount of revenue to recognize. Variable consideration can include various rebate, cooperative marketing, and other incentive programs that Ciena offers to its distributors, partners and customers. When determining the amount of revenue to recognize, Ciena estimates the expected usage of these programs, applying the expected value or most likely estimate and updates the estimate at each reporting period as actual utilization data becomes available. Ciena also considers any customer right of return and any actual or potential payment of liquidated damages, contractual or similar penalties, or other claims for performance failures or delays in determining the transaction price, where applicable.

When transfer of control is judged to be over time for installation and professional service arrangements, Ciena applies the input method to determine the amount of revenue to be recognized in a given period. Utilizing the input method, Ciena recognizes revenue based on the ratio of actual costs incurred to date to the total estimated costs expected to be incurred. Revenue for software subscription and maintenance is recognized ratably over the period during which the services are performed.

#### *Capitalized Contract Acquisition Costs*

Ciena has considered the impact of the guidance in ASC 340-40, *Other Assets and Deferred Costs; Contracts with Customers*, and the interpretations of the FASB Transition Resource Group for Revenue Recognition (“TRG”) with respect to capitalization and amortization of incremental costs of obtaining a contract. In conjunction with this interpretation, Ciena considers each customer purchase in combination with the corresponding framework agreement, if applicable, as a contract. Ciena has elected to implement the practical expedient, which allows for incremental costs to be recognized as an expense when incurred if the period of the asset recognition is one year or less. If the period of the asset recognition is greater than one year, Ciena amortizes these costs over the period of performance. Ciena considers sales commissions incurred upon receipt of purchase orders placed by customers as incremental costs to obtain such purchase orders. The practical expedient method is applied to the purchase order as a whole and thus the capitalized costs of obtaining a purchase order is applied even if the purchase order contains more than one performance obligation. In cases where a purchase order includes various distinct products or services with both short-term (one year or less) and long-term (more than a year) performance periods, the cost of commissions incurred for the total value of the purchase order is capitalized and subsequently amortized as each performance obligation is recognized.

For the additional disclosures required as part of ASC 606, see Note 3 below.

#### *Impact of ASC 606 Adoption*

The following table summarizes the impact of adopting ASC 606 on Ciena’s Condensed Consolidated Statements of Operations (in millions):

	Quarter Ended April 30, 2019		
	As Reported	Adjustments	Balances without adoption of ASC 606
Total revenue	\$ 865,011	\$ (14,219)	\$ 850,792
Total cost of goods sold	\$ 490,334	\$ (13,436)	\$ 476,898
Net income	\$ 52,738	\$ (467)	\$ 52,271
Diluted net income per potential common share	\$ 0.33	\$ —	\$ 0.33

	Six Months Ended April 30, 2019		
	As Reported	Adjustments	Balances without adoption of ASC 606
Total revenue	\$ 1,643,538	\$ (25,119)	\$ 1,618,419
Total cost of goods sold	\$ 945,520	\$ (22,565)	\$ 922,955
Net income	\$ 86,354	\$ (862)	\$ 85,492
Diluted net income per potential common share	\$ 0.55	\$ (0.01)	\$ 0.54

The increase in revenue from adoption of ASC 606 was primarily the result of installation and deployment services, where revenue was recognized over a period of time rather than at a point in time under the prior revenue recognition standard. The adoption of ASC 606 did not have a material impact to Ciena's Condensed Consolidated Balance Sheets or any impact on net cash provided by operating activities as of April 30, 2019. See "*Revenue Recognition Timing Differences*" above. For additional information regarding ASC 606, see Note 3 below.

### Opening Balance Adjustments

The following table summarizes the cumulative effect of the changes made to Ciena's Condensed Consolidated Balance Sheets in connection with the adoption of ASC 606 (in millions):

	Balance at October 31, 2018	New Revenue Recognition Standard	Adjusted Balance at November 1, 2018
<b>ASSETS:</b>			
Accounts receivable, net	\$ 786,502	\$ 12,509 <sup>(1)</sup>	\$ 799,011
Inventories	\$ 262,751	(2,486) <sup>(2)</sup>	\$ 260,265
Prepaid expenses and other	\$ 198,945	21,470 <sup>(3)</sup>	\$ 220,415
Deferred tax asset, net	\$ 745,039	(14,439) <sup>(4)</sup>	\$ 730,600
Other long-term assets	\$ 71,652	3,998 <sup>(5)</sup>	\$ 75,650
<b>Total assets</b>	<b>\$ 3,756,523</b>	<b>\$ 21,052</b>	<b>\$ 3,777,575</b>
<b>LIABILITIES AND STOCKHOLDERS' EQUITY:</b>			
Deferred revenue	\$ 111,134	\$ (14,403) <sup>(6)</sup>	\$ 96,731
Long-term deferred revenue	\$ 58,323	(14,350) <sup>(7)</sup>	\$ 43,973
Accumulated deficit	\$ (4,947,652)	49,805 <sup>(8)</sup>	\$ (4,897,847)
<b>Total liabilities and stockholders equity</b>	<b>\$ 3,756,523</b>	<b>\$ 21,052</b>	<b>\$ 3,777,575</b>

- (1) Unpaid accounts receivable and related deferred revenue related to rights and obligations in a contract are interdependent and therefore recorded net within Ciena's balance sheet. This represents an increase of \$12.5 million from the reversal of certain net unpaid accounts receivable and related deferred revenue.
- (2) Represents a decrease of \$2.5 million in deferred costs of goods sold due to change in revenue recognition for certain product sales.
- (3) Represents increases of \$27.5 million in unbilled accounts receivable for change in recognizing revenue for installation services, \$3.9 million in unbilled accounts receivable from change in recognizing revenue for certain product sales and \$9.6 million related to short-term capitalized acquisition costs (e.g., commissions) and a decrease of \$19.5 million related to prepaid cost of installation services.
- (4) Represents a decrease of \$14.4 million in deferred tax asset, net, related to the unrecognized income tax effects of the net adjustments from the new revenue recognition standard.
- (5) Represents an increase of \$4.0 million related to long-term capitalized acquisition costs (e.g., commissions).
- (6) Represents decreases of \$23.6 million in deferred revenue, primarily due to a change in revenue recognition for certain multiple-element software arrangements and \$1.7 million in deferred revenue, primarily due to a change in revenue recognition for certain product sales, and increases of \$2.7 million for a change in revenue recognition from certain maintenance services and \$8.2 million from the reversal of balance sheet netting for certain unpaid invoices included in accounts receivable, net and deferred revenue.
- (7) Represents a decrease of \$18.6 million in long-term deferred revenue, primarily due to a change in revenue recognition for certain multiple-element software arrangements and an increase of \$4.3 million from the reversal of balance sheet netting for certain unpaid invoices included in accounts receivable, net and long-term deferred revenue.
- (8) Accumulated deficit impact from the adjustments noted above.

### Intangibles

In August 2018, the FASB issued ASU No. 2018-15 ("ASU 2018-15"), *Intangibles - Goodwill and Other-Internal-Use Software*, which aligns the requirements for capitalizing implementation costs incurred in a hosting arrangement that is a service contract with the requirements for capitalizing implementation costs incurred to develop or obtain internal-use software.

Ciena adopted ASU 2018-15 during the first quarter of fiscal 2019. The application of this accounting standard did not have a material impact on Ciena's Condensed Consolidated Financial Statements.

#### *Newly Issued Accounting Standards - Not Yet Effective*

In February 2016, the FASB issued ASU No. 2016-02 (“ASU 2016-02”), *Leases*, which requires an entity to recognize assets and liabilities on the balance sheet for the rights and obligations created by leased assets and to provide additional disclosures. Under current GAAP, the majority of Ciena’s leases for its properties are considered operating leases, and Ciena expects that the adoption of this ASU will require these leases to be recognized as assets and liabilities on Ciena’s balance sheet. ASU 2016-02 is effective for Ciena beginning in the first quarter of fiscal 2020. Ciena is continuing to evaluate other possible impacts of the adoption of ASU 2016-02 on its Consolidated Financial Statements and disclosures.

In June 2016, the FASB issued ASU No. 2016-13 (“ASU 2016-13”), *Financial Instruments - Credit Losses*, which requires measurement and recognition of expected credit losses for financial assets held based on historical experience, current conditions, and reasonable and supportable forecasts that affect the collectibility of the reported amount. ASU 2016-13 is effective for Ciena beginning in the first quarter of fiscal 2021 and early adoption is permitted. Ciena is currently evaluating the impact of this accounting standard update on its Consolidated Financial Statements and disclosures.

In August 2018, the FASB issued ASU No. 2018-13 (“ASU 2018-13”), *Fair Value Measurement (Topic 820): Disclosure Framework* which modifies the disclosure requirements on fair value measurements. ASU 2018-13 is effective for Ciena beginning in the first quarter of fiscal year 2020 and early adoption is permitted. Ciena is currently evaluating this guidance to determine the impact on its disclosures.

### (3) REVENUE

#### Disaggregation of Revenue

Ciena's disaggregated revenue represents similar groups that depict the nature, amount, and timing of revenue and cash flows for Ciena's various offerings. The sales cycle, contractual obligations, customer requirements, and go-to-market strategies may differ for each of its product categories, resulting in different economic risk profiles for each category.

The tables below (in thousands) set forth Ciena's disaggregated revenue for the respective period:

	Quarter Ended April 30, 2019			
	Networking Platforms	Software and Software-Related Services	Global Services	Total
<b>Product lines:</b>				
Converged Packet Optical	\$ 623,838	\$ —	\$ —	\$ 623,838
Packet Networking	73,138	—	—	73,138
Platform Software and Services	—	35,229	—	35,229
Blue Planet Automation Software and Services	—	12,473	—	12,473
Maintenance Support and Training	—	—	68,788	68,788
Installation and Deployment	—	—	41,322	41,322
Consulting and Network Design	—	—	10,223	10,223
Total revenue by product line	<u>\$ 696,976</u>	<u>\$ 47,702</u>	<u>\$ 120,333</u>	<u>\$ 865,011</u>

<b>Timing of revenue recognition:</b>				
Products and services at a point in time	\$ 696,976	\$ 14,148	\$ 5,575	\$ 716,699
Services transferred over time	—	33,554	114,758	148,312
Total revenue by timing of revenue recognition	<u>\$ 696,976</u>	<u>\$ 47,702</u>	<u>\$ 120,333</u>	<u>\$ 865,011</u>

	Six Months Ended April 30, 2019			
	Networking Platforms	Software and Software-Related Services	Global Services	Total
<b>Product lines:</b>				
Converged Packet Optical	\$ 1,172,835	\$ —	\$ —	\$ 1,172,835
Packet Networking	144,707	—	—	144,707
Platform Software and Services	—	76,827	—	76,827
Blue Planet Automation Software and Services	—	27,447	—	27,447
Maintenance Support and Training	—	—	130,065	130,065
Installation and Deployment	—	—	71,944	71,944
Consulting and Network Design	—	—	19,713	19,713
Total revenue by product line	<u>\$ 1,317,542</u>	<u>\$ 104,274</u>	<u>\$ 221,722</u>	<u>\$ 1,643,538</u>

<b>Timing of revenue recognition:</b>				
Products and services at a point in time	\$ 1,317,542	\$ 36,420	\$ 9,141	\$ 1,363,103
Services transferred over time	—	67,854	212,581	280,435
Total revenue by timing of revenue recognition	<u>\$ 1,317,542</u>	<u>\$ 104,274</u>	<u>\$ 221,722</u>	<u>\$ 1,643,538</u>

	Quarter Ended April 30, 2019	Six Months Ended April 30, 2019
Geographic distribution:		
North America	\$ 576,093	\$ 1,061,599
EMEA	114,993	244,183
CALA	39,399	70,374
APAC	134,526	267,382
Total revenue by geographic distribution	<u>\$ 865,011</u>	<u>\$ 1,643,538</u>

- *Networking Platforms* reflects sales of Ciena’s Converged Packet Optical and Packet Networking product lines.
  - Converged Packet Optical - includes the 6500 Packet-Optical Platform, the 5430 Reconfigurable Switching System, Waveserver® stackable interconnect system, the family of CoreDirector® Multiservice Optical Switches and the OTN configuration for the 5410 Reconfigurable Switching System. This product line also includes sales of the Z-Series Packet-Optical Platform.
  - Packet Networking - includes the 3000 family of service delivery switches and service aggregation switches and the 5000 family of service aggregation switches. This product line also includes the 8700 Packetwave Platform, the Ethernet packet configuration for the 5410 Service Aggregation Switch, and the 6500 Packet Transport System (PTS), which combines packet switching, control plane operation, and integrated optics.

The Networking Platforms segment also includes sales of operating system software and enhanced software features embedded in each of the product lines above. Revenue from this segment is included in product revenue on the Condensed Consolidated Statements of Operations. Ciena’s hardware with the embedded operating system software and enhanced software features are considered distinct performance obligations for which the revenue is generally recognized upfront at a point in time upon transfer of control.

- *Software and Software-Related Services* reflects sales of the following:
  - Ciena’s Blue Planet Automation Software and Services, which is a comprehensive, open software suite that allows customers to use enhanced knowledge about their network to drive adaptive optimization of their services and operations. Ciena’s Blue Planet Automation Platform includes multi-domain service orchestration (MDSO), network function virtualization (NFV), management and orchestration (NFV MANO), analytics, network health predictor (NHP), route optimization and assurance (ROA), inventory management and Ciena’s SDN Multilayer Controller and virtual wide area network (V-WAN) application. Ciena acquired the NHP and ROA software solutions as a part of its acquisition of Packet Design, LLC (“Packet Design”). Ciena acquired the inventory management software solution as a part of its acquisition of DonRiver Holdings, LLC (“DonRiver”). Services revenue includes sales of subscription, installation, support, consulting and design services related to Ciena’s Blue Planet Automation Platform.
  - Ciena’s Platform Software and Services, which provides analytics, data, and planning tools to assist customers in managing Ciena’s Networking Platforms products in their networks. Ciena’s platform software includes its Manage, Control and Plan (MCP) domain controller solution, OneControl Unified Management System, ON-Center® Network and Service Management Suite, Ethernet Services Manager, Optical Suite Release and Planet Operate. As Ciena seeks further adoption of its MCP software platform and transitions features, functionality and customers to this platform, Ciena expects revenue declines for its other platform software solutions. Software-related services revenue includes sales of subscription, installation, support, and consulting services related to Ciena’s software platforms and operating system software and enhanced software features embedded in each of the Networking Platforms product lines above.

Revenue from the software portions of this segment is included in product revenue on the Condensed Consolidated Statements of Operations. Revenue from services portions of this segment is included in services revenue on the Condensed Consolidated Statements of Operations.

Ciena’s software platform revenue typically reflects either perpetual or term-based software licenses, and these sales are considered a distinct performance obligation where revenue is generally recognized upfront at a point in time upon transfer of control. Revenue from software subscription and support are recognized ratably over the period during which the services are performed. Revenue from professional services for solution customization, software and solution support services, consulting and design, and build-operate-transfer services relating to Ciena’s software offerings are recognized over time with Ciena applying the input method to determine the amount of revenue to be recognized in a given period.

- *Global Services* reflects sales of a broad range of Ciena’s services for maintenance support and training, installation and deployment, and consulting and network design activities. Revenue from this segment is included in services revenue on the Condensed Consolidated Statements of Operations. Ciena’s Global Services are considered a distinct performance obligation where revenue is generally recognized over time. Revenue from maintenance support is recognized ratably over the period during which the services are performed. Revenue from installation and deployment services and consulting and network design services are recognized over time with Ciena applying the input method to determine the amount of revenue to be recognized in a given period. Revenue from training services are generally recognized at a point in time upon completion of the service.

#### *Contract Balances*

The following table provides information about receivables, contract assets and contract liabilities (deferred revenue) from contracts with customers (in thousands):

	Balance at April 30, 2019	Adjusted Balance at November 1, 2018
Accounts receivable, net	\$ 756,607	\$ 799,011
Contract assets	\$ 74,439	\$ 31,380
Deferred revenue	\$ 145,022	\$ 140,704

Our contract assets represent unbilled accounts receivable where transfer of a product or service has occurred but invoicing is conditional upon completion of future performance obligations. These amounts are primarily related to installation and deployment services arrangements where transfer of control has occurred but Ciena has not yet invoiced the customer.

Contract liabilities consist of deferred revenue and represent advanced payments against non-cancelable customer orders received prior to revenue recognition. Ciena recognized approximately \$73.0 million of revenue during the first six months of fiscal 2019 that was included in the deferred revenue balance at November 1, 2018. Revenue recognized due to changes in transaction price from performance obligations satisfied or partially satisfied in previous periods were immaterial during the six months ended April 30, 2019.

#### *Capitalized Contract Acquisition Costs*

Capitalized contract acquisition costs consist of deferred sales commissions and were \$12.2 million and \$13.6 million as of April 30, 2019 and November 1, 2018, respectively, and were included in other current assets and other assets. The amortization expense associated with these costs was \$8.4 million during the first six months of fiscal 2019 and was included in sales and marketing expense.

#### *Remaining Performance Obligations*

Remaining Performance Obligations (RPO) are comprised of non-cancelable customer purchase orders for products and services that are awaiting transfer of control for revenue recognition under the applicable contract terms. As of April 30, 2019, the aggregate amount of RPO was \$1.28 billion. As of April 30, 2019, Ciena expects approximately 83% of the RPO to be recognized as revenue within the next twelve months.

#### **(4) RESTRUCTURING COSTS**

Ciena has undertaken a number of restructuring activities intended to reduce expense and to better align its workforce and costs with market opportunities, product development and business strategies. The following table sets forth the restructuring activity and balance of the restructuring liability accounts for the six months ended April 30, 2019 (in thousands):



	Workforce reduction	Consolidation of excess facilities	Total
Balance at October 31, 2018	\$ 2,108	\$ 1,739	\$ 3,847
Additional liability recorded	5,661 <sup>(1)</sup>	680 <sup>(2)</sup>	6,341
Cash payments	(6,667)	(847)	(7,514)
Balance at April 30, 2019	\$ 1,102	\$ 1,572	\$ 2,674
Current restructuring liabilities	\$ 1,102	\$ 347	\$ 1,449
Non-current restructuring liabilities	\$ —	\$ 1,225	\$ 1,225

- (1) Reflects a global workforce reduction of approximately 95 employees during the six months ended April 30, 2019 as part of a business optimization strategy to improve gross margin, constrain operating expense and redesign certain business processes.
- (2) Reflects unfavorable lease commitments in connection with a portion of the facilities for certain locations in the United States and India where Ciena has vacated unused space.

The following table sets forth the restructuring activity and balance of the restructuring liability accounts for the six months ended April 30, 2018 (in thousands):

	Workforce reduction	Consolidation of excess facilities	Total
Balance at October 31, 2017	\$ 1,291	\$ 1,648	\$ 2,939
Additional liability recorded	8,232 <sup>(1)</sup>	2,088 <sup>(2)</sup>	10,320
Cash payments	(8,211)	(1,896)	(10,107)
Balance at April 30, 2018	\$ 1,312	\$ 1,840	\$ 3,152
Current restructuring liabilities	\$ 1,312	\$ 865	\$ 2,177
Non-current restructuring liabilities	\$ —	\$ 975	\$ 975

- (1) Reflects a global workforce reduction of approximately 150 employees during fiscal 2018 as part of a business optimization strategy to improve gross margin, constrain operating expense and redesign certain business processes.
- (2) Reflects unfavorable lease commitments in connection with a portion of facilities located in Petaluma, California where Ciena has vacated unused space.

##### (5) INTEREST AND OTHER INCOME (LOSS), NET

The components of interest and other income, net, are as follows (in thousands):

	Quarter Ended April 30,		Six Months Ended April 30,	
	2019	2018	2019	2018
Interest income	\$ 3,519	\$ 3,212	\$ 7,391	\$ 5,656
Gains (losses) on non-hedge designated foreign currency forward contracts	(898)	2,868	(877)	2,169
Foreign currency exchange losses	(2,995)	(4,804)	(2,212)	(4,791)
Other	130	20	(293)	(163)
Interest and other income (loss), net	\$ (244)	\$ 1,296	\$ 4,009	\$ 2,871

Ciena Corporation, as the U.S. parent entity, uses the U.S. Dollar as its functional currency; however, some of its foreign branch offices and subsidiaries use local currencies as their functional currencies. Ciena recorded \$2.2 million and \$4.8 million in foreign currency exchange rate losses during the first six months of fiscal 2019 and fiscal 2018, respectively, as a result of monetary assets and liabilities that were transacted in a currency other than the entity's functional currency, and the remeasurement adjustments were recorded in interest and other income (loss), net on the Condensed Consolidated Statements of Operations. From time to time, Ciena uses foreign currency forwards to hedge this type of balance sheet exposure. These

forwards are not designated as hedges for accounting purposes, and any net gain or loss associated with these derivatives is reported in interest and other income (loss), net on the Condensed Consolidated Statements of Operations. During the first six months of fiscal 2019, Ciena recorded losses of \$0.9 million from non-hedge designated foreign currency forward contracts. During the first six months of fiscal 2018, Ciena recorded gains of \$2.2 million from non-hedge designated foreign currency forward contracts.

## (6) INCOME TAXES

On December 22, 2017, the Tax Cuts and Jobs Act (the "Tax Act") was enacted. The Tax Act significantly revised the U.S. corporate income tax laws by, among other things, lowering the statutory corporate income tax rate from 35% to 21% effective January 1, 2018, implementing a modified territorial tax system, and imposing a mandatory one-time transition tax on accumulated earnings of foreign subsidiaries. The enactment of the Tax Act resulted in Ciena recording a provisional tax expense of \$472.8 million in fiscal 2018.

The effective tax rate for the second quarter and six months ended April 30, 2019 was lower than the effective tax rate for the second quarter and six months ended April 30, 2018, primarily due to the impact of the Tax Act. The reduction of the U.S. federal corporate income tax rate from 35% to 21% effective January 1, 2018, required the remeasurement of the net deferred tax assets and liabilities ("DTA"). Also, Ciena recorded U.S. transition tax in the six months ended April 30, 2018.

## (7) SHORT-TERM AND LONG-TERM INVESTMENTS

As of the dates indicated, investments are comprised of the following (in thousands):

	April 30, 2019			
	Amortized Cost	Gross Unrealized Gains	Gross Unrealized Losses	Estimated Fair Value
U.S. government obligations:				
Included in short-term investments	\$ 119,316	\$ 47	\$ (36)	\$ 119,327
	<u>\$ 119,316</u>	<u>\$ 47</u>	<u>\$ (36)</u>	<u>\$ 119,327</u>
	October 31, 2018			
	Amortized Cost	Gross Unrealized Gains	Gross Unrealized Losses	Estimated Fair Value
U.S. government obligations:				
Included in short-term investments	\$ 139,365	\$ —	\$ (347)	\$ 139,018
Included in long-term investments	59,029	—	(59)	58,970
	<u>\$ 198,394</u>	<u>\$ —</u>	<u>\$ (406)</u>	<u>\$ 197,988</u>
Commercial paper:				
Included in short-term investments	\$ 9,963	\$ —	\$ —	\$ 9,963
	<u>\$ 9,963</u>	<u>\$ —</u>	<u>\$ —</u>	<u>\$ 9,963</u>

The following table summarizes the final legal maturities of debt investments at April 30, 2019 (in thousands):

	Amortized Cost	Estimated Fair Value
Less than one year	<u>\$ 119,316</u>	<u>\$ 119,327</u>

## (8) FAIR VALUE MEASUREMENTS

As of the date indicated, the following table summarizes the assets and liabilities that are recorded at fair value on a recurring basis (in thousands):

April 30, 2019

	Level 1	Level 2	Level 3	Total
<b>Assets:</b>				
Money market funds	\$ 584,859	\$ —	\$ —	\$ 584,859
U.S. government obligations	—	119,327	—	119,327
Foreign currency forward contracts	—	764	—	764
<b>Total assets measured at fair value</b>	<b>\$ 584,859</b>	<b>\$ 120,091</b>	<b>\$ —</b>	<b>\$ 704,950</b>
<b>Liabilities:</b>				
Foreign currency forward contracts	\$ —	\$ 3,630	\$ —	\$ 3,630
Forward starting interest rate swap	—	10,927	—	10,927
Contingent consideration	—	—	10,900	10,900
<b>Total liabilities measured at fair value</b>	<b>\$ —</b>	<b>\$ 14,557</b>	<b>\$ 10,900</b>	<b>\$ 25,457</b>

October 31, 2018

	Level 1	Level 2	Level 3	Total
<b>Assets:</b>				
Money market funds	\$ 590,684	\$ —	\$ —	\$ 590,684
U.S. government obligations	—	197,988	—	197,988
Commercial paper	—	69,888	—	69,888
Foreign currency forward contracts	—	133	—	133
Forward starting interest rate swaps	—	779	—	779
<b>Total assets measured at fair value</b>	<b>\$ 590,684</b>	<b>\$ 268,788</b>	<b>\$ —</b>	<b>\$ 859,472</b>
<b>Liabilities:</b>				
Foreign currency forward contracts	\$ —	\$ 3,231	\$ —	\$ 3,231
Debt conversion liability	—	164,212	—	164,212
Contingent consideration	—	—	10,900	10,900
<b>Total liabilities measured at fair value</b>	<b>\$ —</b>	<b>\$ 167,443</b>	<b>\$ 10,900</b>	<b>\$ 178,343</b>

As of the date indicated, the assets and liabilities above are presented on Ciena's Condensed Consolidated Balance Sheets as follows (in thousands):

April 30, 2019

	Level 1	Level 2	Level 3	Total
<b>Assets:</b>				
Cash equivalents	\$ 584,859	\$ —	\$ —	\$ 584,859
Short-term investments	—	119,327	—	119,327
Prepaid expenses and other	—	764	—	764
<b>Total assets measured at fair value</b>	<b>\$ 584,859</b>	<b>\$ 120,091</b>	<b>\$ —</b>	<b>\$ 704,950</b>
<b>Liabilities:</b>				
Accrued liabilities	\$ —	\$ 3,630	\$ 7,491	\$ 11,121
Other long-term obligations	—	10,927	3,409	14,336
<b>Total liabilities measured at fair value</b>	<b>\$ —</b>	<b>\$ 14,557</b>	<b>\$ 10,900</b>	<b>\$ 25,457</b>

	October 31, 2018			
	Level 1	Level 2	Level 3	Total
<b>Assets:</b>				
Cash equivalents	\$ 590,684	\$ 59,925	\$ —	\$ 650,609
Short-term investments	—	148,981	—	148,981
Prepaid expenses and other	—	133	—	133
Long-term investments	—	58,970	—	58,970
Other long-term assets	—	779	—	779
<b>Total assets measured at fair value</b>	<b>\$ 590,684</b>	<b>\$ 268,788</b>	<b>\$ —</b>	<b>\$ 859,472</b>
<b>Liabilities:</b>				
Accrued liabilities	\$ —	\$ 3,231	\$ —	\$ 3,231
Debt conversion liability	—	164,212	—	164,212
Other long-term obligations	—	—	10,900	10,900
<b>Total liabilities measured at fair value</b>	<b>\$ —</b>	<b>\$ 167,443</b>	<b>\$ 10,900</b>	<b>\$ 178,343</b>

Ciena did not have any transfers between Level 1 and Level 2 fair value measurements during the periods presented.

Ciena's Level 3 liability is included in both accrued liabilities and other long-term obligations and reflects a contingent consideration element of a three-year payout arrangement associated with Ciena's purchase of DonRiver in the fourth quarter of fiscal 2018. The contingent consideration is valued by applying the income approach based upon a discounted cash flow technique using Monte Carlo simulations. As of April 30, 2019, there was no material change to the fair value.

## (9) INVENTORIES

As of the dates indicated, inventories are comprised of the following (in thousands):

	April 30, 2019	October 31, 2018
Raw materials	\$ 90,317	\$ 67,468
Work-in-process	11,986	9,589
Finished goods	205,440	188,575
Deferred cost of goods sold	100,637	48,057
	408,380	313,689
Provision for excess and obsolescence	(48,963)	(50,938)
	<b>\$ 359,417</b>	<b>\$ 262,751</b>

Ciena writes down its inventory for estimated obsolescence or unmarketable inventory by an amount equal to the difference between the cost of inventory and the estimated net realizable value based on assumptions about future demand and market conditions. During the first six months of fiscal 2019, Ciena recorded a provision for excess and obsolescence of \$10.2 million, primarily related to a decrease in the forecasted demand for certain Networking Platforms products. Deductions from the provision for excess and obsolete inventory relate primarily to disposal activities.

## (10) PREPAID EXPENSES AND OTHER

As of the dates indicated, prepaid expenses and other are comprised of the following (in thousands):

	April 30, 2019	October 31, 2018
Prepaid VAT and other taxes	\$ 77,788	\$ 82,518
Contract assets for unbilled accounts receivable	74,439	—
Product demonstration equipment, net	39,323	37,623
Prepaid expenses	31,469	32,987
Other non-trade receivables	11,513	25,716
Capitalized commissions - short term	8,373	—
Financing receivable	—	626
Deferred deployment expense	—	19,342
Derivative assets	764	133
	<u>\$ 243,669</u>	<u>\$ 198,945</u>

Depreciation of product demonstration equipment was \$4.3 million and \$4.6 million first six months of fiscal 2019 and 2018, respectively.

## (11) ACCRUED LIABILITIES AND OTHER SHORT-TERM OBLIGATIONS

As of the dates indicated, accrued liabilities and other short-term obligations are comprised of the following (in thousands):

	April 30, 2019	October 31, 2018
Compensation, payroll related tax and benefits <sup>(1)</sup>	\$ 94,235	\$ 140,277
Warranty	44,907	44,740
Vacation <sup>(2)</sup>	21,648	42,507
Contingent consideration	7,491	—
Capital lease obligations	3,011	3,547
Interest payable	1,000	1,072
Other	119,125	107,932
	<u>\$ 291,417</u>	<u>\$ 340,075</u>

<sup>(1)</sup> Reduction is primarily due to the timing of bonus payments to employees under Ciena's annual cash incentive compensation plan.

<sup>(2)</sup> Reduction is primarily due to the payout of North America vacation accruals in conjunction with adoption of a new vacation policy.

The following table summarizes the activity in Ciena's accrued warranty for the fiscal periods indicated (in thousands):

Six Months Ended April 30,	Beginning Balance	Current Period Provisions	Settlements	Ending Balance
2018	\$ 42,456	10,565	(9,629)	\$ 43,392
2019	\$ 44,740	9,276	(9,109)	\$ 44,907

### Settlement of Conversions of 3.75% Convertible Senior Notes due October 15, 2018 ("New Notes")

#### Debt Conversion Liability Associated With the New Notes

The New Notes provided Ciena the option, at its election, to settle conversions of such notes for cash, shares of its common stock, or a combination of cash and shares equal to the aggregate amount due upon conversion. On August 30, 2018, Ciena notified the noteholders that it had elected to settle conversion of the New Notes in a combination of cash and shares, provided that the cash portion would not exceed an aggregate amount of \$400 million. Ciena became obligated to settle a portion of the conversion feature in cash and reclassified the cash conversion feature from equity to a derivative liability at its fair value of \$164.2 million. On November 15, 2018, Ciena paid approximately \$111.3 million in cash and issued 1.6 million shares in settlement of this embedded conversion feature.

## (12) DERIVATIVE INSTRUMENTS

### Foreign Currency Derivatives

As of April 30, 2019 and October 31, 2018, Ciena had forward contracts to hedge its foreign exchange exposure in order to reduce the variability in its Canadian Dollar- and Indian Rupee-denominated expense, which principally relates to research and development activities. The notional amount of these contracts was approximately \$146.1 million and \$163.2 million as of April 30, 2019 and October 31, 2018, respectively. These foreign exchange contracts have maturities of 24 months or less and have been designated as cash flow hedges.

During the first six months of fiscal 2019 and fiscal 2018, in order to hedge foreign exchange exposures of certain balance sheet items, Ciena entered into forward contracts to mitigate risk due to variability in various currencies. The notional amount of these contracts was approximately \$164.8 million and \$162.6 million as of April 30, 2019 and October 31, 2018, respectively. These foreign exchange contracts have maturities of 12 months or less and have not been designated as hedges for accounting purposes.

### Interest Rate Derivatives

Ciena is exposed to floating rates of LIBOR interest on its term loan borrowings (see Note 14 below) and has hedged such risk by entering into floating to fixed interest rate swap arrangements (“interest rate swaps”). The interest rate swaps fix the LIBOR rate for \$350 million of the 2025 Term Loan at 2.957% through September 2023. The total notional amount of interest rate swaps in effect was \$350.0 million as of April 30, 2019 and October 31, 2018.

Ciena expects the variable rate payments to be received under the terms of the interest rate swaps to offset exactly the forecasted variable rate payments on the equivalent notional amounts of the term loans. These derivative contracts have been designated as cash flow hedges.

Other information regarding Ciena’s derivatives is immaterial for separate financial statement presentation. See Note 5 and Note 8 above.

### (13) ACCUMULATED OTHER COMPREHENSIVE INCOME

The following table summarizes the changes in accumulated balances of other comprehensive income (“AOCI”), net of tax, for the six months ended April 30, 2019:

	Unrealized Loss on Available- for-sale Securities	Unrealized Loss on Foreign Currency Forward Contracts	Unrealized Loss on Forward Starting Interest Rate Swaps	Cumulative Foreign Currency Translation Adjustment	Total
Balance at October 31, 2018	\$ (425)	\$ (3,060)	\$ 6,417	\$ (8,712)	\$ (5,780)
Other comprehensive income (loss) before reclassifications	413	(1,613)	(10,013)	(3,846)	(15,059)
Amounts reclassified from AOCI	—	2,317	(684)	—	1,633
Balance at April 30, 2019	\$ (12)	\$ (2,356)	\$ (4,280)	\$ (12,558)	\$ (19,206)

The following table summarizes the changes in AOCI, net of tax, for the six months ended April 30, 2018:

	Unrealized Loss on Available- for-sale Securities	Unrealized Loss on Foreign Currency Forward Contracts	Unrealized Gain on Forward Starting Interest Rate Swaps	Cumulative Foreign Currency Translation Adjustment	Total
Balance at October 31, 2017	\$ (451)	\$ (1,386)	\$ 218	\$ (9,398)	\$ (11,017)
Other comprehensive income (loss) before reclassifications	(337)	(440)	4,725	1,069	5,017
Amounts reclassified from AOCI	—	405	523	—	928
Balance at April 30, 2018	\$ (788)	\$ (1,421)	\$ 5,466	\$ (8,329)	\$ (5,072)

All amounts reclassified from AOCI related to settlement (gains) losses on foreign currency forward contracts designated as cash flow hedges impacted revenue and research and development expense on the Condensed Consolidated Statements of Operations. All amounts reclassified from AOCI related to settlement (gains) losses on forward starting interest rate swaps designated as cash flow hedges impacted interest and other income (loss), net on the Condensed Consolidated Statements of Operations.

#### (14) SHORT-TERM AND LONG-TERM DEBT

##### *Outstanding Term Loan Payable*

##### *2025 Term Loan*

The net carrying value of Ciena's Term Loan due September 28, 2025 (the "2025 Term Loan") was comprised of the following for the fiscal periods indicated (in thousands):

	April 30, 2019	October 31, 2018
Term Loan Payable due September 28, 2025	\$ 690,429	\$ 693,450

Deferred debt issuance costs that were deducted from the carrying amounts of the 2025 Term Loan totaled \$3.9 million at April 30, 2019 and \$4.3 million at October 31, 2018. Deferred debt issuance costs are amortized using the straight-line method, which approximates the effect of the effective interest rate method, through the maturity of the 2025 Term Loan. The amortization of deferred debt issuance costs for the 2025 Term Loan is included in interest expense, and was \$0.3 million during the first six months of fiscal 2019. The carrying value of the 2025 Term Loan listed above is also net of any unamortized debt discounts.

The principal balance, unamortized debt discount, deferred debt issuance costs, net carrying value and fair value of the 2025 Term Loan were as follows as of April 30, 2019 (in thousands):

	Principal Balance	Unamortized Debt Discount	Deferred Debt Issuance Costs	Net Carrying Value	Fair Value <sup>(1)</sup>
Term Loan Payable due September 28, 2025	\$ 696,500	\$ (2,129)	\$ (3,942)	\$ 690,429	\$ 696,500

- (1) The 2025 Term Loan is categorized as Level 2 in the fair value hierarchy. Ciena estimated the fair value of the 2025 Term Loan using a market approach based upon observable inputs, such as current market transactions involving comparable securities.

#### (15) EARNINGS PER SHARE CALCULATION

The following table (in thousands except per share amounts) is a reconciliation of the numerator and denominator of the basic net income (loss) per common share ("Basic EPS") and the diluted net income (loss) per potential common share ("Diluted EPS"). Basic EPS is computed using the weighted average number of common shares outstanding. Diluted EPS is computed using the weighted average number of the following, in each case, to the extent the effect is not anti-dilutive:

(i) common shares outstanding; (ii) shares issuable upon vesting of stock unit awards; and (iii) shares issuable under Ciena's employee stock purchase plan and upon exercise of outstanding stock options, using the treasury stock method.

Numerator	Quarter Ended April 30,		Six Months Ended April 30,	
	2019	2018	2019	2018
Net income (loss)	\$ 52,738	\$ 13,856	\$ 86,354	\$ (459,507)
Denominator	Quarter Ended April 30,		Six Months Ended April 30,	
	2019	2018	2019	2018
Basic weighted average shares outstanding	156,170	143,975	156,244	143,948
Add: Shares underlying outstanding stock options and stock unit awards and issuable under employee stock purchase plan	2,119	1,345	1,967	—
Add: Shares underlying 3.75% Convertible Senior Notes due 2018 (New)	—	2,653	—	—
Dilutive weighted average shares outstanding	158,289	147,973	158,211	143,948
EPS	Quarter Ended April 30,		Six Months Ended April 30,	
	2019	2018	2019	2018
Basic EPS	\$ 0.34	\$ 0.10	\$ 0.55	\$ (3.19)
Diluted EPS	\$ 0.33	\$ 0.09	\$ 0.55	\$ (3.19)

The following table summarizes the weighted average shares excluded from the calculation of the denominator for Diluted EPS due to their anti-dilutive effect for the periods indicated (in thousands):

	Quarter Ended April 30,		Six Months Ended April 30,	
	2019	2018	2019	2018
Shares underlying stock options and stock unit awards	283	304	257	2,496
3.75% Convertible Senior Notes due October 15, 2018 (Original)	—	3,038	—	3,038
3.75% Convertible Senior Notes due October 15, 2018 (New)	—	—	—	1,672
4.0% Convertible Senior Notes due December 15, 2020	—	9,198	—	9,198
Total shares excluded due to anti-dilutive effect	283	12,540	257	16,404

## (16) STOCKHOLDERS' EQUITY

### Stock Repurchase Program

On December 13, 2018, Ciena announced that its Board of Directors authorized a program to repurchase up to \$500 million of Ciena's common stock. The amount and timing of repurchases are subject to a variety of factors including liquidity, cash flow, stock price and general business and market conditions. The program may be modified, suspended, or discontinued at any time.

A summary of the stock repurchase program, reported based on trade date, is summarized as follows:

	Shares Repurchased	Weighted-Average Price per Share	Amount Repurchased (in thousands)
Cumulative balance at October 31, 2018	—	\$ —	\$ —
Repurchase of common stock under the stock repurchase program	1,752,525	37.97	66,544
Cumulative balance at April 30, 2019	1,752,525	\$ 37.97	\$ 66,544



The purchase price for the shares of Ciena's stock repurchased is reflected as a reduction of common stock and additional paid-in capital.

*Stock Repurchases Related to Stock Unit Award Tax Withholdings*

Ciena repurchases shares of common stock to satisfy employee tax withholding obligations due upon vesting of stock unit awards. The purchase price of \$15.9 million for the shares of Ciena's stock repurchased during the first six months of fiscal 2019 is reflected as a reduction to stockholders' equity. Ciena is required to allocate the purchase price of the repurchased shares as a reduction of common stock and additional paid-in capital.

**(17) SHARE-BASED COMPENSATION EXPENSE**

The following table summarizes share-based compensation expense for the periods indicated (in thousands):

	Quarter Ended April 30,		Six Months Ended April 30,	
	2019	2018	2019	2018
Product costs	\$ 702	\$ 824	\$ 1,339	\$ 1,496
Service costs	907	722	1,677	1,346
Share-based compensation expense included in cost of sales	1,609	1,546	3,016	2,842
Research and development	4,083	3,796	7,474	7,052
Sales and marketing	4,346	3,760	8,131	7,088
General and administrative	5,491	5,109	10,603	9,583
Share-based compensation expense included in operating expense	13,920	12,665	26,208	23,723
Share-based compensation expense capitalized in inventory, net	78	(45)	138	(6)
Total share-based compensation	\$ 15,607	\$ 14,166	\$ 29,362	\$ 26,559

As of April 30, 2019, total unrecognized share-based compensation expense was approximately \$110.7 million, which relates to unvested stock unit awards and is expected to be recognized over a weighted-average period of 1.6 years.

## (18) SEGMENTS AND ENTITY-WIDE DISCLOSURES

### Segment Reporting

Ciena has the following operating segments for reporting purposes: (i) Networking Platforms; (ii) Software and Software-Related Services; and (iii) Global Services. See Note 3 to Ciena's Condensed Consolidated Financial Statements included in Item 1 of Part I of this report.

Ciena's long-lived assets, including equipment, building, furniture and fixtures, finite-lived intangible assets and maintenance spares, are not reviewed by Ciena's chief operating decision maker for purposes of evaluating performance and allocating resources. As of April 30, 2019, equipment, building, furniture and fixtures, net totaled \$282.0 million, primarily supporting asset groups within Ciena's Networking Platforms and Software and Software-Related Services segments and supporting Ciena's unallocated selling and general and administrative activities. As of April 30, 2019, \$25.0 million of Ciena's intangible assets, net were assigned to asset groups within Ciena's Networking Platforms segment and \$105.0 million of Ciena's intangible assets, net were assigned to asset groups within Ciena's Software and Software-Related Services segment. As of April 30, 2019, \$65.5 million of Ciena's Goodwill was assigned to asset groups within Ciena's Networking Platforms segment and \$232.2 million of Ciena's Goodwill was assigned to asset groups within Ciena's Software and Software-Related Services segment. As of April 30, 2019, all of the maintenance spares, net, totaling \$50.9 million, were assigned to asset groups within Ciena's Global Services segment.

### Segment Revenue

The table below (in thousands) sets forth Ciena's segment revenue for the respective periods:

	Quarter Ended April 30,		Six Months Ended April 30,	
	2019	2018	2019	2018
<b>Revenue:</b>				
<b>Networking Platforms</b>				
Converged Packet Optical	\$ 623,838	\$ 527,867	\$ 1,172,835	\$ 955,297
Packet Networking	73,138	63,815	144,707	132,418
Total Networking Platforms	696,976	591,682	1,317,542	1,087,715
<b>Software and Software-Related Services</b>				
Platform Software and Services	35,229	36,393	76,827	80,529
Blue Planet Automation Software and Services	12,473	2,352	27,447	11,703
Total Software and Software-Related Services	47,702	38,745	104,274	92,232
<b>Global Services</b>				
Maintenance Support and Training	68,788	60,904	130,065	116,862
Installation and Deployment	41,322	28,209	71,944	58,225
Consulting and Network Design	10,223	10,438	19,713	21,079
Total Global Services	120,333	99,551	221,722	196,166
Consolidated revenue	\$ 865,011	\$ 729,978	\$ 1,643,538	\$ 1,376,113

### Segment Profit

Segment profit is determined based on internal performance measures used by Ciena's chief executive officer to assess the performance of each operating segment in a given period. In connection with that assessment, the chief executive officer excludes the following items: selling and marketing costs; general and administrative costs; amortization of intangible assets; significant asset impairments and restructuring costs; acquisition and integration costs; interest and other income (loss), net; interest expense; and provision for income taxes.

The table below (in thousands) sets forth Ciena's segment profit and the reconciliation to consolidated net income (loss) during the respective periods indicated:

	Quarter Ended April 30,		Six Months Ended April 30,	
	2019	2018	2019	2018
<b>Segment profit:</b>				
Networking Platforms	\$ 175,191	\$ 126,823	\$ 311,782	\$ 215,392
Software and Software-Related Services	6,536	8,276	24,952	31,911
Global Services	54,981	41,284	94,682	82,321
<b>Total segment profit</b>	<b>236,708</b>	<b>176,383</b>	<b>431,416</b>	<b>329,624</b>
<b>Less: Non-performance operating expenses</b>				
Selling and marketing	103,502	97,359	201,615	185,874
General and administrative	42,154	38,976	81,397	77,382
Amortization of intangible assets	5,529	3,623	11,057	7,246
Significant asset impairments and restructuring costs	4,068	4,359	6,341	10,320
Acquisition and integration costs	1,135	—	2,743	—
<b>Add: Other non-performance financial items</b>				
Interest expense and other income (loss), net	(9,715)	(11,735)	(14,903)	(23,894)
<b>Less: Provision for income taxes</b>	<b>17,867</b>	<b>6,475</b>	<b>27,006</b>	<b>484,415</b>
<b>Consolidated net income (loss)</b>	<b>\$ 52,738</b>	<b>\$ 13,856</b>	<b>\$ 86,354</b>	<b>\$ (459,507)</b>

#### Entity-Wide Reporting

Ciena's revenue includes \$545.6 million and \$392.8 million of United States revenue for the second quarter of fiscal 2019 and 2018, respectively. For the six months ended April 30, 2019 and 2018, United States revenue was \$1.01 billion and \$776.1 million, respectively. No other country accounted for 10% or more of total revenue for the periods presented above.

The following table reflects Ciena's geographic distribution of equipment, building, furniture and fixtures, net, with any country accounting for at least 10% of total equipment, building, furniture and fixtures, net, specifically identified. Equipment, building, furniture and fixtures, net, attributable to geographic regions outside of the U.S. and Canada are reflected as "Other International." For the periods below, Ciena's geographic distribution of equipment, building, furniture and fixtures, net, was as follows (in thousands):

	April 30, 2019	October 31, 2018
Canada	\$ 196,069	\$ 198,028
United States	67,633	75,479
Other International	18,320	18,560
<b>Total</b>	<b>\$ 282,022</b>	<b>\$ 292,067</b>

For the periods below, AT&T, Verizon and a Web-scale provider were the only customers that accounted for at least 10% of Ciena's revenue as follows (in thousands):

	Quarter Ended April 30,		Six Months Ended April 30,	
	2019	2018	2019	2018
AT&T	\$ 108,416	\$ 85,419	\$ 202,587	\$ 176,065
Verizon	106,350	n/a	195,125	n/a
Web-scale provider	n/a	n/a	174,853	n/a
<b>Total</b>	<b>\$ 214,766</b>	<b>\$ 85,419</b>	<b>\$ 572,565</b>	<b>\$ 176,065</b>

n/a Denotes revenue representing less than 10% of total revenue for the period

The customers identified above purchased products and services from each of Ciena's operating segments.

#### (19) COMMITMENTS AND CONTINGENCIES

During fiscal 2018, Ciena entered into agreements related to the Evolution of Networking Services through a Corridor in Quebec and Ontario for Research and Innovation (“ENCQOR”) project with the Canadian federal government, the government of the province of Ontario and the government of the province of Quebec to develop a 5G technology corridor between Quebec and Ontario to promote research and development, small business enterprises and entrepreneurs in Canada. Under these agreements, Ciena can receive up to an aggregate CAD\$57.6 million (approximately \$42.9 million) in reimbursement from the three Canadian government entities for eligible costs over a period commencing on February 20, 2017 and ending on March 31, 2022. Ciena anticipates receiving recurring disbursements over this period. Amounts received under the agreements are subject to recoupment in the event that Ciena fails to achieve certain minimum investment, employment and project milestones. As of April 30, 2019, Ciena has recorded CAD\$23.1 million (approximately \$17.2 million) in cumulative benefits as a reduction in research and development expense of which CAD\$6.5 million (approximately \$4.9 million) was recorded in the first six months of fiscal 2019. As of April 30, 2019, amounts receivable from this grant were CAD\$7.9 million (approximately \$5.9 million).

#### *Tax Contingencies*

Ciena is subject to various tax liabilities arising in the ordinary course of business. Ciena does not expect that the ultimate settlement of these tax liabilities will have a material effect on its results of operations, financial position or cash flows.

#### *Litigation*

As a result of the acquisition of Cyan in August 2015, Ciena became a defendant in a securities class action lawsuit. On April 1, 2014, the first of two purported stockholder class action lawsuits 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. The cases were 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. On May 19, 2015, the proposed class was certified. During the fourth quarter of fiscal 2018, the parties agreed to the terms of a settlement of the action, which settlement is subject to notice to class members and approval by the court. The terms of the proposed settlement, which include a release and dismissal of all claims against all defendants without any liability or wrongdoing attributed to them, are not material to the Ciena’s financial results. There is no assurance that the court will ultimately approve the settlement.

#### *Internal Investigation*

During fiscal 2017, one of Ciena’s third-party vendors raised allegations about certain questionable payments to one or more individuals employed by a customer in a country in the ASEAN region. Ciena promptly initiated an internal investigation into the matter, with the assistance of outside counsel, which investigation corroborated direct and indirect payments to one such individual and sought to determine whether the payments may have violated applicable laws and regulations, including the U.S. Foreign Corrupt Practices Act (“FCPA”). In September 2017, Ciena voluntarily contacted the SEC and the U.S. Department of Justice (“DOJ”) to advise them of the relevant events and the findings of Ciena’s internal investigation. On December 10, 2018, the DOJ advised that it has declined to prosecute this matter and that its investigation into the matter is now closed. Ciena continues to cooperate fully with the SEC in its investigation into this matter.

Ciena’s operations in the relevant country constituted less than 1.5% of consolidated revenues as reported by Ciena in each fiscal year from 2012 through 2017. Ciena does not currently anticipate that this matter will have a material adverse effect on its business, financial condition or results of operations. However, as discussions with the SEC are ongoing, the ultimate outcome of this matter cannot be predicted at this time. As of the filing of this report, no provision with respect to this matter has been made in Ciena’s consolidated financial statements. Any determination that Ciena’s operations or activities are not in compliance with the FCPA or other applicable laws or regulations could result in the imposition of fines, civil and criminal penalties, and equitable remedies, including disgorgement or injunctive relief.

In addition to the matters described in “Litigation” and “Internal Investigation” above, Ciena is subject to various legal proceedings, claims and other matters arising in the ordinary course of business, including those that relate to employment, commercial, tax and other regulatory matters. Ciena is also subject to intellectual property related claims, 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 such matters will have a material effect on its results of operations, financial position or cash flows.

## **(20) SUBSEQUENT EVENTS**

### *Stock Repurchase Program*

From the end of the second quarter of fiscal 2019 through June 7, 2019, Ciena repurchased an additional 485,235 shares of its common stock, for an aggregate purchase price of \$17.3 million at an average price of \$35.63 per share, inclusive of repurchases pending settlement. As of June 7, 2019, Ciena has repurchased an aggregate of 2,237,760 shares and has an aggregate of \$416.2 million of authorized funds remaining under its Stock Repurchase Program.

## **Item 2. Management's Discussion and Analysis of Financial Condition and Results of Operations**

### **Cautionary Note Regarding Forward-Looking Statements**

*This quarterly 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," "can," "should," "could," "expects," "future," "plans," "anticipates," "believes," "estimates," "predicts," "intends," "potential," "projects," "targets," or "continue" or the negative of those words and other comparable words. These statements may relate to, among other things, our competitive landscape; market conditions and growth opportunities; factors impacting our industry and markets; factors impacting the businesses of network operators and their network architectures; adoption of next-generation network technology and software programmability and automation of networks; our 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; 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 information technology (IT) transitions or initiatives; the impact of the Tax Cuts and Jobs Act and changes in our effective tax rates; 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, gross margin 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 or security problems and undetected errors;*
- our ability to diversify our customer base beyond our traditional customers and to broaden the application for our solutions in communications networks;*
- the level of growth in network traffic and bandwidth consumption and the corresponding level of investment in network infrastructures by network operators;*
- the international scale of our operations;*
- fluctuations in currency exchange rates;*
- our ability to forecast accurately demand for our products for purposes of inventory purchase practices;*
- the impact of pricing pressure and price compression that we regularly encounter in our markets;*
- 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;*
- the potential failure to maintain the security of confidential, proprietary or otherwise sensitive business information or systems or to protect against cyber 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 manage effectively 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 ability to grow and maintain our new distribution relationships under which we will make available certain technology as a component;
- 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;
- our ability 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 commercialize and grow our software business and address networking strategies including software-defined networking and network function virtualization;
- 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;
- the impact of the Tax Cuts and Jobs Act, future legislation or executive action in the U.S. relating to tax policy, changes in tax regulations and related accounting, and changes in our effective tax rates;
- future legislation or executive action in the U.S. or foreign countries relating to trade regulations, including the imposition of tariffs and duties;
- the write-down of goodwill, long-lived assets, or our deferred tax 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
- adverse results in litigation matters.

*These are only some of the factors that may affect the forward-looking statements contained in this quarterly 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 quarterly report. For a more complete understanding of the risks associated with an investment in Ciena’s securities, you should review these factors and the rest of this quarterly report in combination with the more detailed description of our business and management’s discussion and analysis of financial condition and risk factors described in our annual report on Form 10-K for fiscal 2018, which we filed with the Securities and Exchange Commission (the “SEC”) on December 21, 2018. 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. We cannot predict all risks and uncertainties that could have an impact on the forward-looking statements contained in this quarterly report. You should be aware that the forward-looking statements contained in this quarterly report are based on our current views and assumptions. We undertake no obligation to revise or update any forward-looking statements made in this quarterly 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 quarterly 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.*

## **Overview**

We are a networking systems, services and software company, providing solutions that enable a wide range of network operators to deploy and manage next-generation networks that deliver services to businesses and consumers. We provide network hardware, software and services that support the transport, switching, aggregation, service delivery and management of video, data and voice traffic on communications networks. Our solutions are used by communications service providers, cable and multiservice operators, Web-scale providers, submarine network operators, governments, enterprises, research and education (R&E) institutions and other emerging network operators.

Our solutions include a diverse portfolio of high-capacity Networking Platform products, which can be applied from the network core to network access points, and which allow network operators to scale capacity, increase transmission speeds, allocate traffic and adapt dynamically to changing end-user service demands. We also offer Platform Software that provides management and domain control of our next-generation packet and optical platforms and automates network lifecycle operations including provisioning equipment and services. In addition, through our comprehensive suite of Blue Planet Automation Software, we enable network operators to use network data and analytics to drive enhanced automation across multi-vendor and multi-domain network environments, accelerate service delivery, and enable an increasingly predictive and



autonomous network infrastructure. To complement our hardware and software solutions, we offer a broad range of attached and software-related services that help our customers design, optimize, integrate, deploy, manage and maintain their networks and associated operational environments. Through our complete portfolio of solutions, we enable our customers to transform their networks into dynamic, programmable environments driven by automation and analytics, which we refer to as the Adaptive Network. Our solutions for the Adaptive Network create business and operational value for our customers, enabling them to introduce new revenue-generating services, reduce costs and maximize the return on their network infrastructure investment.

*Revenue and earnings growth, technology innovation and diversification of our business.*

During the first six months of fiscal 2019, our revenue and earnings growth accelerated as we benefited meaningfully from strong network operator demand for capacity, favorable industry and competitive dynamics, and the continued execution of our strategy. Our strategy has focused on innovation leadership, the diversification of our business and customer base, and market share capture, particularly internationally. For the six months ended April 30, 2019, compared to the six months ended April 30, 2018, our revenue grew from \$1.38 billion to \$1.64 billion, or approximately 19%, and our income from operations grew from \$48.8 million to \$128.3 million, or approximately 163%. Our results can fluctuate from quarter to quarter and we do not expect that these revenue and profit growth rates will be sustainable long-term.

We believe that we continue to benefit from our efforts to push the pace of innovation in our markets and provide market-leading offerings. Keeping pace with the market's demands for technology innovation requires considerable research and development investment capacity. For example, during the first six months of fiscal 2019, we invested \$266.6 million in research and development activities, an increase of approximately 13% compared to the first six months of fiscal 2018. We believe that our investment capacity and innovation execution are important competitive differentiators and have been important contributors to the growth of our business. We believe that remaining competitive in the geographies, markets, and customer segments in which we sell depends upon our continued innovation.

We continue to diversify our business and, in the six months ended April 30, 2019, we benefited from revenue growth across a diverse set of geographies, product solutions and customer segments. During the six months ended April 30, 2019, we grew revenue in each of the geographic regions in which we operate and in each of our operating segments, with a diverse set of hardware, software and service offerings. We grew revenue with our largest service provider customers, and Web-scale providers, which have been increasingly important contributors to our overall growth, are included among our largest customers by revenue for the six months ended April 30, 2019. We believe that continued diversification of our business is important to address the dynamic industry environment in which we operate, to continue to grow our business, and to better withstand potential slowdowns that could adversely affect demand from particular geographies, markets, customers or customer segments.

Our revenue growth for the six months ended April 30, 2019 has also benefited from market share gains and our continued go-to-market strategy focused on generating new customer wins and displacing incumbent competitors in key accounts. An important part of our strategy is to leverage our technology leadership and to aggressively capture additional market share from competitors, particularly with communications service providers internationally. Our revenue growth, in part, reflects the benefits of this strategy, which has yielded revenue growth with additional customers and geographies in Europe, Middle East and Africa ("EMEA") and Asia Pacific and India ("APAC").

*Available Information.* Our quarterly reports on Form 10-Q, annual reports on Form 10-K, current reports on Form 8-K, and any amendments thereto filed or furnished with the SEC are available through the SEC's website at [www.sec.gov](http://www.sec.gov) and are available free of charge on our website as soon as reasonably practicable after we file or furnish 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.

For additional information on our business, industry, market opportunity, competitive landscape, and strategy, see our annual report on Form 10-K for the fiscal year ended October 31, 2018.

## Consolidated Results of Operations

### Operating Segments

We have the following operating segments for reporting purposes: (i) Networking Platforms; (ii) Software and Software-Related Services; and (iii) Global Services. See Note 3 to our Condensed Consolidated Financial Statements included in Item 1 of Part I of this report.

### Quarter ended April 30, 2019 compared to the quarter ended April 30, 2018

As of the first quarter of fiscal 2019, we adopted ASC 606 using the modified retrospective method. See Notes 2 and 3 to our Condensed Consolidated Financial Statements included in Item 1 of Part I of this report for the impact of this adoption on our financial results.

### Revenue

During the second quarter of fiscal 2019, approximately 19.1% of our revenue was non-U.S. Dollar-denominated, including sales in Euros, Japanese Yen, Canadian Dollars, Brazilian Reais, British Pounds and Indian Rupee. During the second quarter of fiscal 2019, as compared to the second quarter of fiscal 2018, foreign exchange rates between these currencies and the U.S. Dollar fluctuated. Consequently, our revenue reported in U.S. Dollars slightly decreased by approximately \$19.8 million, or 2.2%, as compared to the second quarter of fiscal 2018, due to fluctuations in foreign currency. The table below (in thousands, except percentage data) sets forth the changes in our operating segment revenue for the periods indicated:

	Quarter Ended April 30,				Increase	
	2019	%*	2018	%*	(decrease)	%**
<b>Revenue:</b>						
<b>Networking Platforms</b>						
Converged Packet Optical	\$ 623,838	72.1	\$ 527,867	72.4	\$ 95,971	18.2
Packet Networking	73,138	8.5	63,815	8.7	9,323	14.6
Total Networking Platforms	696,976	80.6	591,682	81.1	105,294	17.8
<b>Software and Software-Related Services</b>						
Platform Software and Services	35,229	4.0	36,393	5.0	(1,164)	(3.2)
Blue Planet Automation Software and Services	12,473	1.4	2,352	0.3	10,121	430.3
Total Software and Software-Related Services	47,702	5.4	38,745	5.3	8,957	23.1
<b>Global Services</b>						
Maintenance Support and Training	68,788	8.0	60,904	8.3	7,884	12.9
Installation and Deployment	41,322	4.8	28,209	3.9	13,113	46.5
Consulting and Network Design	10,223	1.2	10,438	1.4	(215)	(2.1)
Total Global Services	120,333	14.0	99,551	13.6	20,782	20.9
Consolidated revenue	\$ 865,011	100.0	\$ 729,978	100.0	\$ 135,033	18.5

\* Denotes % of total revenue

\*\* Denotes % change from 2018 to 2019

- **Networking Platforms segment revenue** increased, reflecting product line sales increases of \$96.0 million of our Converged Packet Optical products and \$9.3 million of our Packet Networking products.
  - Converged Packet Optical sales primarily reflect sales increases of \$102.7 million of our 6500 Packet-Optical Platform and \$28.7 million of our Waveserver stackable interconnect system. These increases were partially

offset by a sales decrease of \$27.0 million of our 5410/5430 Reconfigurable Switching Systems. The sales increase from our 6500 Packet-Optical Platform is primarily due to increased sales to AT&T and other communications service providers, enterprise customers and Web-scale providers. Waveserver stackable interconnect system sales reflect increased sales to Web-scale providers, which represent a growing portion of our business as we continue to diversify.

- Packet Networking sales increased, primarily reflecting \$17.0 million in initial sales of our 6500 Packet Transport System, partially offset by sales decreases of \$3.5 million of our 8700 Packetwave Platform and \$2.9 million of our 3000 and 5000 families of service delivery and aggregation switches, primarily due to decreased sales to communications service providers.
- **Software and Software-Related Services segment revenue** increased, primarily reflecting a sales increase of \$10.1 million of our Blue Planet Automation Software and Services, partially offset by a sales decrease of \$1.2 million of our Platform Software and Services. The increase in our Blue Planet Automation Software and Services includes sales of \$2.0 million and \$3.9 million related to the Packet Design and DonRiver businesses acquired during fiscal 2018, respectively, and a \$2.4 million increase in sales of our Blue Planet management and orchestration (NFV MANO) software.
- **Global Services segment revenue** increased, primarily reflecting sales increases of \$13.1 million of our installation and deployment services and \$7.9 million of our maintenance support and training services.

Our operating segments engage in business and operations across four geographic regions: North America; Europe, Middle EMEA; Caribbean and Latin America (“CALA”); and APAC. Results for North America include only activities in the U.S. and Canada. 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, when considered by geographic distribution, can fluctuate significantly, and 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 increase in our CALA region for the fiscal quarter ended April 30, 2019 was primarily driven by increased sales in Brazil, Argentina and Chile. The decrease in our APAC region for the fiscal quarter ended April 30, 2019 was primarily driven by decreased sales in India, which had been a key contributor to our revenue growth in recent periods. This decrease was partially offset by increased sales in Japan and continued execution of our strategy to capture new market share with communications service providers in the region. The table below (in thousands, except percentage data) sets forth the changes in geographic distribution of revenue for the periods indicated:

	Quarter Ended April 30,				Increase	
	2019	%*	2018	%*	(decrease)	%**
North America	\$ 576,093	66.5	\$ 431,235	59.1	\$ 144,858	33.6
EMEA	114,993	13.3	121,747	16.7	(6,754)	(5.5)
CALA	39,399	4.6	25,080	3.4	14,319	57.1
APAC	134,526	15.6	151,916	20.8	(17,390)	(11.4)
Total	\$ 865,011	100.0	\$ 729,978	100.0	\$ 135,033	18.5

\* Denotes % of total revenue

\*\* Denotes % change from 2018 to 2019

- **North America revenue** primarily reflects increases of \$132.9 million within our Networking Platforms segment and \$11.3 million within our Global Services segment. The increase within our Networking Platforms segment primarily reflects product line sales increases of \$103.7 million of Converged Packet Optical products and \$29.2 million of Packet Networking products. Converged Packet Optical sales primarily reflects sales increases of \$83.0 million of our 6500 Packet-Optical Platform and \$27.0 million of our Waveserver stackable interconnect system. Our 6500 Packet-Optical Platform sales primarily reflect increased sales to AT&T and other communications service providers and enterprise customers, Waveserver stackable interconnect system sales reflect increased sales to Web-scale providers.
- **EMEA revenue** primarily reflects a decrease of \$11.6 million within our Networking Platforms segment partially offset by increases of \$3.0 million within our Software and Software-Related Services segment and \$1.8 million within our Global Services segment.
- **CALA revenue** primarily reflects increases of \$11.6 million within our Networking Platforms segment, \$1.6 million within our Global Services segment and \$1.1 million within our Software and Software-Related Services segment.

Networking Platforms segment sales largely reflect increased sales to communications service providers, Web-scale providers and submarine network operators.

- **APAC revenue** primarily reflects a decrease of \$27.6 million within our Networking Platforms segment partially offset by increases of \$6.1 million within our Global Services segment and \$4.1 million within our Software and Software-Related Services segment. Networking Platforms segment revenue primarily reflects a product line decrease of \$19.8 million in Packet Networking sales primarily due to a decrease of \$13.9 million in sales of our 3000 and 5000 families of service delivery and aggregation switches to communications service providers in India.

#### 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.

Services cost of goods sold consists primarily of direct and third-party 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. The majority of these costs relate to personnel, including employee and third-party contractor-related costs.

Our gross profit as a percentage of revenue, or “gross margin,” can fluctuate due to a number of factors, particularly when viewed on a quarterly basis. Our gross margin can fluctuate and be adversely impacted depending upon our revenue concentration within a particular segment, product line, geography, or customer, including our success in selling software in a particular period. Our gross margin remains highly dependent on our continued ability to drive product cost reductions relative to the price compression that we regularly encounter in our markets. Moreover, we are often required to compete with aggressive pricing and commercial terms and, to secure business with new and existing customers, we may agree to pricing or other unfavorable commercial terms that adversely affect our gross margin. When we have success in taking share and winning new business, it can result in additional pressure on gross margin from these pricing dynamics, particularly during the early stages of these network deployments. Early stages of new network builds also often include an increased concentration of lower margin “common” equipment sales and installation services, with our intent to improve margin as we sell channel cards, maintenance services, and other higher margin products to customers adding capacity or services to their networks. Gross margin and revenue can be impacted by technology-based price compression and the introduction or substitution of new platforms with improved price for performance as compared to existing solutions that may carry higher margins. Gross margin can also be impacted by changes in expense for excess and obsolete inventory and warranty obligations.

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:

	Quarter Ended April 30,				Increase	
	2019	%*	2018	%*	(decrease)	%**
Total revenue	\$ 865,011	100.0	\$ 729,978	100.0	\$ 135,033	18.5
Total cost of goods sold	490,334	56.7	436,671	59.8	53,663	12.3
Gross profit	\$ 374,677	43.3	\$ 293,307	40.2	\$ 81,370	27.7

\* Denotes % of total revenue

\*\* Denotes % change from 2018 to 2019

	Quarter Ended April 30,				Increase	
	2019	%*	2018	%*	(decrease)	%**
Product revenue	\$ 710,688	100.0	\$ 604,226	100.0	\$ 106,462	17.6
Product cost of goods sold	411,050	57.8	372,568	61.7	38,482	10.3
Product gross profit	\$ 299,638	42.2	\$ 231,658	38.3	\$ 67,980	29.3

\* Denotes % of product revenue

\*\* Denotes % change from 2018 to 2019

	Quarter Ended April 30,				Increase	
	2019	%*	2018	%*	(decrease)	%**
Service revenue	\$ 154,323	100.0	\$ 125,752	100.0	\$ 28,571	22.7
Service cost of goods sold	79,284	51.4	64,103	51.0	15,181	23.7
Service gross profit	\$ 75,039	48.6	\$ 61,649	49.0	\$ 13,390	21.7

\* Denotes % of services revenue

\*\* Denotes % change from 2018 to 2019

- **Gross profit as a percentage of revenue** reflects improved product gross profit as described below. In recent periods, we have encountered fluctuations or reductions in our gross margin as a result of our strategy to leverage our technology leadership and to aggressively capture additional market share and displace competitors, with the intent to improve margin in the long term as we sell channel cards, maintenance services, and other higher margin products to customers adding capacity or services to their networks. In the fiscal quarter ended April 30, 2019, our gross margin benefited from the success of this ongoing strategy and the resulting favorable mix of customers, network deployments and capacity additions during the period. Continued implementation of this strategy may require that we agree to aggressive pricing, commercial concessions and other unfavorable terms, or result in an unfavorable mix of revenues from early stage deployments during a particular period, which can adversely impact quarterly gross margin.
- **Gross profit on products as a percentage of product revenue** increased, primarily due to product cost reductions, a favorable mix of customers, network deployments and capacity additions, and improved manufacturing efficiencies, partially offset by market-based price compression we encountered during the period.
- **Gross profit on services as a percentage of services revenue** decreased slightly, primarily as a result of lower margins on our Blue Planet Automation software services.

#### Operating Expense

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, product testing, 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.
- *Amortization of intangible assets* primarily reflects the amortization of both purchased technology and the value of customer relationships derived from our acquisitions.

- *Significant asset impairments and restructuring costs* primarily reflect actions we have taken to better align our workforce, facilities, and operating costs with perceived market opportunities, business strategies, changes in market and business conditions and significant impairments of assets.
- *Acquisition and integration costs* consist of expenses for financial, legal and accounting advisors and severance and other employee-related costs associated with our acquisitions of Packet Design and DonRiver, including costs associated with a three-year earn-out arrangement related to the DonRiver acquisition.

During the second quarter of fiscal 2019, approximately 50.6% of our operating expense was non-U.S. Dollar-denominated, including expenses in Canadian Dollars, British Pounds, Indian Rupees and Euros. During the second quarter of fiscal 2019 as compared to the second quarter of fiscal 2018, foreign exchange rates between these currencies and the U.S. Dollar fluctuated. Consequently, our operating expense reported in U.S. Dollars slightly decreased by approximately \$7.1 million, or 2.4%, as compared to the second quarter of fiscal 2018, due to fluctuations in foreign currency, net of hedging. The table below (in thousands, except percentage data) sets forth the changes in operating expense for the periods indicated:

	Quarter Ended April 30,				Increase	
	2019	%*	2018	%*	(decrease)	%**
Research and development	\$ 137,969	15.9	\$ 116,924	16.0	\$ 21,045	18.0
Selling and marketing	103,502	12.0	97,359	13.3	6,143	6.3
General and administrative	42,154	4.9	38,976	5.3	3,178	8.2
Amortization of intangible assets	5,529	0.6	3,623	0.5	1,906	52.6
Significant asset impairments and restructuring costs	4,068	0.5	4,359	0.6	(291)	(6.7)
Acquisition and integration costs	1,135	0.1	—	—	1,135	100.0
<b>Total operating expenses</b>	<b>\$ 294,357</b>	<b>34.0</b>	<b>\$ 261,241</b>	<b>35.7</b>	<b>\$ 33,116</b>	<b>12.7</b>

\* Denotes % of total revenue

\*\* Denotes % change from 2018 to 2019

- **Research and development expense** benefited from \$3.4 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 and Indian Rupee. Including the effect of foreign exchange rates, net of hedging, research and development expenses increased by \$21.0 million. This increase primarily reflects increases of \$5.9 million in professional services, \$3.2 million in employee and compensation costs, \$3.0 million in prototype expense, \$1.5 million in technology and related expenses and \$1.3 million for facility and information technology costs. Also contributing to the increase was a reduced benefit of \$5.1 million for the ENCQOR grant reimbursement, as the amount reflected in operating expense for the second quarter of fiscal 2018 represents amounts incurred from the February 20, 2017 grant inception date through the end of such period. For more information on the ENCQOR grant, see Note 19 to our Condensed Consolidated Financial Statements included in Item 1 of Part I of this report.
- **Selling and marketing expense** benefited from \$3.0 million as a result of foreign exchange rates primarily due to a stronger U.S. Dollar in relation to the Euro and Canadian Dollar. Including the effect of foreign exchange rates, sales and marketing expenses increased by \$6.1 million, primarily reflecting increases of \$3.9 million in employee and compensation costs and \$1.5 million in facilities and information technology costs.
- **General and administrative expense** increased by \$3.2 million, primarily reflecting increases of \$1.3 million in employee and compensation costs, \$1.2 million in bad debt expense, and \$1.0 million in facilities and information technology costs.
- **Amortization of intangible assets** increased due to additional intangibles acquired in connection with our acquisitions of Packet Design and DonRiver during fiscal 2018.
- **Significant asset impairments and restructuring costs** reflect global workforce reductions as part of a business optimization strategy to improve gross margin, constrain operating expense, and redesign certain business processes and unfavorable lease commitments for certain facility locations in the United States and India where we have vacated unused space.

- **Acquisition and integration costs** reflect financial, legal and accounting advisors and severance and other employment-related costs related to our acquisitions of Packet Design and DonRiver.

#### Other items

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

	Quarter Ended April 30,				Increase	
	2019	%*	2018	%*	(decrease)	%**
Interest and other income (loss), net	\$ (244)	0.0	\$ 1,296	0.2	\$ (1,540)	(118.8)
Interest expense	\$ 9,471	1.1	\$ 13,031	1.8	\$ (3,560)	(27.3)
Provision for income taxes	\$ 17,867	2.1	\$ 6,475	0.9	\$ 11,392	175.9

\* Denotes % of total revenue

\*\* Denotes % change from 2018 to 2019

- **Interest and other income, net** primarily reflects the impact of foreign exchange rates on assets and liabilities denominated in a currency other than the relevant functional currency, net of hedging activity.
- **Interest expense** decreased, primarily due to a reduction in our aggregate outstanding debt during the fourth quarter of fiscal 2018.
- **Provision for income taxes** increased, due to higher earnings for the second quarter of fiscal 2019. The effective tax rate for the second quarter of 2019 was lower compared to the second quarter of fiscal 2018, primarily due to a lower statutory federal income tax rate in 2019.

#### Six months ended April 30, 2018 compared to the six months ended April 30, 2019

##### Revenue

During the first six months of fiscal 2019, approximately 18.5% of our revenue was non-U.S. Dollar-denominated, including sales in Japanese Yen, Canadian Dollars, Indian Rupees, Euro, British Pounds and Brazilian Reais. During the first six months of fiscal 2019, as compared to the first six months of fiscal 2018, foreign exchange rates between these currencies and the U.S. Dollar fluctuated. Consequently, our revenue reported in U.S. Dollars was slightly reduced by approximately \$29.0 million or 1.7%. The table below (in thousands, except percentage data) sets forth the changes in our operating segment revenue for the periods indicated:

	Six Months Ended April 30,				Increase	
	2019	%*	2018	%*	(decrease)	%**
<b>Revenue:</b>						
<b>Networking Platforms</b>						
Converged Packet Optical	\$ 1,172,835	71.4	\$ 955,297	69.4	\$ 217,538	22.8
Packet Networking	144,707	8.8	132,418	9.6	12,289	9.3
Total Networking Platforms	1,317,542	80.2	1,087,715	79.0	229,827	21.1
<b>Software and Software-Related Services</b>						
Platform Software and Services	76,827	4.7	80,529	5.9	(3,702)	(4.6)
Blue Planet Automation Software and Services	27,447	1.6	11,703	0.8	15,744	134.5
Total Software and Software-Related Services	104,274	6.3	92,232	6.7	12,042	13.1
<b>Global Services</b>						
Maintenance Support and Training	130,065	7.9	116,862	8.5	13,203	11.3
Installation and Deployment	71,944	4.4	58,225	4.2	13,719	23.6
Consulting and Network Design	19,713	1.2	21,079	1.6	(1,366)	(6.5)
Total Global Services	221,722	13.5	196,166	14.3	25,556	13.0
Consolidated revenue	\$ 1,643,538	100.0	\$ 1,376,113	100.0	\$ 267,425	19.4

\* Denotes % of total revenue

\*\* Denotes % change from 2018 to 2019

- **Networking Platforms segment revenue** increased, primarily reflecting product line sales increases of \$217.5 million of our Converged Packet Optical products and \$12.3 million of our Packet Networking products.
  - Converged Packet Optical sales primarily reflect sales increases of \$156.3 million of our 6500 Packet-Optical Platform and \$108.1 million of our Waveserver stackable interconnect system. These increases were partially offset by a sales decrease of \$39.6 million of our 5410/5430 Reconfigurable Switching Systems. The sales increase of our 6500 Packet-Optical Platform is primarily due to increased sales to AT&T and other communications service providers, enterprise customers and Web-scale providers. Waveserver stackable interconnect system sales primarily reflect increased sales to Web-scale providers, which represent a growing portion of our business as we continue to diversify.
  - Packet Networking sales increased, primarily reflecting \$34.9 million in initial sales of our 6500 Packet Transport System to communications service providers, partially offset by a sales decrease of \$18.0 million of our 3000 and 5000 families of service delivery and aggregation switches, primarily due to decreased sales to communications service providers in India.
- **Software and Software-Related Services segment revenue** increased, primarily reflecting a sales increase of \$15.7 million of our Blue Planet Automation Software and Services, partially offset by a sales decrease of \$3.7 million of our Platform Software and Services. The increase in our Blue Planet Automation Software and Services includes sales of \$6.8 million and \$6.9 million related to the Packet Design and DonRiver businesses acquired during fiscal 2018, respectively.
- **Global Services segment revenue** increased, primarily reflecting sales increases of \$13.7 million of our deployment and installation services and \$13.2 million of our maintenance support and training services.

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 and 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 increase in our CALA region for the six months ended April 30, 2019 was primarily driven by increased sales in Brazil, Chile and Argentina. The increase in our APAC region for the six months ended April 30, 2019 was primarily driven by increased sales in Japan, partially offset by decreased sales in India and Australia. The table below (in thousands, except percentage data) sets forth the changes in geographic distribution of revenue for the periods indicated:

	Six Months Ended April 30,				Increase	
	2019	%*	2018	%*	(decrease)	%**
North America	\$ 1,061,599	64.5	\$ 834,144	60.6	\$ 227,455	27.3
EMEA	244,183	14.9	219,581	16.0	24,602	11.2
CALA	70,374	4.3	59,643	4.3	10,731	18.0
APAC	267,382	16.3	262,745	19.1	4,637	1.8
Total	\$ 1,643,538	100.0	\$ 1,376,113	100.0	\$ 267,425	19.4

\* Denotes % of total revenue

\*\* Denotes % change from 2018 to 2019

- **North America revenue** primarily reflects increases of \$217.3 million within our Networking Platforms segment and \$11.6 million within our Global Services segment. This increase primarily reflects product line sales increases of \$177.6 million of Converged Packet Optical products and \$39.7 million of Packet Networking products. Converged Packet Optical sales primarily reflect sales increases of \$109.2 million of our 6500 Packet-Optical Platform and \$75.4 million of our Waveserver stackable interconnect system. 6500 Packet-Optical Platform sales reflect increased sales to AT&T and other communications service providers and enterprise customers. Waveserver stackable interconnect system sales reflect increased sales to Web-scale providers.
- **EMEA revenue** primarily reflects increases of \$14.2 million within our Networking Platforms segment, \$6.3 million within our Global Services segment and \$4.1 million within our Software and Software-Related Services segment. These increases largely reflect sales to Web-scale providers.
- **CALA revenue** primarily reflects increases of \$9.4 million within our Networking Platforms segment and \$1.9 million within our Software and Software-Related Services segment. Networking Platforms segment sales largely reflect increased sales to Web-scale providers and submarine network operators.
- **APAC revenue** primarily reflects increases of \$8.1 million within our Global Services segment and \$7.5 million within our Software and Software-Related Services segment partially offset by a decrease of \$11.0 million within our Networking Platforms segment.

#### 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:

	Six Months Ended April 30,				Increase	
	2019	%*	2018	%*	(decrease)	%**
Total revenue	\$ 1,643,538	100.0	\$ 1,376,113	100.0	\$ 267,425	19.4
Total cost of goods sold	945,520	57.5	811,041	58.9	134,479	16.6
Gross profit	\$ 698,018	42.5	\$ 565,072	41.1	\$ 132,946	23.5

\* Denotes % of total revenue

\*\* Denotes % change from 2018 to 2019

	Six Months Ended April 30,				Increase	
	2019	%*	2018	%*	(decrease)	%**
Product revenue	\$ 1,353,220	100.0	\$ 1,129,835	100.0	\$ 223,385	19.8
Product cost of goods sold	791,492	58.5	685,688	60.7	105,804	15.4
Product gross profit	\$ 561,728	41.5	\$ 444,147	39.3	\$ 117,581	26.5

\* Denotes % of product revenue

\*\* Denotes % change from 2018 to 2019

	Six Months Ended April 30,				Increase	
	2019	%*	2018	%*	(decrease)	%**
Service revenue	\$ 290,318	100.0	\$ 246,278	100.0	\$ 44,040	17.9
Service cost of goods sold	154,028	53.1	125,353	50.9	28,675	22.9
Service gross profit	\$ 136,290	46.9	\$ 120,925	49.1	\$ 15,365	12.7

\* Denotes % of services revenue

\*\* Denotes % change from 2018 to 2019

- **Gross profit as a percentage of revenue** reflects improved product gross profit partially offset by lower services gross profit as described below.
- **Gross profit on products as a percentage of product revenue** increased, primarily due to product cost reductions and improved manufacturing efficiencies. This benefit was partially offset by an unfavorable mix of customers and early stage international network deployments, and market-based price compression we encountered during the period.
- **Gross profit on services as a percentage of services revenue** decreased, primarily as a result of lower margins on our Blue Planet Automation software services and the impact of early stages of international network deployments.

#### Operating Expense

During the first six months of fiscal 2019, approximately 51.2% of our operating expense was non-U.S. Dollar-denominated, including Canadian Dollars, British Pounds, Euros, Indian Rupees and Brazilian Reals. Consequently, our operating expense reported in U.S. Dollars slightly decreased by approximately \$13.4 million, or 2.3%, during the first six months of fiscal 2019 as compared to the first six months fiscal 2018, due to fluctuations in foreign currency, net of hedging. The table below (in thousands, except percentage data) sets forth the changes in operating expense for the periods indicated:

	Six Months Ended April 30,				Increase	
	2019	%*	2018	%*	(decrease)	%**
Research and development	\$ 266,602	16.2	\$ 235,448	17.1	\$ 31,154	13.2
Selling and marketing	201,615	12.3	185,874	13.5	15,741	8.5
General and administrative	81,397	5.0	77,382	5.6	4,015	5.2
Amortization of intangible assets	11,057	0.7	7,246	0.5	3,811	52.6
Significant asset impairments and restructuring costs	6,341	0.4	10,320	0.7	(3,979)	(38.6)
Acquisition and integration costs	2,743	0.2	—	—	2,743	—
Total operating expenses	\$ 569,755	34.8	\$ 516,270	37.4	\$ 53,485	10.4

\* Denotes % of total revenue

\*\* Denotes % change from 2018 to 2019

- **Research and development expense** benefited from \$7.1 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 and Indian Rupee. Including the effect of foreign exchange rates, net of hedging, research and development expenses increased by \$31.2 million. This increase primarily reflects increases of \$11.1 million in professional services, \$6.9 million in employee and compensation

costs, \$4.0 million in prototype expense, \$1.8 million in technology and related costs and \$1.6 million in facility and information technology costs. This increase also reflects a reduced benefit of \$3.2 million for the ENCQOR grant reimbursement, as described above.

- **Selling and marketing expense** benefited from \$4.9 million as a result of foreign exchange rates, primarily due to a stronger U.S. Dollar in relation to the Euro and Canadian Dollar. Including the effect of foreign exchange rates, sales and marketing expenses increased by \$15.7 million, primarily reflecting increases of \$10.6 million in employee and compensation costs, \$2.4 million in facilities and information technology costs and \$1.1 million in travel and entertainment costs.
- **General and administrative expense** benefited from \$1.4 million as a result of foreign exchange rates, primarily due to a stronger U.S. Dollar in relation to the Euro, Brazilian Real, Canadian Dollar and India Rupee. Including the effect of foreign exchange rates, general and administrative expenses increased by \$4.0 million, primarily reflecting increases of \$2.6 million in employee and compensation costs, \$1.4 million in bad debt expense and \$1.4 million for facilities and information technology costs.
- **Amortization of intangible assets** increased due to additional intangibles acquired in connection with our acquisitions of Packet Design and DonRiver.
- **Significant asset impairments and restructuring costs** reflect global workforce reductions as part of a business optimization strategy to improve gross margin, constrain operating expense, and redesign certain business processes and unfavorable lease commitments for a few of our facility locations in the United States and India where we have vacated unused space.
- **Acquisition and integration costs** reflect financial, legal and accounting advisors and severance and other employment-related costs related to our acquisitions of Packet Design and DonRiver.

#### Other items

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

	Six Months Ended April 30,				Increase	
	2019	%*	2018	%*	(decrease)	%**
Interest and other income (loss), net	\$ 4,009	0.2	\$ 2,871	0.2	\$ 1,138	39.6
Interest expense	\$ 18,912	1.2	\$ 26,765	1.9	\$ (7,853)	(29.3)
Provision for income taxes	\$ 27,006	1.6	\$ 484,415	35.2	\$ (457,409)	(94.4)

\* Denotes % of total revenue

\*\* Denotes % change from 2018 to 2019

- **Interest and other income (loss), net** primarily reflects a \$1.7 million gain in interest income due to higher interest rates on our investments during fiscal 2019.
- **Interest expense** decreased, primarily due to a reduction in our aggregate outstanding debt during the fourth quarter of fiscal 2018.
- **Provision for income taxes** decreased as the first six months of fiscal 2018 reflects the impact of the Tax Act, including \$431.3 million in expense for the remeasurement of our net deferred tax assets and a \$45.6 million charge related to a transition tax on accumulated historical foreign earnings and their deemed repatriation to the U.S.

#### Segment Profit

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

	Quarter Ended April 30,		Increase (decrease)	%*
	2019	2018		
<b>Segment profit:</b>				
Networking Platforms	\$ 175,191	\$ 126,823	\$ 48,368	38.1
Software and Software-Related Services	\$ 6,536	\$ 8,276	\$ (1,740)	(21.0)
Global Services	\$ 54,981	\$ 41,284	\$ 13,697	33.2

\* Denotes % change from 2018 to 2019

- **Networking Platforms segment profit** increased, primarily due to higher sales volume and higher gross margin as described above, partially offset by higher research and development costs.
- **Software and Software-Related Services segment profit** decreased, primarily due to reduced gross margin on software-related services, as described above, and higher research and development costs, partially offset by higher sales volume.
- **Global Services segment profit** increased, primarily due to higher sales volume and improved gross margin.

	Six Months Ended April 30,		Increase (decrease)	%*
	2019	2018		
<b>Segment profit:</b>				
Networking Platforms	\$ 311,782	\$ 215,392	\$ 96,390	44.8
Software and Software-Related Services	\$ 24,952	\$ 31,911	\$ (6,959)	(21.8)
Global Services	\$ 94,682	\$ 82,321	\$ 12,361	15.0

\* Denotes % change from 2018 to 2019

- **Networking Platforms segment profit** increased, primarily due to higher sales volume and higher gross margin as described above, partially offset by higher research and development costs.
- **Software and Software-Related Services segment profit** decreased, primarily due to reduced gross margin on software-related services partially offset by higher sales volume as described above.
- **Global Services segment profit** increased, primarily due to higher sales volume as described above.

## Liquidity and Capital Resources

For the six months ended April 30, 2019, we generated \$90.0 million of cash from operating activities, as our net income (adjusted for non-cash charges) of \$212.0 million exceeded our working capital requirements of \$122.0 million. The increase in working capital was primarily driven by inventory increases of \$109.6 million. For additional details on our cash provided by operating activities, see the discussion below entitled “Cash Provided By Operating Activities.”

Despite our cash generated from operations, cash, cash equivalents and investments decreased by \$134.9 million during the first six months of fiscal 2019. The decrease in cash primarily reflects (i) cash used for the payment of the debt conversion liability associated with our New Notes of \$111.3 million on November 15, 2018, (ii) cash used to fund our investing activities for capital expenditures totaling \$35.3 million, (iii) cash used for stock repurchase under our stock repurchase program of \$65.1 million, (iv) stock repurchased upon vesting of our stock unit awards to employees relating to tax withholding of \$15.9 million and (v) cash used for payments on our 2025 term loan of \$3.5 million. Proceeds from the issuance of equity under our employee stock purchase plans provided \$11.2 million in cash during the six months ended April 30, 2019.

	April 30, 2019	October 31, 2018	Increase (decrease)
Cash and cash equivalents	\$ 699,148	\$ 745,423	\$ (46,275)
Short-term investments in marketable debt securities	119,327	148,981	(29,654)
Long-term investments in marketable debt securities	—	58,970	(58,970)
Total cash and cash equivalents and investments in marketable debt securities	<u>\$ 818,475</u>	<u>\$ 953,374</u>	<u>\$ (134,899)</u>

*Principal Sources of Liquidity.* Our principal sources of liquidity on hand include our cash, cash equivalents and investments, which as of April 30, 2019 totaled \$818.5 million, as well as the senior secured asset-backed revolving credit facility to which we and certain of our subsidiaries are parties (the “ABL Credit Facility”). The ABL Credit Facility provides for a total commitment of \$250 million with a maturity date of December 31, 2020. We principally use the ABL Credit Facility to support the issuance of letters of credit that arise in the ordinary course of our business and thereby to reduce our use of cash required to collateralize these instruments. As of April 30, 2019, letters of credit totaling \$75.2 million were collateralized by our ABL Credit Facility. There were no borrowings outstanding under the ABL Credit Facility as of April 30, 2019.

*Foreign Liquidity.* The amount of cash, cash equivalents, and short-term investments held by our foreign subsidiaries was \$61.6 million as of April 30, 2019. We intend to reinvest indefinitely our foreign earnings. If we were to repatriate these accumulated historical foreign earnings, the estimated amount of unrecognized deferred income tax liability related to foreign withholding taxes would be approximately \$27.0 million.

*Stock Repurchase Authorization.* On December 13, 2018, Ciena announced that its Board of Directors authorized a program to repurchase up to \$500 million of its common stock, which replaced in its entirety the previous stock repurchase program authorized in fiscal 2018. The amount and timing of repurchases are subject to a variety of factors including liquidity, cash flow, stock price and general business and market conditions. The program may be modified, suspended, or discontinued at any time.

*Liquidity Position.* We regularly evaluate our liquidity position, debt obligations, and anticipated cash needs to fund our operating or investment plans and may consider capital raising and other market opportunities that may be available to us. We regularly evaluate alternatives to manage our capital structure and reduce our debt. Based on past performance and current expectations, we believe that cash from operations, cash, cash equivalents, investments, and other sources of liquidity, including our ABL Credit Facility, will satisfy our working capital needs, capital expenditures, and other liquidity requirements associated with our operations through at least the next 12 months.

#### *Cash Provided By Operating Activities*

The following sections set forth the components of our \$90.0 million of cash provided by operating activities during the first six months of fiscal 2019:

#### *Net income (adjusted for non-cash charges)*

The following table sets forth our net income (adjusted for non-cash charges) during the period (in thousands):

	Six months ended April 30, 2019
Net income	\$ 86,354
Adjustments for non-cash charges:	
Depreciation of equipment, building, furniture and fixtures, and amortization of leasehold improvements	42,995
Share-based compensation costs	29,362
Amortization of intangible assets	17,778
Deferred taxes	18,293
Provision for inventory excess and obsolescence	10,245
Provision for warranty	9,276
Other	(2,259)
Net income (adjusted for non-cash charges)	<u>\$ 212,044</u>

#### *Working Capital*

We used \$122.0 million of cash for working capital during the period. The following table sets forth the major components of the cash used in working capital (in thousands):

	Six months ended April 30, 2019
Cash provided by accounts receivable	\$ 43,174
Cash used in inventories	(109,554)
Cash used in prepaid expenses and other	(33,241)
Cash used in accounts payable, accruals and other obligations	(26,971)
Cash provided by deferred revenue	4,560
Total cash used for working capital	<u>\$ (122,032)</u>

As compared to the end of fiscal 2018:

- The \$43.2 million of cash provided by accounts receivable during the first six months of fiscal 2019 reflects increased cash collections;
- The \$109.6 million of cash used in inventory during the first six months of fiscal 2019 primarily reflects increases in finished goods to meet customer delivery schedules;
- The \$33.2 million of cash used in prepaid expense and other during the first six months of fiscal 2019 primarily reflects increases in contract assets for unbilled accounts receivable due to changes in recognizing revenue for installation services and certain product sales, partially offset by lower non-customer receivables;
- The \$27.0 million of cash used in accounts payable, accruals and other obligations during the first six months of fiscal 2019 primarily reflects the timing of bonus payments to employees under our annual cash incentive compensation plan and employee payout of accrued leave in North America due to a new paid time off policy, which was offset by increased inventory purchases during fiscal 2019; and
- The \$4.6 million of cash provided by deferred revenue during the first six months of fiscal 2019 represents an increase in advanced payments received from customers prior to revenue recognition.

Our days sales outstanding (“DSOs”) for the first six months of fiscal 2019 were 91 days, and our inventory turns for the first six months of fiscal 2019 were 4.4. The calculation of DSOs includes accounts receivables and contract assets for unbilled receivables included in prepaid expenses and other.

#### *Cash Paid for Interest*

The following table sets forth the cash paid for interest during the period (in thousands):

	Six months ended April 30, 2019
Term Loan due September 28, 2025 <sup>(1)</sup>	\$ 15,718
Interest rate swaps <sup>(2)</sup>	949
ABL Credit Facility <sup>(3)</sup>	737
Capital leases	2,574
Cash paid during period	<u>\$ 19,978</u>

- (1) Interest on the 2025 Term Loan is payable periodically based on the interest period selected for borrowing. The 2025 Term Loan bears interest at LIBOR plus a spread of 2.00% subject to a minimum LIBOR rate of 0.00%. At the end of the second quarter of fiscal 2019, the interest rate on the 2025 Term Loan was 4.50%.
- (2) The interest rate swaps fix the LIBOR rate for \$350 million of the 2025 Term Loan at 2.957% through September 2023.
- (3) During the first six months of fiscal 2019, we utilized the ABL Credit Facility to collateralize certain standby letters of credit and paid \$0.7 million in commitment fees, interest expense and other administrative charges relating to the ABL Credit Facility.

### **Contractual Obligations**

There have been no material changes to our contractual obligations since October 31, 2018. For a summary of our contractual obligations, see Item 7 of Part II of our annual report on Form 10-K for the fiscal year ended October 31, 2018.

### **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 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 revenue recognition, 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.

Our critical accounting policies and estimates have not changed materially since October 31, 2018, except for items listed below. For a discussion of our critical accounting policies and estimates, see Item 7 of Part II of our annual report on Form 10-K for the fiscal year ended October 31, 2018 (Management's Discussion and Analysis of Financial Condition and Results of Operations).

### **Revenue Recognition**

For changes to our revenue recognition policies and estimates due to ASC 606, see Notes 2 and 3 to our Condensed Consolidated Financial Statements included in Item 1 of Part I of this report.

### **Effects of Recent Accounting Pronouncements**

See Note 2 to our Condensed Consolidated Financial Statements included in Item 1 of Part I of this report for information relating to our discussion of the effects of recent accounting pronouncements.

### **Item 3. Quantitative and Qualitative Disclosures About Market Risk**

Our exposure to market risk has not changed materially since October 31, 2018. For a discussion of quantitative and qualitative disclosures about market risk, see Item 7A of Part II of our annual report on Form 10-K for the fiscal year ended October 31, 2018 (Quantitative and Qualitative Disclosures About Market Risk).

### **Item 4. Controls and Procedures**

#### **Disclosure Controls and Procedures**

As of the end of the period covered by this report, we carried out an evaluation under the supervision and with the participation of management, including our Chief Executive Officer and Chief Financial Officer, of our disclosure controls and procedures (as defined in Rules 13a-15(e) and 15d-15(e) under the Securities Exchange Act of 1934, as amended). Based upon this evaluation, our Chief Executive Officer and Chief Financial Officer concluded that our disclosure controls and procedures were effective as of the end of the period covered by this report.

#### **Changes in Internal Control over Financial Reporting**

There was no change in our internal control over financial reporting (as defined in Rules 13a-15(f) and 15d-15(f) under the Securities Exchange Act of 1934, as amended) during the most recently completed fiscal quarter that has materially affected, or is reasonably likely to materially affect, our internal control over financial reporting.

## **PART II — OTHER INFORMATION**

### **Item 1. Legal Proceedings**

The information set forth under the headings “Litigation” and “Internal Investigation” in Note 19, Commitments and Contingencies, to our Condensed Consolidated Financial Statements included in Item 1 of Part I of this report, is incorporated herein by reference.

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

There has been no material change to our Risk Factors from those presented in our annual report on Form 10-K for the year fiscal year ended October 31, 2018, other than as set forth below. Investing in our securities involves a high degree of risk. Before investing in our securities, you should consider carefully the information contained in this report and in our annual report on Form 10-K for the fiscal year ended October 31, 2018, including the risk factors identified in Item 1A of Part I thereof (Risk Factors). This report contains forward-looking statements that involve risks and uncertainties. See “Cautionary Note Regarding Forward-Looking Statements” in “Management’s Discussion and Analysis of Financial Conditions and Results of Operations” above. Our actual results could differ materially from those contained in the forward-looking statements. Any of the risks discussed in our annual report on Form 10-K for the fiscal year ended October 31, 2018, in this report, in other reports we file with the SEC, and other risks we have not anticipated or discussed, could have a material adverse impact on our business, financial condition or results of operations.

#### **The potential effects of recently announced tariffs on Chinese products by the United States government are uncertain.**

We maintain a global sourcing strategy and depend on a diverse set of third-party suppliers in international markets that comprise our supply chain. We rely on these third parties for activities relating to product design, development and support, and in the sourcing of products, components, subcomponents and related raw materials. Our products include optical and electronic components for which reliable, high-volume supply is often available only from sole or limited sources. The loss of a source of supply, or lack of sufficient availability of key components or materials, could require that we locate an alternate source or redesign our products, either of which could result in business interruption and increased costs and could negatively affect our product gross margin and results of operations.

As a result of our global sourcing strategy, our supply chain includes certain direct and indirect suppliers based in China who supply goods to us, our manufacturers and our third party suppliers. Recently, there have been a number of significant geopolitical events, including trade tensions and regulatory actions, involving the governments of the United States and China. The United States government has raised tariffs on numerous Chinese goods and threatened to tax a wide range of imports of Chinese products. The U.S. government has also put in place prohibitions on U.S. companies doing business with certain Chinese companies. These actions have resulted in escalating tensions between the United States and China and introduce a



risk that the Chinese government may take similar steps to retaliate against United States industries or companies. At this time, it remains unclear what additional actions, if any, will be taken by the governments of the U.S. or China with respect to such trade and tariff matters. There can be no assurance that any future action or regulation would not adversely affect our business, operations and financial results.

**Our reliance upon certain third-party component suppliers exposes us to certain risks relating to their business in China that, in turn, could disrupt our business or limit our sales.**

In May 2019, the U.S. Department of Commerce amended the Export Administration Regulations by adding Huawei Technologies Co., Ltd. and a number of its affiliates (“Huawei”) to the “Entity List” for actions contrary to the national security and foreign policy interests of the United States, which amendment imposes significant new restrictions on export, reexport and transfer of U.S. regulated technologies and products to Huawei. Several of our third party component suppliers, including certain sole and limited source suppliers, sell products to Huawei and, in some cases, Huawei is a significant customer for such suppliers. Any continued restriction on our suppliers’ ability to make sales to Huawei may adversely impact their businesses. Such industry, market and regulatory disruptions affecting these suppliers could, in turn, expose our business to loss or lack of supply, or discontinuation of components that could result in lost revenue, additional product costs, increased lead times and deployment delays that could harm our business and customer relationships. 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. At this time, there can be no assurance regarding the scope or duration of the restrictions imposed on Huawei and any future impact on our suppliers.

**We rely upon third-party contract manufacturers and our business and results of operations may be adversely affected by risks associated with their businesses, financial condition and the geographies in which they operate.**

We rely upon third-party contract manufacturers with facilities in Canada, Mexico, Thailand and the United States to perform a substantial portion of our supply chain activities, including component sourcing, manufacturing, product testing and quality, and fulfillment and logistics relating to the distribution and support 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 associated with the locations or countries where our products are manufactured, including potential manufacturing disruptions caused by social, geopolitical or environmental factors;
- changes in U.S. law or policy governing foreign trade, manufacturing, development and investment in the countries where we currently manufacture our products, including the World Trade Organization Information Technology Agreement or other free trade agreements;
- limited warranties provided to us; and
- potential misappropriation of our intellectual property.

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 may 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.

A substantial portion of our products are manufactured and distributed by third-party contract manufacturers in Mexico. In recent months, the United States has generally indicated a willingness to revise, renegotiate, or terminate various multilateral trade agreements and to impose new taxes on certain goods imported into the U.S. For example, the United States has threatened to undertake a number of actions relating to trade with Mexico, including the closure of the border and the imposition of escalating tariffs on goods imported into the U.S. from Mexico. If adopted, such actions could adversely impact our business and operations, and may make our products less competitive in the United States and other markets. At this time, it remains unclear what additional actions, if any, will be taken by the U.S. government with respect to such trade agreements, tax policy related to international commerce, or the imposition of tariffs on goods imported into the U.S. There can be no assurance that any future executive or legislative action in the United States relating to tax policy and trade regulation would not adversely affect our business, operations and financial results.

**Item 2. Unregistered Sales of Equity Securities and Use of Proceeds****Issuer Purchases of Equity Securities**

The following table provides a summary of repurchases of our common stock during the second quarter of fiscal 2019:

<b>Period</b>	<b>Total Number of Shares Purchased (1)</b>	<b>Average Price Paid Per Share</b>	<b>Total Number of Shares Purchased as Part of Publicly Announced Plans or Programs (1)</b>	<b>Approximate Dollar Value of Shares that May Yet Be Purchased Under the Plans or Programs (in Thousands)</b>
February 1, 2019 to February 28, 2019	338,610	\$ 40.42	338,610	\$ 465,152
March 1, 2019 to March 31, 2019	370,357	\$ 38.90	370,357	\$ 450,745
April 1, 2019 to April 30, 2019	451,661	\$ 38.28	451,661	\$ 433,456
	<u>1,160,628</u>	<u>\$ 39.10</u>	<u>1,160,628</u>	

(1) On December 13, 2018, Ciena announced that its Board of Directors authorized a program to repurchase up to \$500 million of its common stock, which replaced in its entirety the previous stock repurchase program authorized in fiscal 2018. The amount and timing of repurchases are subject to a variety of factors including liquidity, cash flow, stock price and general business and market conditions. The program may be modified, suspended, or discontinued at any time.

**Item 3. Defaults Upon Senior Securities**

Not applicable.

**Item 4. Mine Safety Disclosures**

Not applicable.

**Item 5. Other Information**

Not applicable.

**Item 6. Exhibits**

- 10.1 [Joinder Agreement in U.S. Guaranty, U.S. Security Agreement and U.S. Pledge Agreement, dated as of April 19, 2019 by Blue Planet Software, Inc. and delivered to Deutsche Bank AG New York Branch, as Administrative Agent and as Collateral Agent, for the benefit of the Secured Lenders ++](#)
- 10.2 [Joinder Agreement in U.S. Guaranty, U.S. Security Agreement and U.S. Pledge Agreement, dated as of April 19, 2019 by Ciena Communications International, LLC and delivered to Deutsche Bank AG New York Branch, as Administrative Agent and as Collateral Agent, for the benefit of the Secured Lenders ++](#)
- 10.3 [Guaranty Supplement dated as of April 19, 2019, by Ciena Communications International, LLC, in favor of Bank of America, N.A., as Administrative Agent ++](#)
- 10.4 [Guaranty Supplement dated as of April 19, 2019, by Blue Planet Software, Inc., in favor of Bank of America, N.A., as Administrative Agent ++](#)
- 31.1 [Certification of Chief Executive Officer Pursuant to Rule 13a-14\(a\) under the Securities Exchange Act of 1934 as Adopted Pursuant to Section 302 of the Sarbanes-Oxley Act of 2002](#)
- 31.2 [Certification of Chief Financial Officer Pursuant to Rule 13a-14\(a\) under the Securities Exchange Act of 1934 as Adopted Pursuant to Section 302 of the Sarbanes-Oxley Act of 2002](#)
- 32.1 [Certification of Chief Executive Officer Pursuant to 18 U.S.C. Section 1350 as Adopted Pursuant to Section 906 of the Sarbanes-Oxley Act of 2002](#)
- 32.2 [Certification of Chief Financial Officer Pursuant to 18 U.S.C. Section 1350 as Adopted Pursuant to Section 906 of the Sarbanes-Oxley Act of 2002](#)
- 101.INS XBRL Instance Document
- 101.SCH XBRL Taxonomy Extension Schema Document
- 101.CAL XBRL Taxonomy Extension Calculation Linkbase Document
- 101.DEF XBRL Taxonomy Extension Definition Linkbase Document
- 101.LAB XBRL Taxonomy Extension Label Linkbase Document
- 101.PRE XBRL Taxonomy Extension Presentation Linkbase Document

++ Representations and warranties included in these agreements, as amended, were made by the parties to one another in connection with a negotiated transaction. These representations and warranties were made as of specific dates, only for purposes of these agreements and for the benefit of the parties thereto. These representations and warranties were subject to important exceptions and limitations agreed upon by the parties, including being qualified by confidential disclosures, made for the purposes of allocating contractual risk between the parties rather than establishing these matters as facts. These agreements are filed with this report only to provide investors with information regarding its terms and conditions, and not to provide any other factual information regarding Ciena or any other party thereto. Accordingly, investors should not rely on the representations and warranties contained in these agreements or any description thereof as characterizations of the actual state of facts or condition of any party, its subsidiaries or affiliates. The information in these agreements should be considered together with Ciena's public reports filed with the SEC.

**SIGNATURES**

Pursuant to the requirements of the Securities Exchange Act of 1934, the Registrant has duly caused this report to be signed on its behalf by the undersigned thereunto duly authorized.

Ciena Corporation

Date: June 12, 2019

By: /s/ Gary B. Smith

Gary B. Smith

President, Chief Executive Officer  
and Director  
(Duly Authorized Officer)

Date: June 12, 2019

By: /s/ James E. Moylan, Jr.

James E. Moylan, Jr.

Senior Vice President, Finance and  
Chief Financial Officer  
(Principal Financial Officer)

## JOINDER AGREEMENT

THIS JOINDER IN U.S. GUARANTY, U.S. SECURITY AGREEMENT and U.S. PLEDGE AGREEMENT (this "Joinder") is executed as of April 19, 2019 by BLUE PLANET SOFTWARE, INC., a Delaware corporation (the "Joining Party"), and delivered to Deutsche Bank AG New York Branch, as Administrative Agent and as Collateral Agent, for the benefit of the Secured Creditors (as defined below). Except as otherwise defined herein, terms used herein and defined in the Credit Agreement (as defined below) shall be used herein as therein defined.

### W I T N E S S E T H:

WHEREAS, Ciena Corporation (the "Company"), Ciena Communications, Inc. ("CCI"), Ciena Government Solutions, Inc. (together with the Company, CCI and each other Wholly-Owned Domestic Subsidiary of the Company that becomes a U.S. Borrower pursuant to the terms of the Credit Agreement, collectively, the "U.S. Borrowers"), Ciena Canada, Inc. (together with each other Wholly-Owned Canadian Subsidiary of the Company that becomes a Canadian Borrower pursuant to the terms of the Credit Agreement, collectively, the "Canadian Borrowers"; and the Canadian Borrowers, together with the U.S. Borrowers, collectively, the "Borrowers"), the various lenders from time to time party thereto (the "Lenders"), Deutsche Bank AG New York Branch, as Administrative Agent and as Collateral Agent, and the other agents and arrangers party thereto, have entered into an ABL Credit Agreement, dated as of August 13, 2012 (as the same may be amended, modified or supplemented from time to time, the "Credit Agreement"), providing for the making of Loans to, and the issuance of Letters of Credit for the account of, the Borrowers as contemplated therein;

WHEREAS, the Joining Party is a Wholly-Owned Domestic Subsidiary of the Company and desires, or is required pursuant to the provisions of the Credit Agreement, to become a Guarantor under the U.S. Guaranty, an Assignor under the U.S. Security Agreement, and a Pledgor under the U.S. Pledge Agreement; and

WHEREAS, the Joining Party will obtain benefits from (x) the incurrence of Loans by the Borrowers, and the issuance of, and participation in, Letters of Credit for the account of the Borrowers, in each case pursuant to the Credit Agreement and (y) the entering into Secured Hedging Agreements and Treasury Services Agreements (each as defined in the U.S. Security Agreement), and, accordingly, desires to execute this Joinder in order to (i) satisfy the requirements described in the preceding paragraph, (ii) induce the Lenders to make Loans to the Borrowers and/or participate in Letters of Credit for the account of the Borrowers, (iii) induce the Issuing Lenders to issue Letters of Credit for the account of the Borrowers and (iv) induce the Secured Creditors to enter into Secured Hedging Agreements and Treasury Services Agreements;

NOW, THEREFORE, in consideration of the foregoing and other benefits accruing to the Joining Party, the receipt and sufficiency of which are hereby acknowledged, the Joining Party hereby makes the following representations and warranties to the Secured Creditors and hereby covenants and agrees with each Secured Creditor as follows:

1. By this Joinder, the Joining Party becomes (i) a U.S. Guarantor for all purposes under the U.S. Guaranty, pursuant to Section 23 thereof, (ii) an Assignor for all purposes under the U.S. Security Agreement, pursuant to Section 8.12 thereof and (iii) a Pledgor for all purposes under the U.S. Pledge Agreement, pursuant to Section 32 thereof.

2. The Joining Party agrees that, upon its execution hereof, it will become a U.S. Guarantor under the U.S. Guaranty with respect to all Guaranteed Obligations (as defined in the U.S. Guaranty), and will be bound by all terms, conditions, obligations, liabilities and duties applicable to a U.S. Guarantor under the U.S. Guaranty and the other Credit Documents. Without limitation of the foregoing, and in furtherance thereof, the Joining Party absolutely, unconditionally and irrevocably, and jointly and severally, guarantees the due and punctual payment and performance when due of all Guaranteed Obligations (on the same basis as the other U.S. Guarantors under the U.S. Guaranty).

3. The Joining Party agrees that, upon its execution hereof, it will become a Pledgor under, and as defined in, the U.S. Pledge Agreement, and will be bound by all terms, conditions, obligations, liabilities and duties applicable to a Pledgor under the U.S. Pledge Agreement. Without limitation of the foregoing and in furtherance thereof, as security for the due and punctual payment when due of the Obligations (as defined in the U.S. Pledge Agreement), the Joining Party hereby pledges and assigns to the Collateral Agent for the benefit of the Secured Creditors and grants to the Collateral Agent for the benefit of the Secured Creditors a security interest in all its right, title and interest in, to and under the Pledge Agreement Collateral, if any, now owned or hereafter acquired by it, in each case to the extent provided in the U.S. Pledge Agreement.

4. The Joining Party agrees that, upon its execution hereof, it will become an Assignor under, and as defined in, the U.S. Security Agreement, and will be bound by all terms, conditions, obligations, liabilities and duties applicable to an Assignor under the U.S. Security Agreement. Without limitation of the foregoing and in furtherance thereof, as security for the due and punctual payment when due of the Obligations (as defined in the U.S. Security Agreement), the Joining Party hereby pledges and assigns to the Collateral Agent for the benefit of the Secured Creditors and grants to the Collateral Agent for the benefit of the Secured Creditors a security interest in all its right, title and interest in, to and under the Security Agreement Collateral, if any, now owned or hereafter acquired by it, in each case to the extent provided in the U.S. Security Agreement.

5. In connection with the grant by the Joining Party, pursuant to paragraph 3 above, of a security interest in all of its right, title and interest in the Pledge Agreement Collateral in favor of the Collateral Agent, the Joining Party agrees to perform (to the extent required) for the benefit of the Secured Creditors, together with the delivery of this Joinder, each of the actions specified in Section 3.2 of the U.S. Pledge Agreement.

6. The Joining Party hereby makes and undertakes, as the case may be, each covenant, representation and warranty made by, and as (i) each U.S. Guarantor pursuant to Section 9 of the U.S. Guaranty, (ii) each Assignor pursuant to Articles II, III and IV of the U.S. Security Agreement and (iii) each Pledgor pursuant to Section 18 of the U.S. Pledge Agreement, in each case as of the date hereof (except to the extent any such representation or warranty relates solely to an earlier date in which case such representation and warranty shall be true and correct in all material respects as of such earlier date), and agrees to be bound by all covenants, agreements and obligations of a U.S. Guarantor, an Assignor and a U.S. Pledgor pursuant to the U.S. Guaranty, U.S. Security Agreement and Pledge Agreement, respectively, and all other Credit Documents to which it is or becomes a party.

7. Annexes A, B, C, D, E, F and G to the U.S. Pledge Agreement are hereby amended by supplementing such Annexes with the information for the Joining Party contained on Annexes A, B, C, D, E, F and G attached hereto as Annex I. In addition, Annexes A, B, C, D, E, F and G to the U.S. Security Agreement are hereby amended by supplementing such Annexes with the information for the Joining Party contained on Annexes A, B, C, D, E, F and G attached hereto as Annex II.

8. This Joinder shall be binding upon the parties hereto and their respective successors and assigns and shall inure to the benefit of and be enforceable by each of the parties hereto and its successors

and assigns, provided, however, that the Joining Party may not assign any of its rights, obligations or interest hereunder or under any other Credit Document except as permitted by the Credit Documents. **THIS JOINDER SHALL BE CONSTRUED AND ENFORCED IN ACCORDANCE WITH AND GOVERNED BY THE LAW OF THE STATE OF NEW YORK (WITHOUT REGARD TO CONFLICTS OF LAWS PRINCIPLES)**. This Joinder may be executed in any number of counterparts, each of which shall be an original, but all of which shall constitute one instrument. In the event that any provision of this Joinder shall prove to be invalid or unenforceable, such provision shall be deemed to be severable from the other provisions of this Joinder which shall remain binding on all parties hereto.

9. From and after the execution and delivery hereof by the parties hereto, this Joinder shall constitute a “Credit Document” for all purposes of the Credit Agreement and the other Credit Documents.

10. Each of the representations and warranties set forth in the Credit Agreement and each other Credit Document and applicable to the undersigned is true and correct in all material respects, both before and after giving effect to this Joinder on the date hereof, except to the extent that any such representation and warranty relates solely to any earlier date, in which case such representation and warranty is true and correct in all material respects as of such earlier date (it being understood that any representation or warranty that is qualified as to “materiality,” “Material Adverse Effect” or similar language shall be true and correct in all respects on the date hereof or as of such earlier date, as applicable).

11. No Default or Event of Default has occurred or is continuing as of the date hereof, or will result from the transactions contemplated by this Joinder on the date hereof.

12. The effective date of this Joinder is April 19, 2019.

\* \* \*

IN WITNESS WHEREOF, the Joining Party has caused this Joinder to be duly executed as of the date first above written.

BLUE PLANET SOFTWARE, INC.

By: /s/ Jiong Liu

Name: Jiong Liu

Title: Vice President and Treasurer

Accepted and Acknowledged by:

DEUTSCHE BANK AG NEW YORK BRANCH,

as Administrative Agent and as Collateral Agent

By: /s/ Marguerite Sutton

Name: Marguerite Sutton

Title: Vice President

By: /s/ Stephen R. Lapidus

Name: Stephen R. Lapidus

Title: Director



## JOINDER AGREEMENT

THIS JOINDER IN U.S. GUARANTY, U.S. SECURITY AGREEMENT and U.S. PLEDGE AGREEMENT (this "Joinder") is executed as of April 19, 2019 by CIENA COMMUNICATIONS INTERNATIONAL, LLC, a Delaware limited liability company (the "Joining Party"), and delivered to Deutsche Bank AG New York Branch, as Administrative Agent and as Collateral Agent, for the benefit of the Secured Creditors (as defined below). Except as otherwise defined herein, terms used herein and defined in the Credit Agreement (as defined below) shall be used herein as therein defined.

### W I T N E S S E T H:

WHEREAS, Ciena Corporation (the "Company"), Ciena Communications, Inc. ("CCI"), Ciena Government Solutions, Inc. (together with the Company, CCI and each other Wholly-Owned Domestic Subsidiary of the Company that becomes a U.S. Borrower pursuant to the terms of the Credit Agreement, collectively, the "U.S. Borrowers"), Ciena Canada, Inc. (together with each other Wholly-Owned Canadian Subsidiary of the Company that becomes a Canadian Borrower pursuant to the terms of the Credit Agreement, collectively, the "Canadian Borrowers"; and the Canadian Borrowers, together with the U.S. Borrowers, collectively, the "Borrowers"), the various lenders from time to time party thereto (the "Lenders"), Deutsche Bank AG New York Branch, as Administrative Agent and as Collateral Agent, and the other agents and arrangers party thereto, have entered into an ABL Credit Agreement, dated as of August 13, 2012 (as the same may be amended, modified or supplemented from time to time, the "Credit Agreement"), providing for the making of Loans to, and the issuance of Letters of Credit for the account of, the Borrowers as contemplated therein;

WHEREAS, the Joining Party is a Wholly-Owned Domestic Subsidiary of the Company and desires, or is required pursuant to the provisions of the Credit Agreement, to become a Guarantor under the U.S. Guaranty, an Assignor under the U.S. Security Agreement, and a Pledgor under the U.S. Pledge Agreement; and

WHEREAS, the Joining Party will obtain benefits from (x) the incurrence of Loans by the Borrowers, and the issuance of, and participation in, Letters of Credit for the account of the Borrowers, in each case pursuant to the Credit Agreement and (y) the entering into Secured Hedging Agreements and Treasury Services Agreements (each as defined in the U.S. Security Agreement), and, accordingly, desires to execute this Joinder in order to (i) satisfy the requirements described in the preceding paragraph, (ii) induce the Lenders to make Loans to the Borrowers and/or participate in Letters of Credit for the account of the Borrowers, (iii) induce the Issuing Lenders to issue Letters of Credit for the account of the Borrowers and (iv) induce the Secured Creditors to enter into Secured Hedging Agreements and Treasury Services Agreements;

NOW, THEREFORE, in consideration of the foregoing and other benefits accruing to the Joining Party, the receipt and sufficiency of which are hereby acknowledged, the Joining Party hereby makes the following representations and warranties to the Secured Creditors and hereby covenants and agrees with each Secured Creditor as follows:

1. By this Joinder, the Joining Party becomes (i) a U.S. Guarantor for all purposes under the U.S. Guaranty, pursuant to Section 23 thereof, (ii) an Assignor for all purposes under the U.S. Security Agreement, pursuant to Section 8.12 thereof and (iii) a Pledgor for all purposes under the U.S. Pledge Agreement, pursuant to Section 32 thereof.

2. The Joining Party agrees that, upon its execution hereof, it will become a U.S. Guarantor under the U.S. Guaranty with respect to all Guaranteed Obligations (as defined in the U.S. Guaranty), and will be bound by all terms, conditions, obligations, liabilities and duties applicable to a U.S. Guarantor under the U.S. Guaranty and the other Credit Documents. Without limitation of the foregoing, and in furtherance thereof, the Joining Party absolutely, unconditionally and irrevocably, and jointly and severally, guarantees the due and punctual payment and performance when due of all Guaranteed Obligations (on the same basis as the other U.S. Guarantors under the U.S. Guaranty).

3. The Joining Party agrees that, upon its execution hereof, it will become a Pledgor under, and as defined in, the U.S. Pledge Agreement, and will be bound by all terms, conditions, obligations, liabilities and duties applicable to a Pledgor under the U.S. Pledge Agreement. Without limitation of the foregoing and in furtherance thereof, as security for the due and punctual payment when due of the Obligations (as defined in the U.S. Pledge Agreement), the Joining Party hereby pledges and assigns to the Collateral Agent for the benefit of the Secured Creditors and grants to the Collateral Agent for the benefit of the Secured Creditors a security interest in all its right, title and interest in, to and under the Pledge Agreement Collateral, if any, now owned or hereafter acquired by it, in each case to the extent provided in the U.S. Pledge Agreement.

4. The Joining Party agrees that, upon its execution hereof, it will become an Assignor under, and as defined in, the U.S. Security Agreement, and will be bound by all terms, conditions, obligations, liabilities and duties applicable to an Assignor under the U.S. Security Agreement. Without limitation of the foregoing and in furtherance thereof, as security for the due and punctual payment when due of the Obligations (as defined in the U.S. Security Agreement), the Joining Party hereby pledges and assigns to the Collateral Agent for the benefit of the Secured Creditors and grants to the Collateral Agent for the benefit of the Secured Creditors a security interest in all its right, title and interest in, to and under the Security Agreement Collateral, if any, now owned or hereafter acquired by it, in each case to the extent provided in the U.S. Security Agreement.

5. In connection with the grant by the Joining Party, pursuant to paragraph 3 above, of a security interest in all of its right, title and interest in the Pledge Agreement Collateral in favor of the Collateral Agent, the Joining Party agrees to perform (to the extent required) for the benefit of the Secured Creditors, together with the delivery of this Joinder, each of the actions specified in Section 3.2 of the U.S. Pledge Agreement.

6. The Joining Party hereby makes and undertakes, as the case may be, each covenant, representation and warranty made by, and as (i) each U.S. Guarantor pursuant to Section 9 of the U.S. Guaranty, (ii) each Assignor pursuant to Articles II, III and IV of the U.S. Security Agreement and (iii) each Pledgor pursuant to Section 18 of the U.S. Pledge Agreement, in each case as of the date hereof (except to the extent any such representation or warranty relates solely to an earlier date in which case such representation and warranty shall be true and correct in all material respects as of such earlier date), and agrees to be bound by all covenants, agreements and obligations of a U.S. Guarantor, an Assignor and a U.S. Pledgor pursuant to the U.S. Guaranty, U.S. Security Agreement and Pledge Agreement, respectively, and all other Credit Documents to which it is or becomes a party.

7. Annexes A, B, C, D, E, F and G to the U.S. Pledge Agreement are hereby amended by supplementing such Annexes with the information for the Joining Party contained on Annexes A, B, C, D, E, F and G attached hereto as Annex I. In addition, Annexes A, B, C, D, E, F and G to the U.S. Security Agreement are hereby amended by supplementing such Annexes with the information for the Joining Party contained on Annexes A, B, C, D, E, F and G attached hereto as Annex II.

8. This Joinder shall be binding upon the parties hereto and their respective successors and assigns and shall inure to the benefit of and be enforceable by each of the parties hereto and its successors

and assigns, provided, however, that the Joining Party may not assign any of its rights, obligations or interest hereunder or under any other Credit Document except as permitted by the Credit Documents. **THIS JOINDER SHALL BE CONSTRUED AND ENFORCED IN ACCORDANCE WITH AND GOVERNED BY THE LAW OF THE STATE OF NEW YORK (WITHOUT REGARD TO CONFLICTS OF LAWS PRINCIPLES)**. This Joinder may be executed in any number of counterparts, each of which shall be an original, but all of which shall constitute one instrument. In the event that any provision of this Joinder shall prove to be invalid or unenforceable, such provision shall be deemed to be severable from the other provisions of this Joinder which shall remain binding on all parties hereto.

9. From and after the execution and delivery hereof by the parties hereto, this Joinder shall constitute a “Credit Document” for all purposes of the Credit Agreement and the other Credit Documents.

10. Each of the representations and warranties set forth in the Credit Agreement and each other Credit Document and applicable to the undersigned is true and correct in all material respects, both before and after giving effect to this Joinder on the date hereof, except to the extent that any such representation and warranty relates solely to any earlier date, in which case such representation and warranty is true and correct in all material respects as of such earlier date (it being understood that any representation or warranty that is qualified as to “materiality,” “Material Adverse Effect” or similar language shall be true and correct in all respects on the date hereof or as of such earlier date, as applicable).

11. No Default or Event of Default has occurred or is continuing as of the date hereof, or will result from the transactions contemplated by this Joinder on the date hereof.

12. The effective date of this Joinder is April 19, 2019.

\* \* \*

IN WITNESS WHEREOF, the Joining Party has caused this Joinder to be duly executed as of the date first above written.

CIENA COMMUNICATIONS INTERNATIONAL, LLC

By: /s/ James E. Moylan, Jr.

Name: James E. Moylan, Jr.

Title: Senior Vice President of Finance and Chief  
Financial Officer

Accepted and Acknowledged by:

DEUTSCHE BANK AG NEW YORK BRANCH,

as Administrative Agent and as Collateral Agent

By: /s/ Marguerite Sutton

Name: Marguerite Sutton

Title: Vice President

By: /s/ Stephen R. Lapidus

Name: Stephen R. Lapidus

Title: Director

## GUARANTY SUPPLEMENT

GUARANTY SUPPLEMENT dated as of April 19, 2019, by CIENA COMMUNICATIONS INTERNATIONAL, LLC, a Delaware limited liability company (the “**Guarantor**”), in favor of Bank of America, N.A., as Administrative Agent.

WHEREAS, CIENA COMMUNICATIONS, INC., a Delaware corporation, CIENA GOVERNMENT SOLUTIONS, INC., a Delaware corporation, the other Guarantors party thereto and BANK OF AMERICA, N.A., as Administrative Agent, are parties to that certain Guaranty dated as of July 15, 2014 (as amended, modified, restated or supplemented from time to time and as heretofore amended and/or supplemented, the “**Guaranty**”) under which the Guarantors guarantee the Guaranteed Obligations of CIENA CORPORATION, a Delaware corporation (the “**Borrower**”);

WHEREAS, Ciena Communications International, LLC desires to become a party to the Guaranty as a Guarantor thereunder; and

WHEREAS, terms defined in the Guaranty (or whose definitions are incorporated by reference in the recitals in the Guaranty) and not otherwise defined herein have, as used herein, the respective meanings provided for therein;

NOW, THEREFORE, in consideration of the foregoing and other good and valuable consideration, the receipt and sufficiency of which are hereby acknowledged, the parties hereto agree as follows:

1. *Secured Guarantee.* The Guarantor, jointly and severally, irrevocably, absolutely and unconditionally guarantees as a primary obligor and not merely as surety: to the Secured Parties the full and prompt payment when due (whether at the stated maturity, by required prepayment, declaration, acceleration, demand or otherwise) of the Guaranteed Obligations.

2. *Party to Guaranty.* The Guarantor acknowledges that, by signing this Guaranty Supplement and delivering it to the Administrative Agent, the Guarantor becomes a “Guarantor” for all purposes of the Guaranty and that its obligations hereunder are subject to all the provisions of the Guaranty applicable to the obligations of a Guarantor thereunder and the Guarantor becomes a party to the Guaranty and will thereafter have all the rights and obligations of a Guarantor thereunder and be bound by all the provisions thereof as fully as if the Guarantor were one of the original parties thereto.

3. *Representations and Warranties.* (a) The Guarantor is duly organized, validly existing and in good standing under the laws of Delaware.

(b) The execution, delivery and performance by the Guarantor of this Guaranty Supplement and each other Loan Document to which it is a party has been duly authorized by all necessary corporate or other organizational action, and do not and will not (i) contravene the terms of any of the Guarantor’s Organization Documents; (ii) conflict with or result in any breach or contravention of, or the creation of any Lien (other than Liens created under the Loan Documents) under, or require any payment to be made under (A) any material Contractual Obligation to which the Guarantor is a party or affecting the Guarantor or the properties of the Guarantor or any of its

Subsidiaries or (B) any order, injunction, writ or decree of any Governmental Authority or any arbitral award to which the Guarantor or its property is subject; or (iii) violate any Law.

(c) The Guaranty as supplemented hereby constitutes a valid and binding agreement of the Guarantor, enforceable in accordance with its terms, except as limited by (i) applicable bankruptcy, insolvency, fraudulent conveyance or other similar laws affecting creditors' rights generally and (ii) general principles of equity.

(d) Each of the representations and warranties set forth in Section 9 of the Guaranty is true as applied to the Guarantor. For purposes of the foregoing sentence, references in said Section to a "Guarantor" shall be deemed to refer to the Guarantor and references to the "Effective Date" shall be deemed to refer to the date on which the Guarantor signs and delivers this Guaranty Supplement.

4. *Governing Law.* This Guaranty Supplement shall be construed in accordance with and governed by the laws of the State of New York.

IN WITNESS WHEREOF, the parties hereto have caused this Guaranty Supplement to be duly executed by their respective authorized officers as of the day and year first above written.

CIENA COMMUNICATIONS INTERNATIONAL, LLC

By: /s/ James E. Moylan, Jr.

Name: James E. Moylan, Jr.

Title: Senior Vice President of Finance and Chief  
Financial Officer

BANK OF AMERICA, N.A., as Administrative Agent

By: /s/ Priscilla Ruffin

Name: Priscilla Ruffin

Title: AVP

## GUARANTY SUPPLEMENT

GUARANTY SUPPLEMENT dated as of April 19, 2019, by BLUE PLANET SOFTWARE, INC., a Delaware corporation (the “**Guarantor**”), in favor of Bank of America, N.A., as Administrative Agent.

WHEREAS, CIENA COMMUNICATIONS, INC., a Delaware corporation, CIENA GOVERNMENT SOLUTIONS, INC., a Delaware corporation, the other Guarantors party thereto and BANK OF AMERICA, N.A., as Administrative Agent, are parties to that certain Guaranty dated as of July 15, 2014 (as amended, modified, restated or supplemented from time to time and as heretofore amended and/or supplemented, the “**Guaranty**”) under which the Guarantors guarantee the Guaranteed Obligations of CIENA CORPORATION, a Delaware corporation (the “**Borrower**”);

WHEREAS, Blue Planet Software, Inc. desires to become a party to the Guaranty as a Guarantor thereunder; and

WHEREAS, terms defined in the Guaranty (or whose definitions are incorporated by reference in the recitals in the Guaranty) and not otherwise defined herein have, as used herein, the respective meanings provided for therein;

NOW, THEREFORE, in consideration of the foregoing and other good and valuable consideration, the receipt and sufficiency of which are hereby acknowledged, the parties hereto agree as follows:

1. *Secured Guarantee.* The Guarantor, jointly and severally, irrevocably, absolutely and unconditionally guarantees as a primary obligor and not merely as surety: to the Secured Parties the full and prompt payment when due (whether at the stated maturity, by required prepayment, declaration, acceleration, demand or otherwise) of the Guaranteed Obligations.

2. *Party to Guaranty.* The Guarantor acknowledges that, by signing this Guaranty Supplement and delivering it to the Administrative Agent, the Guarantor becomes a “Guarantor” for all purposes of the Guaranty and that its obligations hereunder are subject to all the provisions of the Guaranty applicable to the obligations of a Guarantor thereunder and the Guarantor becomes a party to the Guaranty and will thereafter have all the rights and obligations of a Guarantor thereunder and be bound by all the provisions thereof as fully as if the Guarantor were one of the original parties thereto.

3. *Representations and Warranties.* (a) The Guarantor is duly organized, validly existing and in good standing under the laws of Delaware.

(b) The execution, delivery and performance by the Guarantor of this Guaranty Supplement and each other Loan Document to which it is a party has been duly authorized by all necessary corporate or other organizational action, and do not and will not (i) contravene the terms of any of the Guarantor’s Organization Documents; (ii) conflict with or result in any breach or contravention of, or the creation of any Lien (other than Liens created under the Loan Documents) under, or require any payment to be made under (A) any material Contractual Obligation to which the Guarantor is a party or affecting the Guarantor or the properties of the Guarantor or any of its Subsidiaries or (B) any order, injunction, writ or decree of any Governmental Authority or any arbitral award to which the Guarantor or its property is subject; or (iii) violate any Law.



(c) The Guaranty as supplemented hereby constitutes a valid and binding agreement of the Guarantor, enforceable in accordance with its terms, except as limited by (i) applicable bankruptcy, insolvency, fraudulent conveyance or other similar laws affecting creditors' rights generally and (ii) general principles of equity.

(d) Each of the representations and warranties set forth in Section 9 of the Guaranty is true as applied to the Guarantor. For purposes of the foregoing sentence, references in said Section to a "Guarantor" shall be deemed to refer to the Guarantor and references to the "Effective Date" shall be deemed to refer to the date on which the Guarantor signs and delivers this Guaranty Supplement.

4. *Governing Law.* This Guaranty Supplement shall be construed in accordance with and governed by the laws of the State of New York.

IN WITNESS WHEREOF, the parties hereto have caused this Guaranty Supplement to be duly executed by their respective authorized officers as of the day and year first above written.

BLUE PLANET SOFTWARE, INC.

By: /s/ Jiong Liu

Name: Jiong Liu

Title: Vice President and Treasurer

BANK OF AMERICA, N.A., as Administrative Agent

By: /s/ Priscilla Ruffin

Name: Priscilla Ruffin

Title: AVP

**CIENA CORPORATION**  
**CERTIFICATION OF CHIEF EXECUTIVE OFFICER**

I, Gary B. Smith, certify that:

1. I have reviewed this quarterly report of Ciena Corporation;
2. Based on my knowledge, this report does not contain any untrue statement of a material fact or omit to state a material fact necessary to make the statements made, in light of the circumstances under which such statements were made, not misleading with respect to the period covered by this report;
3. Based on my knowledge, the financial statements, and other financial information included in this report, fairly present in all material respects the financial condition, results of operations and cash flows of the registrant as of, and for, the periods presented in this report;
4. The registrant's other certifying officer and I are responsible for establishing and maintaining disclosure controls and procedures (as defined in Exchange Act Rules 13a-15(e) and 15d-15(e)) and internal control over financial reporting (as defined in Exchange Act Rules 13a-15(f) and 15d-15(f)) for the registrant and have:
  - (a) Designed such disclosure controls and procedures, or caused such disclosure controls and procedures to be designed under our supervision, to ensure that material information relating to the registrant, including its consolidated subsidiaries, is made known to us by others within those entities, particularly during the period in which this report is being prepared;
  - (b) Designed such internal control over financial reporting, or caused such internal control over financial reporting to be designed under our supervision, to provide reasonable assurance regarding the reliability of financial reporting and the preparation of financial statements for external purposes in accordance with generally accepted accounting principles;
  - (c) Evaluated the effectiveness of the registrant's disclosure controls and procedures and presented in this report our conclusions about the effectiveness of the disclosure controls and procedures, as of the end of the period covered by this report based on such evaluation; and
  - (d) Disclosed in this report any change in the registrant's internal control over financial reporting that occurred during the registrant's most recent fiscal quarter (the registrant's fourth fiscal quarter in the case of an annual report) that has materially affected, or is reasonably likely to materially affect, the registrant's internal control over financial reporting; and
5. The registrant's other certifying officer and I have disclosed, based on our most recent evaluation of internal control over financial reporting, to the registrant's auditors and the audit committee of the registrant's board of directors (or persons performing the equivalent functions):
  - (a) All significant deficiencies and material weaknesses in the design or operation of internal control over financial reporting which are reasonably likely to adversely affect the registrant's ability to record, process, summarize and report financial information; and
  - (b) Any fraud, whether or not material, that involves management or other employees who have a significant role in the registrant's internal control over financial reporting.

Dated: June 12, 2019

/s/ Gary B. Smith

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Gary B. Smith

President and Chief Executive Officer

**CIENA CORPORATION**  
**CERTIFICATION OF CHIEF FINANCIAL OFFICER**

I, James E. Moylan, Jr., certify that:

1. I have reviewed this quarterly report of Ciena Corporation;
2. Based on my knowledge, this report does not contain any untrue statement of a material fact or omit to state a material fact necessary to make the statements made, in light of the circumstances under which such statements were made, not misleading with respect to the period covered by this report;
3. Based on my knowledge, the financial statements, and other financial information included in this report, fairly present in all material respects the financial condition, results of operations and cash flows of the registrant as of, and for, the periods presented in this report;
4. The registrant's other certifying officer and I are responsible for establishing and maintaining disclosure controls and procedures (as defined in Exchange Act Rules 13a-15(e) and 15d-15(e)) and internal control over financial reporting (as defined in Exchange Act Rules 13a-15(f) and 15d-15(f)) for the registrant and have:
  - (a) Designed such disclosure controls and procedures, or caused such disclosure controls and procedures to be designed under our supervision, to ensure that material information relating to the registrant, including its consolidated subsidiaries, is made known to us by others within those entities, particularly during the period in which this report is being prepared;
  - (b) Designed such internal control over financial reporting, or caused such internal control over financial reporting to be designed under our supervision, to provide reasonable assurance regarding the reliability of financial reporting and the preparation of financial statements for external purposes in accordance with generally accepted accounting principles;
  - (c) Evaluated the effectiveness of the registrant's disclosure controls and procedures and presented in this report our conclusions about the effectiveness of the disclosure controls and procedures, as of the end of the period covered by this report based on such evaluation; and
  - (d) Disclosed in this report any change in the registrant's internal control over financial reporting that occurred during the registrant's most recent fiscal quarter (the registrant's fourth fiscal quarter in the case of an annual report) that has materially affected, or is reasonably likely to materially affect, the registrant's internal control over financial reporting; and
5. The registrant's other certifying officer and I have disclosed, based on our most recent evaluation of internal control over financial reporting, to the registrant's auditors and the audit committee of the registrant's board of directors (or persons performing the equivalent functions):
  - (a) All significant deficiencies and material weaknesses in the design or operation of internal control over financial reporting which are reasonably likely to adversely affect the registrant's ability to record, process, summarize and report financial information; and
  - (b) Any fraud, whether or not material, that involves management or other employees who have a significant role in the registrant's internal control over financial reporting.

Date: June 12, 2019

/s/ James E. Moylan, Jr.

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James E. Moylan, Jr.

Senior Vice President and Chief Financial Officer

**CIENA CORPORATION**

**Written Statement of Chief Executive Officer**

**Pursuant to Section 906 of the Sarbanes-Oxley Act of 2002**

The undersigned, the Chief Executive Officer of Ciena Corporation (the "Company"), hereby certifies that, to his knowledge, on the date hereof:

- (a) the Report on Form 10-Q of the Company for the quarter ended April 30, 2019 filed on the date hereof with the Securities and Exchange Commission (the "Report") fully complies with the requirements of Section 13(a) or 15(d) of the Securities Exchange Act of 1934; and
- (b) information contained in the Report fairly presents, in all material respects, the financial condition and results of operations of the Company.

/s/ Gary B. Smith

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Gary B. Smith

President and Chief Executive Officer

June 12, 2019

A signed original of this written statement required by Section 906, or other document authenticating, acknowledging, or otherwise adopting the signature that appears in typed form within the electronic version of this written statement required by Section 906, has been provided to Ciena Corporation and will be retained by Ciena Corporation and furnished to the Securities and Exchange Commission or its staff upon request.

**CIENA CORPORATION**  
**Written Statement of Chief Financial Officer**  
**Pursuant to Section 906 of the Sarbanes-Oxley Act of 2002**

The undersigned, the Chief Financial Officer of Ciena Corporation (the "Company"), hereby certifies that, to his knowledge, on the date hereof:

- (a) the Report on Form 10-Q of the Company for the quarter ended April 30, 2019 filed on the date hereof with the Securities and Exchange Commission (the "Report") fully complies with the requirements of Section 13(a) or 15(d) of the Securities Exchange Act of 1934; and
- (b) information contained in the Report fairly presents, in all material respects, the financial condition and results of operations of the Company.

/s/ James E. Moylan, Jr.

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James E. Moylan, Jr.

Senior Vice President and Chief Financial Officer

June 12, 2019

A signed original of this written statement required by Section 906, or other document authenticating, acknowledging, or otherwise adopting the signature that appears in typed form within the electronic version of this written statement required by Section 906, has been provided to Ciena Corporation and will be retained by Ciena Corporation and furnished to the Securities and Exchange Commission or its staff upon request.