

**UNITED STATES
SECURITIES AND EXCHANGE COMMISSION
WASHINGTON, D.C. 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 March 31, 2020

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: 001-38324

Casa Systems, Inc.

(Exact name of registrant as specified in its charter)

Delaware

(State or other jurisdiction of
incorporation or organization)

100 Old River Road
Andover, Massachusetts
(Address of principal executive offices)

75-3108867

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

01810
(Zip Code)

Registrant's telephone number, including area code: (978) 688-6706

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

Title of each class	Trading Symbol	Name of each exchange on which registered
Common Stock, \$0.001 par value per share	CASA	The Nasdaq Stock Market LLC

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 (§ 232.405 of this chapter) during the preceding 12 months (or for such shorter period that the registrant was required to submit such files). Yes No

Indicate by check mark 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	<input type="checkbox"/>	Accelerated filer	<input checked="" type="checkbox"/>
Non-accelerated filer	<input type="checkbox"/>	Smaller reporting company	<input type="checkbox"/>
		Emerging growth company	<input checked="" type="checkbox"/>

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

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

As of April 29, 2020, the registrant had 83,040,053 shares of common stock, \$0.001 par value per share, issued and outstanding.

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Cautionary Note Regarding Forward-Looking Statements

This Quarterly Report on Form 10-Q contains forward-looking statements within the meaning of Section 27A of the Securities Act of 1933, as amended, and Section 21E of the Securities Exchange Act of 1934, as amended. All statements other than statements of historical fact contained in this Quarterly Report on Form 10-Q, including statements regarding our future results of operations and financial position, business strategy and plans and objectives of management for future operations, are forward-looking statements. These statements involve known and unknown risks, uncertainties and other important factors that may cause our actual results, performance or achievements to be materially different from any future results, performance or achievements expressed or implied by the forward-looking statements.

In some cases, you can identify forward-looking statements by terms such as “may,” “might,” “should,” “expects,” “plans,” “anticipates,” “would,” “could,” “intends,” “target,” “projects,” “contemplates,” “believes,” “estimates,” “predicts,” “potential” or “continue” or the negative of these terms or other similar expressions. The forward-looking statements in this Quarterly Report on Form 10-Q are only predictions. We have based these forward-looking statements largely on our current expectations and projections about future events and financial trends that we believe may affect our business, financial condition and results of operations. These forward-looking statements speak only as of the date of this Quarterly Report on Form 10-Q and are subject to a number of risks, uncertainties and assumptions described in the “Risk Factors” section and elsewhere in this Quarterly Report on Form 10-Q. Because forward-looking statements are inherently subject to risks and uncertainties, some of which cannot be predicted or quantified, you should not rely on these forward-looking statements as predictions of future events. The events and circumstances reflected in our forward-looking statements may not be achieved or occur and actual results could differ materially from those projected in the forward-looking statements. Some of the key factors that could cause actual results to differ from our expectations include:

- our ability to integrate and generate potential synergies from our acquisition of NetComm Wireless Limited;
- our ability to anticipate technological shifts;
- our ability to generate positive returns on our research and development;
- changes in the rate of broadband service providers’ deployment of, and investment in, ultra-broadband network capabilities;
- the lack of predictability of revenue due to lengthy sales cycles and the volatility in capital expenditure budgets of broadband service providers;
- our ability to maintain and expand gross profit and net income;
- the sufficiency of our cash resources and needs for additional financing;
- our ability to further penetrate our existing customer base and obtain new customers;
- changes in our pricing policies, whether initiated by us or as a result of competition;
- the amount and timing of operating costs and capital expenditures related to the operation and expansion of our business;
- the extent of the effects of the COVID-19 pandemic on the Company, which is highly uncertain and will depend on future developments;
- the actual or rumored timing and success of new product and service introductions by us or our competitors or any other change in the competitive landscape of our industry, including consolidation among our competitors or customers;
- our ability to successfully expand our business domestically and internationally;
- insolvency or credit difficulties confronting our customers, which could adversely affect their ability to purchase or pay for our products and services, or confronting our key suppliers, which could disrupt our supply chain;
- our inability to fulfill our customers’ orders due to supply chain delays, access to key commodities or technologies or events that impact our manufacturers or their suppliers;
- future accounting pronouncements or changes in our accounting policies;
- stock-based compensation expense;
- the cost and possible outcomes of any potential litigation matters;

- our overall effective tax rate, including impacts caused by the relative proportion of foreign to U.S. income, the amount and timing of certain employee stock-based compensation transactions, changes in the valuation of our deferred tax assets and any new legislation or regulatory developments;
- increases or decreases in our expenses caused by fluctuations in foreign currency exchange rates;
- the costs and possible outcomes of any legal actions or proceedings against us, including those described under “Part II, Item 1—Legal Proceedings”;
- general economic conditions, both domestically and in foreign markets;
- our ability to obtain and maintain intellectual property protection for our products; and
- our use of proceeds from our initial public offering.

Except as required by applicable law, we do not plan to publicly update or revise any forward-looking statements contained herein, whether as a result of any new information, future events or otherwise.

PART I—FINANCIAL INFORMATION
Item 1. Financial Statements
CASA SYSTEMS, INC.
CONDENSED CONSOLIDATED BALANCE SHEETS
(in thousands, except per share amounts)
(Unaudited)

	March 31, 2020	December 31, 2019
Assets		
Current assets:		
Cash and cash equivalents	\$ 134,752	\$ 113,638
Accounts receivable, net of provision for doubtful accounts of \$22 and \$20 as of March 31, 2020 and December 31, 2019, respectively	55,013	93,100
Inventory	81,014	93,604
Prepaid expenses and other current assets	7,239	4,884
Prepaid income taxes	9,663	3,217
Total current assets	287,681	308,443
Property and equipment, net	34,231	35,910
Accounts receivable, net of current portion	522	575
Deferred tax assets	319	69
Goodwill	50,347	50,347
Intangible assets, net	39,721	41,148
Other assets	6,037	7,820
Total assets	<u>\$ 418,858</u>	<u>\$ 444,312</u>
Liabilities and Stockholders' Equity		
Current liabilities:		
Accounts payable	\$ 17,622	\$ 25,890
Accrued expenses and other current liabilities	26,120	34,567
Accrued income taxes	110	—
Deferred revenue	18,850	25,485
Current portion of long-term debt, net of unamortized debt issuance costs	8,449	8,524
Total current liabilities	71,151	94,466
Accrued income taxes, net of current portion	10,667	12,381
Deferred tax liabilities	9,166	8,993
Deferred revenue, net of current portion	4,149	4,583
Long-term debt, net of current portion and unamortized debt issuance costs	284,282	284,756
Other liabilities, net of current portion	522	569
Total liabilities	379,937	405,748
Commitments and contingencies (Note 18)		
Stockholders' equity:		
Preferred stock, \$0.001 par value; 5,000 shares authorized as of March 31, 2020 and December 31, 2019; no shares issued and outstanding as of March 31, 2020 and December 31, 2019	—	—
Common stock, \$0.001 par value; 500,000 shares authorized as of March 31, 2020 and December 31, 2019; 84,726 and 84,333 shares issued and outstanding as of March 31, 2020 and December 31, 2019, respectively	85	84
Treasury stock, at cost; 1,711 and 495 shares at March 31, 2020 and December 31, 2019, respectively	(4,793)	(1,795)
Additional paid-in capital	171,914	169,561
Accumulated other comprehensive loss	(2,383)	(2,222)
Accumulated deficit	(125,902)	(127,064)
Total stockholders' equity	38,921	38,564
Total liabilities and stockholders' equity	<u>\$ 418,858</u>	<u>\$ 444,312</u>

The accompanying notes are an integral part of these unaudited condensed consolidated financial statements.

CASA SYSTEMS, INC.
CONDENSED CONSOLIDATED STATEMENTS OF OPERATIONS AND COMPREHENSIVE INCOME (LOSS)
(in thousands, except per share amounts)
(Unaudited)

	Three Months Ended March 31,	
	2020	2019
Revenue:		
Product	\$ 73,758	\$ 26,653
Service	9,865	8,833
Total revenue	<u>83,623</u>	<u>35,486</u>
Cost of revenue:		
Product	39,644	9,429
Service	1,326	1,560
Total cost of revenue	<u>40,970</u>	<u>10,989</u>
Gross profit	<u>42,653</u>	<u>24,497</u>
Operating expenses:		
Research and development	21,211	18,405
Selling, general and administrative	24,991	20,193
Total operating expenses	<u>46,202</u>	<u>38,598</u>
Loss from operations	<u>(3,549)</u>	<u>(14,101)</u>
Other income (expense):		
Interest income	406	1,652
Interest expense	(4,628)	(5,197)
Gain (loss) on foreign currency, net	152	(92)
Other income, net	62	229
Total other income (expense), net	<u>(4,008)</u>	<u>(3,408)</u>
Loss before benefit from income taxes	<u>(7,557)</u>	<u>(17,509)</u>
Benefit from income taxes	<u>(8,719)</u>	<u>(2,170)</u>
Net income (loss)	<u>1,162</u>	<u>(15,339)</u>
Other comprehensive income (loss)—foreign currency translation adjustment, net of tax	(516)	713
Other comprehensive income (loss)—gain on foreign currency hedge, net of tax	356	—
Comprehensive income (loss)	<u>\$ 1,002</u>	<u>\$ (14,626)</u>
Net income (loss) attributable to common stockholders:		
Basic and diluted	<u>\$ 1,162</u>	<u>\$ (15,339)</u>
Net income (loss) per share attributable to common stockholders:		
Basic	<u>\$ 0.01</u>	<u>\$ (0.18)</u>
Diluted	<u>\$ 0.01</u>	<u>\$ (0.18)</u>
Weighted-average shares used to compute net income (loss) per share attributable to common stockholders:		
Basic	<u>83,990</u>	<u>83,323</u>
Diluted	<u>85,009</u>	<u>83,323</u>

The accompanying notes are an integral part of these unaudited condensed consolidated financial statements.

CASA SYSTEMS, INC.
CONDENSED CONSOLIDATED STATEMENTS OF STOCKHOLDERS' EQUITY
(in thousands)
(Unaudited)

	Common Stock		Treasury Stock		Additional Paid-in Capital	Accumulated Other Comprehensive Loss	Accumulated Deficit	Total Stockholders' Equity
	Shares	Amount	Shares	Amount				
Balances at January 1, 2020	84,333	\$ 84	495	\$ (1,795)	\$ 169,561	\$ (2,222)	\$ (127,064)	\$ 38,564
Exercise of stock options and common stock issued upon vesting of equity awards, net of shares withheld for employee taxes	393	1	—	—	(148)	—	—	(147)
Unrealized gain on cash flow hedges	—	—	—	—	—	356	—	356
Foreign currency translation adjustment, net of tax of \$0	—	—	—	—	—	(517)	—	(517)
Repurchases of treasury shares	—	—	1,216	(2,998)	—	—	—	(2,998)
Stock-based compensation	—	—	—	—	2,501	—	—	2,501
Net income	—	—	—	—	—	—	1,162	1,162
Balances at March 31, 2020	<u>84,726</u>	<u>\$ 85</u>	<u>1,711</u>	<u>\$ (4,793)</u>	<u>\$ 171,914</u>	<u>\$ (2,383)</u>	<u>\$ (125,902)</u>	<u>\$ 38,921</u>
	Common Stock		Additional Paid-in Capital	Accumulated Other Comprehensive Loss	Accumulated Deficit	Total Stockholders' Equity		
	Shares	Amount						
Balances at January 1, 2019	82,961	\$ 83	\$ 156,939	\$ (1,158)	\$ (81,008)	\$ 74,856		
Exercise of stock options and common stock issued upon vesting of equity awards, net of shares withheld for employee taxes	773	1	493	—	—	494		
Foreign currency translation adjustment, net of tax of \$0	—	—	—	713	—	713		
Effect of adopted accounting standards	—	—	—	—	2,150	2,150		
Stock-based compensation	—	—	2,560	—	—	2,560		
Net loss	—	—	—	—	(15,339)	(15,339)		
Balances at March 31, 2019	<u>83,734</u>	<u>\$ 84</u>	<u>\$ 159,992</u>	<u>\$ (445)</u>	<u>\$ (94,197)</u>	<u>\$ 65,434</u>		

The accompanying notes are an integral part of these unaudited condensed consolidated financial statements.

CASA SYSTEMS, INC.
CONDENSED CONSOLIDATED STATEMENTS OF CASH FLOWS
(in thousands)
(Unaudited)

	Three Months Ended March 31,	
	2020	2019
Cash flows provided by (used in) operating activities:		
Net income (loss)	\$ 1,162	\$ (15,339)
Adjustments to reconcile net income (loss) to net cash provided by (used in) operating activities:		
Depreciation and amortization	4,768	2,396
Stock-based compensation	2,437	1,900
Deferred income taxes	(75)	(2,700)
Increase in provision for doubtful accounts	2	1,255
Excess and obsolete inventory valuation adjustment	519	(613)
Gain on disposal of assets	10	—
Changes in operating assets and liabilities:		
Accounts receivable	38,021	25,289
Inventory	11,873	(16,986)
Prepaid expenses and other assets	(231)	(1,721)
Prepaid income taxes	(6,446)	(1,245)
Accounts payable	(9,128)	1,165
Accrued expenses and other current liabilities	(8,204)	(8,171)
Accrued income taxes	(1,609)	812
Deferred revenue	(7,030)	109
Net cash provided by (used in) operating activities	<u>26,069</u>	<u>(13,849)</u>
Cash flows used in investing activities:		
Purchases of property and equipment	(390)	(1,835)
Net cash used in investing activities	<u>(390)</u>	<u>(1,835)</u>
Cash flows used in financing activities:		
Principal repayments of debt	(830)	(828)
Proceeds from exercise of stock options	312	1,498
Employee taxes paid related to net share settlement of equity awards	(459)	(1,004)
Payments of dividends and equitable adjustments	(176)	(761)
Repurchases of common stock	(2,998)	—
Net cash used in financing activities	<u>(4,151)</u>	<u>(1,095)</u>
Effect of exchange rate changes on cash and cash equivalents	(408)	609
Net increase (decrease) in cash, cash equivalents and restricted cash	21,120	(16,170)
Cash, cash equivalents and restricted cash at beginning of period	114,657	281,606
Cash, cash equivalents and restricted cash at end of period ⁽¹⁾	<u>\$ 135,777</u>	<u>\$ 265,436</u>
Supplemental disclosures of cash flow information:		
Cash paid for interest	\$ 4,194	\$ 4,682
Cash paid for income taxes	\$ 189	\$ 683
Supplemental disclosures of non-cash operating, investing and financing activities:		
Purchases of property and equipment included in accounts payable	\$ 1,879	\$ 858
Unpaid equitable adjustments included in accrued expenses and other current liabilities	\$ 555	\$ 2,575
Release of customer incentives included in accounts receivable and accrued expenses and other current liabilities	\$ —	\$ 5,389
Fair value of cash flow hedges	\$ 356	\$ —

(1) See Note 2 of the accompanying notes for a reconciliation of the ending balance of cash, cash equivalents and restricted cash shown in these condensed consolidated statements of cash flows.

The accompanying notes are an integral part of these unaudited condensed consolidated financial statements.

CASA SYSTEMS, INC.
NOTES TO UNAUDITED CONDENSED CONSOLIDATED FINANCIAL STATEMENTS
(in thousands, except per share amounts)
(Unaudited)

1. Nature of Business and Basis of Presentation

Casa Systems, Inc. (the “Company”) was incorporated under the laws of the State of Delaware on February 28, 2003. The Company is a global communications technology company headquartered in Andover, Massachusetts and has wholly owned subsidiaries in China, France, Canada, Ireland, Spain, Colombia, the Netherlands, Hong Kong, Australia, Germany, the United Kingdom and New Zealand.

The Company offers converged solutions for next-generation centralized, distributed and virtualized architectures for cable broadband, fixed-line broadband and wireless networks. The Company’s solutions enable customers to cost-effectively and dynamically increase network speed, add bandwidth capacity and new services for consumers and enterprises, reduce network complexity and reduce operating and capital expenditures.

The Company is subject to a number of risks similar to other companies of comparable size and other companies selling and providing services to the communications industry. These risks include, but are not limited to, the level of capital spending by the communications industry, a lengthy sales cycle, dependence on the development of new products and services, unfavorable economic and market conditions, risks associated with coronavirus (COVID-19), competition from larger and more established companies, limited management resources, dependence on a limited number of contract manufacturers and suppliers, the rapidly changing nature of the technology used by the communications industry and reliance on resellers and sales agents. Failure by the Company to anticipate or to respond adequately to technological developments in its industry, changes in customer or supplier requirements, changes in regulatory requirements or industry standards, or any significant delays in the development or introduction of products could have a material adverse effect on the Company’s operating results, financial condition and cash flows.

On July 1, 2019, the Company acquired 100% of the equity interests in NetComm Wireless Limited (“NetComm”) for cash consideration of \$161,963 Australian dollars (“AUD”) (\$112,674 United States dollars (“USD”)), based on an exchange rate of USD \$0.700 per AUD \$1.00 on July 1, 2019) and NetComm became a wholly-owned subsidiary of the Company (the “Acquisition”). NetComm is a global leader in the development of fixed wireless and distribution point broadband solutions, and with the Acquisition, the Company now offers a broad, highly competitive product portfolio for new 4G and 5G fixed wireless access products and customer premise equipment for vDSL2 and G.fast services for service providers.

The Company is an “emerging growth company,” as defined in the Jumpstart Our Business Startups Act of 2012 (the “JOBS Act”), and may remain an emerging growth company until the last day of the fiscal year following the fifth anniversary of the initial public offering, subject to specified conditions. The JOBS Act provides that an emerging growth company can take advantage of the extended transition period afforded by the JOBS Act for the implementation of new or revised accounting standards. The Company has elected not to “opt out” of such extended transition period, which means that when a standard is issued or revised, and it has different application dates for public or private companies, the Company will adopt the new or revised standard at the time private companies adopt the new or revised standard, provided that the Company continues to be an emerging growth company. The JOBS Act provides that the decision to take advantage of the extended transition period for complying with new or revised accounting standards is irrevocable.

The accompanying condensed consolidated balance sheet as of March 31, 2020, the condensed consolidated statements of operations and comprehensive income (loss) for the three months ended March 31, 2020 and 2019, the condensed consolidated statements of cash flows for the three months ended March 31, 2020 and 2019 and the condensed consolidated statements of stockholders’ equity for the three months ended March 31, 2020 and 2019 are unaudited. The financial data and other information disclosed in these notes related to the three months ended March 31, 2020 and 2019 are also unaudited. The accompanying condensed consolidated balance sheet as of December 31, 2019 was derived from the Company’s audited consolidated financial statements for the year ended December 31, 2019 included in the Company’s Annual Report on Form 10-K filed with the Securities and Exchange Commission (“SEC”) on February 27, 2020 (the “Annual Report on Form 10-K”). The accompanying unaudited condensed consolidated financial statements have been prepared in accordance with generally accepted accounting principles in the United States (“GAAP”) regarding interim financial reporting. Certain information and note disclosures normally included in the consolidated financial statements prepared in accordance with GAAP have been condensed or omitted. Therefore, these condensed consolidated financial statements should be read in conjunction with the consolidated financial statements and notes included in the Annual Report on Form 10-K. There have been no material changes to the Company’s accounting policies from those disclosed in the Annual Report on Form 10-K that would have a material impact on the Company’s condensed consolidated financial statements.

The unaudited interim condensed consolidated financial statements have been prepared on a basis consistent with that used to prepare the audited annual consolidated financial statements and, in the opinion of management, include all adjustments, consisting of only normal recurring adjustments, necessary for a fair statement of the financial position, results of operations and cash flows for the interim periods, but are not necessarily indicative of the results of operations and cash flows to be anticipated for the full year ending December 31, 2020 or any future period.

The accompanying condensed consolidated financial statements include the accounts and results of operations of the Company and its wholly owned subsidiaries. All intercompany transactions and balances have been eliminated in consolidation.

2. Summary of Significant Accounting Policies

Use of Estimates

The preparation of financial statements in conformity with GAAP requires management to make estimates and assumptions that affect the reported amounts of assets and liabilities and the disclosures of contingent assets and liabilities at the date of the financial statements and the reported amounts of revenue and expenses during the reporting periods.

Significant estimates and judgments relied upon by management in preparing these condensed consolidated financial statements include revenue recognition, provision for doubtful accounts, reserves for excess and obsolete inventory, valuation of inventory and deferred inventory costs, the expensing and capitalization of software-related research and development costs, amortization and depreciation periods, recoverability of net deferred tax assets, valuations of uncertain tax positions, benefit from income taxes, warranty allowances, the valuation of equity instruments and stock-based compensation expense.

Although the Company regularly reassesses the assumptions underlying these estimates, actual results could differ materially from these estimates. Changes in estimates are recorded in the period in which they become known. The Company bases its estimates on historical experience and various other assumptions that it believes to be reasonable under the circumstances existing at the time such estimates are made.

The emergence of COVID-19 around the world, and particularly in the United States and China, presents various risks to the Company, not all of which the Company is able to fully evaluate or even to foresee at the current time, and could have a material effect upon the estimates and judgments relied upon by management in preparing these condensed consolidated financial statements. While the COVID-19 pandemic did not materially adversely affect the Company's financial results and business operations in the quarter ended March 31, 2020, economic and health conditions in the United States and across most of the globe have changed rapidly since the end of the quarter. Globally, all aspects of the Company's business remain fully operational, and it is working with its supply chain to ensure continued availability of all anticipated inventory requirements. The Company will continue to monitor its business very closely for any effects of COVID-19 for as long as necessary on an ongoing basis.

Cash, Cash Equivalents and Restricted Cash

Cash and cash equivalents include all highly liquid investments maturing within three months from the date of purchase. As of March 31, 2020 and December 31, 2019, the Company's cash and cash equivalents consisted of investments in certificates of deposit and money market mutual funds.

Restricted cash as of March 31, 2020 and December 31, 2019 consisted of a certificate of deposit of \$1,025 and \$1,019, respectively, pledged as collateral for a stand-by letter of credit required to support a contractual obligation.

The following table is a reconciliation of cash, cash equivalents and restricted cash included in the accompanying condensed consolidated balance sheets that sum to the total cash, cash equivalents and restricted cash included in the accompanying condensed consolidated statements of cash flows:

	<u>March 31, 2020</u>	<u>March 31, 2019</u>
Cash and cash equivalents	\$ 134,752	\$ 264,411
Restricted cash included in other assets	1,025	1,025
	<u>\$ 135,777</u>	<u>\$ 265,436</u>

Accounts Receivable

Accounts receivable are presented net of a provision for doubtful accounts, which is an estimate of amounts that may not be collectible. Accounts receivable for customer contracts with customary payment terms, which are one year or less, are recorded at invoiced amounts and do not bear interest. The Company generally does not require collateral, but the Company may, in certain instances based on its credit assessment, require full or partial prepayment prior to shipment.

In limited instances, for certain customers and/or for certain transactions, the Company provides extended payment terms that are considered significant financing components. These extended payment terms allow the customer to pay for the purchased equipment in monthly, other periodic or lump-sum payments over a period of one to five years. In certain circumstances, the receivables may be collateralized by the underlying assets over the payment period. Payments due beyond 12 months from the balance sheet date are recorded as non-current assets.

Accounts receivable as of March 31, 2020 and December 31, 2019 consisted of the following:

	March 31, 2020	December 31, 2019
Current portion of accounts receivable, net:		
Accounts receivable, net	\$ 53,390	\$ 91,273
Accounts receivable, extended payment terms	1,623	1,827
	55,013	93,100
Accounts receivable, net of current portion:		
Accounts receivable, extended payment terms	522	575
	\$ 55,535	\$ 93,675

The Company performs ongoing credit evaluations of its customers and, if necessary, provides a provision for doubtful accounts and expected losses. When assessing and recording its provision for doubtful accounts, the Company evaluates the age of its accounts receivable, current economic trends, creditworthiness of the customers, customer payment history, and other specific customer and transaction information. The Company writes off accounts receivable against the provision when it determines a balance is uncollectible and no longer actively pursues collection of the receivable. Adjustments to the provision for doubtful accounts are recorded as selling, general and administrative expenses in the condensed consolidated statements of operations and comprehensive income (loss).

As of March 31, 2020 and December 31, 2019, the Company concluded that all amounts due under extended payment terms were collectible and no reserve for credit losses was recorded. During the three months ended March 31, 2020 and 2019, the Company did not provide a reserve for credit losses and did not write off any uncollectible receivables due under extended payment terms.

Concentration of Risks

Financial instruments that potentially subject the Company to concentrations of credit risk consist principally of cash and cash equivalents and accounts receivable. Cash and cash equivalents consist of demand deposits, savings accounts, money market mutual funds, and certificates of deposit with financial institutions, which may exceed Federal Deposit Insurance Corporation limits. The Company has not experienced any losses related to its cash and cash equivalents and does not believe that it is subject to unusual credit risk beyond the normal credit risk associated with commercial banking relationships.

Significant customers are those that represent 10% or more of revenue or accounts receivable and are set forth in the following tables:

	Revenue		Accounts Receivable, Net	
	Three Months Ended March 31, 2020	2019	March 31, 2020	December 31, 2019
Customer A	*	25%	*	11%
Customer B	*	*	*	14%
Customer C	*	12%	*	*
Customer D	12%	*	17%	19%
Customer E	23%	*	*	*

* Less than 10% of total

Certain of the components and subassemblies included in the Company's products are obtained from a single source or a limited group of suppliers. In addition, the Company primarily relies on two third parties to manufacture certain components of its products. Although the Company seeks to reduce dependence on those limited sources of suppliers and manufacturers, the partial or complete loss of certain of these sources could have a material adverse effect on the Company's operating results, financial condition and cash flows and damage its customer relationships.

Goodwill and Acquired Intangible Assets

Goodwill represents the excess purchase price over the estimated fair value of net assets acquired as of the acquisition date. Goodwill has been recorded in connection with the acquisition of NetComm on July 1, 2019 (refer to Note 3). The Company tests goodwill for impairment on an annual basis and between annual tests when impairment indicators are identified, and goodwill is written down when impaired. As of March 31, 2020, the Company considered potential impairment indicators of goodwill and noted no indicators of impairment.

The Company performs its annual goodwill impairment test during its fourth quarter. For its annual goodwill impairment test, the Company operates under one reporting unit and the fair value of its reporting unit has been determined based on the Company's enterprise value. As part of the annual goodwill impairment test, the Company has the option to perform a qualitative assessment to determine whether further impairment testing is necessary. Examples of events and circumstances that might indicate that the reporting unit's fair value is less than its carrying amount include macro-economic conditions such as deterioration in the entity's operating environment or industry or market considerations; entity-specific events such as increasing costs, declining financial performance, or loss of key personnel; or other events such as a sustained decrease in the stock price on either an absolute basis or relative to peers. If, as a result of its qualitative assessment, it is more likely than not (i.e., greater than 50% chance) that the fair value of the Company's reporting unit is less than its carrying amount, the quantitative impairment test will be required. Otherwise, no further testing will be required.

The Company's intangible assets subject to amortization are amortized using the straight-line method over their estimated useful lives, ranging from three to ten years. The Company evaluates the recoverability of intangible assets periodically by taking into account events or circumstances that may warrant revised estimates of useful lives or that indicate the asset may be impaired. The Company considered potential impairment indicators of acquired intangible assets at March 31, 2020 and noted no indicators of impairment.

Derivative Instruments

The Company has transactions and balances denominated in currencies other than the U.S. dollar. Most of these transactions or balances are denominated in Euros and Australian dollars. The Company has historically entered into foreign exchange contracts to reduce its exposure to currency fluctuations. Historically, these transactions have not qualified for hedge accounting. However, beginning in March 2020, the Company entered into two forward contracts to hedge against the impact of foreign currency fluctuations on certain forecasted operating expenses. These instruments qualified for hedge accounting as cash flow hedges, and were appropriately designated as such, thus permitting the application of special hedge accounting under ASC 815, *Derivatives and Hedging*, which states that changes in the market value of the hedging instrument are accounted for within stockholder's equity as accumulated other comprehensive loss, until such time as the hedged cash flows take place. Upon utilization of the hedge instrument for the designated cash flows, the appropriate amounts are reclassified from accumulated other comprehensive loss to the relevant line items within the Statement of Operations for the period. For further information, please refer to Note 9, "Derivative Instruments".

Impact of Recently Adopted Accounting Standards

In June 2018, the FASB issued ASU 2018-07, *Compensation – Stock Compensation (Topic 718)* ("ASU 2018-07"), which expands the scope of Topic 718 to include share-based payment transactions for acquiring goods and services from nonemployees. The Company adopted ASU 2018-07 as of January 1, 2020 and it did not have a material effect on its condensed consolidated financial statements.

Impact of Recently Issued Accounting Standards

In February 2016, the FASB issued ASU 2016-02, *Leases* (“ASU 2016-02”), which will require lessees to recognize most leases on their balance sheets as a right-of-use asset with a corresponding lease liability, and lessors to recognize a net lease investment. Additional qualitative and quantitative disclosures will also be required. In November 2019, the FASB issued ASU 2019-10, *Financial Instruments-Credit Losses (Topic 326), Derivatives and Hedging (Topic 815), and Leases (Topic 842): Effective Dates* (“ASU 2019-10”) to defer the effective dates of ASU 2016-02. This guidance is will become effective for private companies, and emerging growth companies that choose to take advantage of the extended transition periods, for annual reporting periods beginning after December 15, 2020, and interim periods within fiscal years beginning after December 15, 2021. Early application continues to be permitted. In July 2018, the FASB issued ASU 2018-10, *Codification Improvements to Topic 842: Leases* (“ASU 2018-10”), which affects narrow aspects of the guidance issued in the amendments in ASU 2016-02. ASU 2018-10 has the same effective dates and transition requirements as ASU 2016-02. In July 2018, the FASB issued update ASU 2018-11, *Leases (Topic 842), Targeted Improvements* (“ASU 2018-11”), which provided for an additional (and optional) transition method with which to adopt the new lease standard in ASU 2016-02. The additional method allows entities to apply the new leases standard at the adoption date and recognize a cumulative-effect adjustment to the opening balance of retained earnings in the period of adoption. Additionally, in December 2018, the FASB issued update ASU 2018-20, *Leases (Topic 842) – Narrow-Scope Improvements for Lessors* (“ASU 2018-20”), which addresses stakeholders’ concerns about the operability challenges encountered in determining certain lessor costs paid by lessees directly to third parties by requiring lessors to exclude from variable payments, and thus from lease revenue, lessor costs paid by a lessee directly to a third party. The amendments in ASU 2018-20 also clarify that costs excluded from the consideration in a contract that are paid directly to a third party by a lessor and reimbursed by the lessee are lessor costs to be accounted for as variable payments. The Company is currently assessing the potential impact that the adoption of ASU 2016-02, ASU 2018-10, ASU 2018-11, ASU 2018-20 and ASU 2019-10 will have on its consolidated financial statements. The Company is in the process of reviewing existing lease agreements to assess the impact this guidance may have on the consolidated financial statements. The Company currently expects that most of its operating lease commitments will be subject to the new standard and will affect the consolidated balance sheet by recognizing new right-of-use assets and operating lease liabilities upon the adoption of ASU 2016-02, which will increase the total assets and total liabilities that it reports relative to such amounts prior to adoption.

In June 2016, the FASB issued ASU 2016-13, *Measurement of Credit Losses on Financial Instruments* (“ASU 2016-13”). This guidance intended to provide more decision-useful information about expected credit losses on financial instruments and other commitments to extend credit held by a reporting entity at each reporting date. The main provisions include presenting financial assets measured at amortized cost at the amount expected to be collected, which is net of an allowance for expected credit losses, and recording credit losses related to available-for-sale securities through an allowance for credit losses. The effective dates for the amendments in ASU 2016-13 were updated in ASU 2019-10, *Financial Instruments – Credit Losses (Topic 326), Derivatives and Hedging (Topic 815), and Leases (Topic 842)*, and as such ASU 2016-13 will now be effective for private companies, and emerging growth companies that choose to take advantage of the extended transition periods, for fiscal years beginning after December 15, 2022, including interim periods within those fiscal periods, and must be applied using a modified retrospective approach. The Company is currently evaluating the impact ASU 2016-13 will have on its consolidated financial statements.

Other

For further information with regard to the Company’s significant accounting policies, please refer to Note 2 “Summary of Significant Accounting Policies” to the Company’s consolidated financial statements included in the Annual Report on Form 10-K for the fiscal year ended December 31, 2019.

3. Business Acquisition

On July 1, 2019, the Company acquired 100% of the equity interests in NetComm for cash consideration of \$161,963 AUD (\$112,674 USD, based on an exchange rate of USD \$0.700 per AUD \$1.00 on July 1, 2019) and NetComm became a wholly-owned subsidiary of the Company. The Acquisition was accounted for under the acquisition method. The total purchase price is allocated to the tangible and intangible assets acquired and the liabilities assumed based on their estimated fair values. The excess of the purchase price over those fair values is recorded as goodwill. The fair value assigned to the tangible and intangible assets acquired and liabilities assumed are based on estimates and assumptions provided by management. Goodwill is not amortized but instead is tested for impairment at least annually.

NetComm is a global leader in the development of fixed wireless and distribution point broadband solutions. With the Acquisition, the Company now offers a broad, highly competitive product portfolio for new 4G and 5G fixed wireless access products and customer premise equipment for vDSL2 and G.fast services for service providers. This factor contributed to a purchase price in excess of fair value of NetComm’s net tangible and intangible assets, leading to the recognition of goodwill.

The total purchase price was preliminarily allocated to NetComm's net tangible and intangible assets based upon their estimated fair values as of the date of Acquisition. NetComm's cash and cash equivalents balance at the Acquisition date was \$3,243; as such, total consideration net of cash acquired is \$109,431. NetComm's existing debt of approximately \$3,507 as of the Acquisition date has been accounted for as an assumed liability. As of July 1, 2019, all contractual amounts receivable, which totaled \$18,142, are expected to be collected. Based upon the purchase price and the valuation, the allocation of the total purchase price is as follows:

	Preliminary Purchase Price Allocation
Assets acquired	
Fair value of tangible assets:	
Accounts receivable	\$ 18,142
Inventory	24,138
Prepaid expenses and other current assets	2,240
Property, plant and equipment	8,010
Deferred tax assets	365
Other assets	13
Goodwill	50,347
Identifiable intangible assets	44,000
Total assets acquired	<u>\$ 147,255</u>
Liabilities assumed	
Accounts payable	\$ (9,719)
Accrued expenses	(13,178)
Accrued income taxes	(140)
Deferred tax liabilities	(10,791)
Current portion of long-term debt	(3,507)
Other liabilities	(489)
Total liabilities assumed	<u>\$ (37,824)</u>
Net assets acquired	<u>\$ 109,431</u>

The preliminary allocation of the purchase price and the estimated useful lives associated with certain assets is as follows:

	Amount	Estimated Useful Life
Net tangible assets	\$ 15,084	—
Identifiable intangible assets:		
Developed technology	25,000	7 years
Customer relationships	18,000	10 years
Trade name	1,000	3 years
Goodwill	50,347	—
Total purchase price	<u>\$ 109,431</u>	

Intangible assets of \$44,000 have been allocated to identifiable intangible assets consisting of developed technology, amortized over seven years using a straight-line amortization method; customer relationships, amortized over ten years using a straight-line amortization method; and a trade name, amortized over three years using a straight-line amortization method. The weighted average life of the identifiable intangible assets recognized from the Acquisition was 8.2 years.

The Acquisition accounting has resulted in goodwill of \$50,347. Various factors contributed to the establishment of the goodwill, including: the strategic benefit of expanding the breadth of the Company's product offerings; the value of NetComm's highly trained work force; the expected revenue growth over time that is attributable to increased market penetration from future products and customers, and cross-selling by the sales force; and the synergies expected to result from reducing redundant infrastructure such as corporate costs and field operations. The goodwill acquired in the Acquisition is not deductible for tax purposes.

4. Goodwill and Intangible Assets

There were no changes to goodwill during the three months ended March 31, 2020.

Intangible assets, net consisted of the following at March 31, 2020 and December 31, 2019:

	Cost	Accumulated amortization	Net Balance
Developed Technology	\$ 25,000	\$ (2,679)	\$ 22,321
Customer Relationships	18,000	(1,350)	16,650
Trade Name	1,000	(250)	750
Totals as of March 31, 2020	<u>\$ 44,000</u>	<u>\$ (4,279)</u>	<u>\$ 39,721</u>

	Cost	Accumulated amortization	Net Balance
Developed Technology	\$ 25,000	\$ (1,786)	\$ 23,214
Customer Relationships	18,000	(900)	17,100
Trade Name	1,000	(166)	834
Totals as of December 31, 2019	<u>\$ 44,000</u>	<u>\$ (2,852)</u>	<u>\$ 41,148</u>

As of March 31, 2020, amortization expense on existing intangible assets for the next five years and beyond is as follows:

Year Ending December 31,	
2020	\$ 4,279
2021	5,704
2022	5,538
2023	5,371
2024	5,371
Thereafter	13,458
	<u>\$ 39,721</u>

The Company recorded amortization expense of \$893 and \$533 related to intangible assets, which were included in product cost of revenue and selling, general and administrative expense, respectively, for the three months ended March 31, 2020 in the condensed consolidated statements of operations and comprehensive income (loss). The Company recorded no amortization expense related to intangible assets for the three months ended March 31, 2019.

5. Inventory

Inventory as of March 31, 2020 and December 31, 2019 consisted of the following:

	March 31, 2020	December 31, 2019
Raw materials	\$ 28,455	\$ 24,000
Work in process	—	17
Finished goods:		
Manufactured finished goods	57,838	70,923
Deferred inventory costs	836	4,263
	<u>87,129</u>	<u>99,203</u>
Valuation allowance for excess and obsolete inventory	(6,115)	(5,599)
	<u>\$ 81,014</u>	<u>\$ 93,604</u>

6. Property and Equipment

Property and equipment as of March 31, 2020 and December 31, 2019 consisted of the following:

	March 31, 2020	December 31, 2019
Computers and purchased software	\$ 22,127	\$ 22,294
Leasehold improvements	4,384	4,380
Furniture and fixtures	2,965	2,794
Machinery and equipment	40,592	40,002
Land	3,091	3,091
Building	4,765	4,765
Building improvements	7,231	6,776
Trial systems at customers' sites	5,816	6,039
	<u>90,971</u>	<u>90,141</u>
Less: Accumulated depreciation and amortization	(56,740)	(54,231)
	<u>\$ 34,231</u>	<u>\$ 35,910</u>

During the three months ended March 31, 2020 and 2019, the Company transferred trial systems to inventory from property and equipment with values of \$237 and \$109, respectively, net of transfers of trial systems to cost of revenue. In addition, the Company transferred \$9 and \$(411) of equipment from (to) inventory into (from) property and equipment during the three months ended March 31, 2020 and 2019, respectively.

Depreciation and amortization expense on property and equipment totaled \$3,347 and \$2,396 for the three months ended March 31, 2020 and 2019, respectively.

7. Accrued Expenses and Other Current Liabilities

Accrued expenses and other current liabilities as of March 31, 2020 and December 31, 2019 consisted of the following:

	March 31, 2020	December 31, 2019
Accrued compensation and related taxes	\$ 12,735	\$ 18,540
Accrued warranty	2,234	2,448
Dividends and equitable adjustments payable (see Note 12)	555	750
Accrued customer incentives	11	233
Other accrued expenses	10,585	12,596
	<u>\$ 26,120</u>	<u>\$ 34,567</u>

Accrued Warranty

Substantially all of the Company's products are covered by warranties for software and hardware for periods ranging from 90 days to one year. In addition, in conjunction with customers' renewals of maintenance and support contracts, the Company offers an extended warranty for periods typically of one to three years for agreed-upon fees. In the event of a failure of a hardware product or software covered by these warranties, the Company must repair or replace the software or hardware or, if those remedies are insufficient, and at the discretion of the Company, provide a refund. The Company's warranty reserve, which is included in accrued expenses and other current liabilities in the condensed consolidated balance sheets, reflects estimated material, labor and other costs related to potential or actual software and hardware warranty claims for which the Company expects to incur an obligation. The Company's estimates of anticipated rates of warranty claims and the costs associated therewith are primarily based on historical information and future forecasts. The Company periodically assesses the adequacy of the warranty reserve and adjusts the amount as necessary. If the historical data used to calculate the adequacy of the warranty reserve are not indicative of future requirements, additional or reduced warranty reserves may be required.

A summary of changes in the amount reserved for warranty costs for the three months ended March 31, 2020 and 2019 is as follows:

	Three Months Ended March 31,	
	2020	2019
Warranty reserve at beginning of period	\$ 2,448	\$ 926
Provisions	550	525
Charges	(764)	(574)
Warranty reserve at end of period	\$ 2,234	\$ 877

8. Fair Value Measurements

Certain assets and liabilities are carried at fair value under GAAP. Fair value is defined as the price that would be received for an asset or the exit price that would be paid to transfer a liability in the principal or most advantageous market in an orderly transaction between market participants on the measurement date. Valuation techniques used to measure fair value must maximize the use of observable inputs and minimize the use of unobservable inputs. Financial assets and liabilities carried at fair value are to be classified and disclosed in one of the following three levels of the fair value hierarchy, of which the first two are considered observable and the last is considered unobservable:

Level 1— Quoted prices in active markets for identical assets and liabilities.

Level 2— Observable inputs (other than Level 1 quoted prices), such as quoted prices in active markets for similar assets or liabilities at the measurement date; quoted prices in markets that are not active for identical or similar assets and liabilities; or other inputs that are observable or can be corroborated by observable market data.

Level 3— Unobservable inputs that involve management judgment and are supported by little or no market activity, including pricing models, discounted cash flow methodologies and similar techniques.

The following tables present information about the fair value of the Company's financial assets and liabilities as of March 31, 2020 and December 31, 2019 and indicate the level of the fair value hierarchy utilized to determine such fair values:

	Fair Value Measurements as of March 31, 2020 Using:			
	Level 1	Level 2	Level 3	Total
Assets:				
Certificates of deposit—restricted cash	\$ —	\$ 1,025	\$ —	\$ 1,025
Money market mutual funds	60,735	—	—	60,735
Foreign currency forward contracts	—	356	—	356
	<u>\$ 60,735</u>	<u>\$ 1,381</u>	<u>\$ —</u>	<u>\$ 62,116</u>
Liabilities:				
SARs	\$ —	\$ —	\$ 199	\$ 199
	<u>\$ —</u>	<u>\$ —</u>	<u>\$ 199</u>	<u>\$ 199</u>
Fair Value Measurements as of December 31, 2019 Using:				
	Level 1	Level 2	Level 3	Total
Assets:				
Certificates of deposit	\$ —	\$ 10,933	\$ —	\$ 10,933
Certificates of deposit—restricted cash	—	1,019	—	1,019
Money market mutual funds	53,763	—	—	53,763
Foreign currency forward contracts	—	23	—	23
	<u>\$ 53,763</u>	<u>\$ 11,975</u>	<u>\$ —</u>	<u>\$ 65,738</u>
Liabilities:				
SARs	\$ —	\$ —	\$ 264	\$ 264
Foreign currency forward contracts	—	50	—	50
	<u>\$ —</u>	<u>\$ 50</u>	<u>\$ 264</u>	<u>\$ 314</u>

During the three months ended March 31, 2020 and 2019, there were no transfers between Level 1, Level 2 and Level 3.

There were no changes to the valuation techniques used to measure asset and liability fair values on a recurring basis during the three months ended March 31, 2020 from those included in the Company's consolidated financial statements for the year ended December 31, 2019. The following table provides a summary of changes in the fair values of the Company's stock appreciation rights ("SARs") liability, for which fair value is determined by Level 3 inputs:

	Three Months Ended March 31,	
	2020	2019
Fair value at beginning of period	\$ 264	\$ 1,387
Change in fair value	(65)	(660)
Exercises	—	—
Fair value at end of period	<u>\$ 199</u>	<u>\$ 727</u>

9. Derivative Instruments

The Company has certain international customers that are billed in foreign currencies. To mitigate the volatility related to fluctuations in the foreign exchange rates for accounts receivable denominated in foreign currencies, the Company enters into foreign currency forward contracts. As of March 31, 2020, no foreign currency forward contracts were outstanding. As of December 31, 2019, the Company had foreign currency forward contracts outstanding with notional amounts totaling 500 Euros and 900 USD related to the Company's Australian subsidiary which matured during the first quarter of 2020.

The Company's foreign currency forward contracts describe above economically hedged certain risks but were not designated as hedges for financial reporting purposes, and accordingly, all changes in the fair value of this derivative instrument were recorded as unrealized foreign currency transaction gains or losses and were included in the condensed consolidated statements of operations and comprehensive income (loss) as a component of other income (expense). The Company records derivative instruments in the condensed consolidated balance sheet at their fair values. As of March 31, 2020, the Company recorded no asset relating to outstanding foreign currency forward contracts and as of December 31, 2019, had recorded an asset of \$23 which was included in prepaid expenses and other current assets in the condensed consolidated balance sheets. As of March 31, 2020, the Company recorded no liability relating to outstanding foreign currency forward contracts and as of December 31, 2019, had recorded a liability of \$50, related to outstanding foreign currency forward contracts, which was included in accrued expenses and other current liabilities in the condensed consolidated balance sheets.

The Company also faces exposure to foreign currency exchange rate fluctuations, as a certain portion of its expenses are denominated in currencies other than U.S. Dollars. In certain instances, we utilize forward contracts to hedge against foreign currency fluctuations. These contracts are used to minimize foreign gains or losses, as the gains or losses on the derivative are intended to offset the losses or gains on the underlying exposure. We do not engage in foreign currency speculation.

The Company's foreign currency risk management strategy is principally designed to mitigate the potential financial impact of changes in the value of transactions and balances denominated in foreign currencies resulting from changes in foreign currency exchange rates. The Company may enter into cash flow hedges which utilize foreign currency forward contracts to hedge specific forecasted transactions of the Company's foreign subsidiaries with the goal of protecting our budgeted expenses against foreign currency exchange rate changes compared to our budgeted rates.

As of March 31, 2020, the company had entered into two cash flow hedges with notional amounts totaling 7,883 AUD to hedge certain Australian Dollar cash flows during the second and third quarters of 2020. These contracts mature in the second and third quarters of 2020, respectively. Accordingly, as of March 31, 2020, the company recorded an asset for the fair value of the hedges of \$356, which is included in prepaid expenses and other current assets in the accompanying condensed consolidated balance sheets as of March 31, 2020. As the cash flows being hedged had not yet occurred, the full amount of the fair value at March 31, 2020 has been recognized as accumulated other comprehensive loss in the accompanying condensed consolidated balance sheets as of March 31, 2020. The Company did not have any cash flow hedges as of December 31, 2019.

10. Income Taxes

The Company's effective income tax rate was 115.4% and 12.4% for the three months ended March 31, 2020 and 2019, respectively. The benefit from income taxes was \$8,719 and \$2,170 for the three months ended March 31, 2020 and 2019, respectively.

The Company determines its estimated annual effective tax rate at the end of each interim period based on estimated pre-tax income (loss) and facts known at that time. The estimated annual effective tax rate is applied to the year-to-date pre-tax income (loss) at the end of each interim period with certain adjustments. The tax effects of significant unusual or extraordinary items are reflected as discrete adjustments in the periods in which they occur. The Company's estimated annual effective tax rate can change based on the mix of jurisdictional pre-tax income (loss) and other factors. However, if a company is unable to make a reliable estimate of its annual effective tax rate, then the actual effective tax rate for the year-to-date period may be the best estimate. For the three months ended March 31, 2020, the Company determined that its annual effective tax rate approach would provide for a reliable estimate and therefore used this method to calculate its first quarter tax provision. Due to US deferred tax assets requiring a full valuation allowance, the Company determined that best estimates would be made using separate annual effective tax rates for the United States and the rest of the world.

The effective income tax rate for the three months ended March 31, 2020 and 2019 differed from the federal statutory rate due to geographical mix of earnings and related foreign tax rate differential, permanent differences, research and development tax credits, foreign tax credits, valuation allowance and withholding taxes. Permanent differences primarily included global intangible low-taxed income, Australian research and development expenditures claim and excess tax benefit from stock-based transactions.

On March 27, 2020, the Coronavirus Aid, Relief and Economic Security ("CARES") Act was enacted and signed into law. Accordingly, applicable provisions of the CARES Act have been reflected in the tax provision for the quarter ended March 31, 2020. The CARES Act, among other things, permits net operating loss ("NOL") carryovers and carrybacks to offset 100% of taxable income for taxable years beginning before 2021. In addition, the CARES Act allows NOLs incurred in 2018, 2019, and 2020 to be carried back to each of the five preceding taxable years to generate a refund of previously paid income taxes. The Company is currently evaluating certain aspects of these provisions, but has determined that the NOL it incurred in 2019 may be carried back, and accordingly has recognized a benefit of approximately \$9,310 in the three months ended March 31, 2020, which is included in prepaid income taxes in the condensed consolidated balance sheet as of March 31, 2020. Of this amount, approximately \$7,627 related to release of valuation allowances due to the conversion of certain deferred tax assets to NOLs available for carryback. As of December 31, 2019, the Company had recorded a full valuation allowance against its deferred tax assets in the United States.

The change in the benefit from income taxes for the three months ended March 31, 2020 compared to the three months ended March 31, 2019 was primarily due to the pre-tax net loss for the three months ended March 31, 2020 of \$7,557 coupled with the recognition of the benefit from the CARES Act provisions concerning NOL carrybacks compared to the pre-tax net loss for the three months ended March 31, 2019 of \$17,509.

11. Debt

The aggregate principal amount of debt outstanding as of March 31, 2020 and December 31, 2019 consisted of the following:

	March 31, 2020	December 31, 2019
Term loans	\$ 290,250	\$ 291,000
Mortgage loan	6,564	6,644
Total principal amount of debt outstanding	<u>\$ 296,814</u>	<u>\$ 297,644</u>

Current and non-current debt obligations reflected in the condensed consolidated balance sheets as of March 31, 2020 and December 31, 2019 consisted of the following:

	March 31, 2020	December 31, 2019
Current liabilities:		
Term loans	\$ 3,000	\$ 3,000
Mortgage loan	6,564	6,644
Current portion of principal payment obligations	9,564	9,644
Unamortized debt issuance costs, current portion	(1,115)	(1,120)
Current portion of long-term debt, net of unamortized debt issuance costs	<u>\$ 8,449</u>	<u>\$ 8,524</u>
Non-current liabilities:		
Term loans	\$ 287,250	\$ 288,000
Non-current portion of principal payment obligations	287,250	288,000
Unamortized debt issuance costs, non-current portion	(2,968)	(3,244)
Long-term debt, net of current portion and unamortized debt issuance costs	<u>\$ 284,282</u>	<u>\$ 284,756</u>

Term Loan and Revolving Credit Facilities

On December 20, 2016, the Company entered into a credit agreement with JPMorgan Chase Bank, N.A., as administrative agent, various lenders and JPMorgan Chase Bank, N.A. and Barclays Bank PLC providing for (i) a term loan facility of \$300,000 and (ii) a revolving credit facility of up to \$25,000 in revolving credit loans and letters of credit.

As of March 31, 2020 and December 31, 2019, \$290,250 and \$291,000 in principal amount, respectively, was outstanding under the term loan facility (the "Term Loans") and the Company did not have any outstanding borrowings under the revolving credit facility; however, as of March 31, 2020 and December 31, 2019, the Company had used \$1,295 and \$1,343 of availability under the revolving credit facility for two stand-by letters of credit, one which serves as collateral to one of the Company's customers pursuant to a contractual performance guarantee and one which serves as collateral for operating leases in Australia. In addition, the Company may, subject to certain conditions, including the consent of the administrative agent and the institutions providing such increases, increase the facilities by an unlimited amount so long as the Company is in compliance with specified leverage ratios, or otherwise by up to \$70,000.

Borrowings under the facilities bear interest at a floating rate, which can be either a Eurodollar rate plus an applicable margin or, at the Company's option, a base rate (defined as the highest of (x) the JPMorgan Chase, N.A. prime rate, (y) the federal funds effective rate, plus one-half percent (0.50%) per annum and (z) a one-month Eurodollar rate plus 1.00% per annum) plus an applicable margin. The applicable margin for borrowings under the term loan facility is 4.00% per annum for Eurodollar rate loans (subject to a 1.00% per annum interest rate floor) and 3.00% per annum for base rate loans. As a result of the completion of the Company's IPO in December 2017, the applicable margin for borrowings under the revolving credit facility is 1.75% per annum for Eurodollar rate loans and 0.75% per annum for base rate loans, subject to reduction based on the Company's maintaining of specified net leverage ratios. The interest rates payable under the facilities are subject to an increase of 2.00% per annum during the continuance of any payment default.

For Eurodollar rate loans, the Company may select interest periods of one, three or six months or, with the consent of all relevant affected lenders, twelve months. Interest will be payable at the end of the selected interest period, but no less frequently than every three months within the selected interest period. Interest on any base rate loan is not set for any specified period and is payable quarterly. The Company has the right to convert Eurodollar rate loans into base rate loans and the right to convert base rate loans into Eurodollar rate loans at its option, subject, in the case of Eurodollar rate loans, to breakage costs if the conversion is effected prior to the end of the applicable interest period. As of March 31, 2020, the interest rate on the Term Loans was 5.00% per annum, which was based on a one-month Eurodollar rate at the applicable floor of 1.00% per annum plus the applicable margin of 4.00% per annum for Eurodollar rate loans. As of December 31, 2019, the interest rate on the Term Loans was 5.80% per annum, which was based on a one-month Eurodollar rate of 1.80% per annum plus the applicable margin of 4.00% per annum for Eurodollar rate loans.

Upon entering into the term loan facility, the Company incurred debt issuance costs of \$7,811, which were initially recorded as a reduction of the debt liability and are amortized to interest expense using the effective interest method from the issuance date of the Term Loan until the maturity date. Principal payments of \$750 were made under the term loan facility during each of the three months ended March 31, 2020 and 2019. Interest expense, including the amortization of debt issuance costs, totaled \$4,448 and \$4,958 for the three months ended March 31, 2020 and 2019, respectively.

The revolving credit facility also requires payment of quarterly commitment fees at a rate of 0.25% per annum on the difference between committed amounts and amounts actually borrowed under the facility and customary letter of credit fees. For the three months ended March 31, 2020 and 2019, interest expense related to the fee for the unused amount of the revolving credit facility totaled \$15 and \$16, respectively.

The Term Loans mature on December 20, 2023, and the revolving credit facility matures on December 20, 2021. The Term Loans are subject to amortization in equal quarterly installments, which commenced on March 31, 2017, of principal in an annual aggregate amount equal to 1.0% of the original principal amount of the Term Loans of \$300,000, with the remaining outstanding balance payable at the date of maturity.

Voluntary prepayments of principal amounts outstanding under the term loan facility are permitted at any time; however, if a prepayment of principal is made with respect to a Eurodollar loan on a date other than the last day of the applicable interest period, the Company is required to compensate the lenders for any funding losses and expenses incurred as a result of the prepayment. Prior to the revolving credit facility maturity date, funds borrowed under the revolving credit facility may be borrowed, repaid and reborrowed, without premium or penalty.

In addition, the Company is required to make mandatory prepayments under the facilities with respect to (i) 100% of the net cash proceeds from certain asset dispositions (including casualty and condemnation events) by the Company or certain of its subsidiaries, subject to certain exceptions and reinvestment provisions, (ii) 100% of the net cash proceeds from the issuance or incurrence of any additional debt by the Company or certain of its subsidiaries, subject to certain exceptions, and (iii) 50% of the Company's excess cash flow, as defined in the credit agreement, subject to reduction upon its achievement of specified performance targets.

The facilities are secured by, among other things, a first priority security interest, subject to permitted liens, in substantially all of the Company's assets and all of the assets of certain of its subsidiaries and a pledge of certain of the stock of certain of its subsidiaries, in each case subject to specified exceptions. The facilities contain customary affirmative and negative covenants, including certain restrictions on the Company's ability to pay dividends, and, with respect to the revolving credit facility, a financial covenant requiring the Company to maintain a specified total net leverage ratio in the event that on the last day of any fiscal quarter the Company has utilized more than 30% of its borrowing capacity under the facility. The Company's net leverage ratio exceeded the maximum on March 31, 2020 and December 31, 2019; however, as the Company's utilization of the revolving credit facility did not exceed the 30% testing threshold on either March 31, 2020 or December 31, 2019, the Company was not in default of the revolving credit facility as a result of the Company's net leverage ratio exceeding the maximum permitted amount. The Company was in compliance with all other applicable covenants of the facilities as of March 31, 2020 and December 31, 2019.

Commercial Mortgage Loan

On July 1, 2015, the Company entered into a commercial mortgage loan agreement in the amount of \$7,950 (the "Mortgage Loan"). Borrowings under the Mortgage Loan bear interest at a rate of 3.5% per annum and are repayable in 60 monthly installments of \$46, consisting of principal and interest based on a 20-year amortization schedule. The remaining amount of unpaid principal under the Mortgage Loan is due on the maturity date of July 1, 2020. Upon entering into the Mortgage Loan, the Company incurred debt issuance cost of \$45, which was initially recorded as a direct deduction from the debt liability and is amortized to interest expense using the effective interest method from issuance date of the loan until the maturity date.

The Company made principal payments under the Mortgage Loan of \$80 and \$78 during the three months ended March 31, 2020 and 2019, respectively. Interest expense, including the amortization of debt issuance costs, totaled \$60 and \$63 during the three months ended March 31, 2020 and 2019, respectively.

The Mortgage Loan is secured by the land and building purchased in March 2015 and subjects the Company to various affirmative, negative and financial covenants, including maintenance of a minimum debt service ratio. The Company was in compliance with all covenants of the Mortgage Loan as of March 31, 2020 and December 31, 2019.

As of March 31, 2020, aggregate minimum future principal payments of the Company's debt are summarized as follows:

<u>Year Ending December 31,</u>	
2020	\$ 8,814
2021	3,000
2022	3,000
2023	3,000
2024	279,000
Thereafter	—
	<u>\$ 296,814</u>

12. Stockholders' Equity

Special Dividends to Holders of Common and Preferred Stock

The board of directors, on five separate occasions, declared a special dividend to the holders of common stock and preferred stock of record at that time. The below table details the cash dividends declared to stockholders of each share type for each of the five special dividends, as well as the amount of dividends the Company paid in each of the three months ended March 31, 2020 and 2019, respectively:

<u>Dividend Declaration Date</u>	<u>Cash Dividend Declared per Share Type</u>		<u>Dividends Paid Three months ended</u>	
	<u>Common</u>	<u>Series B and Series C Convertible Preferred</u>	<u>March 31, 2020</u>	<u>March 31, 2019</u>
November 30, 2017	\$ 0.5802	\$ 5.8020	\$ —	\$ 865
May 10, 2017	1.1774	11.7744	—	—
December 27, 2016	2.3306	23.3058	—	—
June 17, 2016	0.5891	5.8910	—	—
November 30, 2014	0.3835	3.8346	—	—
Total dividends paid			<u>\$ —</u>	<u>\$ 865</u>

No dividend payments were payable as of March 31, 2020 and December 31, 2019.

In connection with these special dividends, the board of directors also approved cash payments to be made to holders of the Company's stock options, SARs and restricted stock units ("RSUs") as equitable adjustments to the holders of such instruments in accordance with the provisions of the Company's equity incentive plans. These equitable adjustment payments are equal to an amount per share multiplied by the net number of shares subject to outstanding equity awards after applying the treasury stock method. The below table provides details of these equitable adjustment payments:

<u>Dividend Declaration Dates</u>	<u>Equitable Adjustment per share</u>	<u>Year of Final Vesting</u>	<u>Equitable Adjustment Payments Three months ended</u>		<u>Equitable Adjustment Liability(1)</u>	
			<u>March 31, 2020</u>	<u>March 31, 2019</u>	<u>As of March 31, 2020</u>	<u>As of December 31, 2019</u>
November 30, 2017	\$ 0.5802	2021	\$ 38	\$ 122	\$ 139	\$ 177
May 10, 2017	1.1774	2021	33	170	149	182
December 27, 2016	2.3306	2020	93	391	242	335
June 17, 2016	0.5891	2020	12	77	25	37
November 30, 2014	0.3835	2018	—	1	—	—
Total			<u>\$ 176</u>	<u>\$ 761</u>	<u>\$ 555</u>	<u>\$ 731</u>

(1) Net of estimated forfeitures. Amounts are included in accrued expenses and other current liabilities in the accompanying condensed consolidated balance sheets.

Stock Repurchase Program

On February 21, 2019, the Company announced a stock repurchase program authorizing it to repurchase up to \$75,000 of the Company's common stock. During the three months ended March 31, 2020, the Company repurchased 1,216 shares for a total cost of \$2,998. During the three months ended March 31, 2019, the Company did not repurchase any shares. As of March 31, 2020, \$70,241 remained authorized for repurchases of the Company's common stock under the stock repurchase program. The stock repurchase program has no expiration date and does not require us to purchase a minimum number of shares, and the Company may suspend, modify or discontinue the stock repurchase program at any time without prior notice.

13. Stock-based Compensation

2017 Stock Incentive Plan

The Company's 2017 Stock Incentive Plan (the "2017 Plan") provides for the Company to sell or issue common stock or restricted common stock, or to grant qualified incentive stock options, nonqualified stock options, SARs, performance-based stock units ("PSUs"), RSUs or other stock-based awards to the Company's employees, officers, directors, advisers and outside consultants. The total number of shares authorized for issuance under the 2017 Plan was 17,143 shares as of March 31, 2020, of which 11,225 shares remained available for future grant.

Stock Options

The following table summarizes the outstanding stock option activity and a summary of information related to stock options as of and for the three months ended March 31, 2020:

	Number of Shares	Weighted- Average Exercise Price	Weighted- Average Remaining Contractual Term (in years)	Aggregate Intrinsic Value
Outstanding at January 1, 2020	8,250	\$ 7.73	5.65	\$ 4,235
Granted	18	2.23		
Exercised	(150)	2.08		
Forfeited	(400)	8.32		
Outstanding at March 31, 2020	<u>7,718</u>	\$ 7.80	5.43	\$ 2,901
Options exercisable at March 31, 2020	6,668	\$ 6.88	5.03	\$ 2,878
Vested or expected to vest at March 31, 2020	7,668	\$ 7.77	5.41	\$ 2,898

The fair value of each option is estimated on the date of grant using the Black-Scholes option-pricing model using the following assumptions:

	Three Months Ended March 31,	
	2020	2019
Risk-free interest rate	0.7%	2.5%
Expected term (in years)	6.1	6.1–6.2
Expected volatility	29.3%	30.5%–30.6%
Expected dividend yield	0.0%	0.0%

The weighted-average grant-date fair value of options granted during the three months ended March 31, 2020 and 2019 was \$0.66 and \$3.33 per share, respectively. Cash proceeds received upon the exercise of options were \$312 and \$1,498 during the three months ended March 31, 2020 and 2019, respectively. The intrinsic value of stock options exercised during the three months ended March 31, 2020 and 2019 was \$273 and \$4,770, respectively. The aggregate intrinsic value is calculated as the difference between the exercise price of the stock options and the fair value of the Company's common stock for those stock options that had exercise prices lower than the fair value of the Company's common stock.

Restricted Stock Units

A summary of RSU activity under the Company's 2011 Stock Incentive Plan (the "2011 Plan") and the 2017 Plan for the three months ended March 31, 2020 is as follows:

	Number of Shares	Weighted- Average Grant Date Fair Value	Aggregate Fair Value
Unvested balance at January 1, 2020	1,653	\$ 11.38	
Granted	3,435	3.23	
Vested	(353)	12.16	\$ 1,453
Forfeited	(94)	11.88	
Unvested balance at March 31, 2020	4,641	\$ 5.83	

The Company withheld 111 and 76 shares of common stock in settlement of employee tax withholding obligations due upon the vesting of RSUs during the three months ended March 31, 2020 and 2019, respectively.

Stock Appreciation Rights

Over time, the Company has granted SARs that allow the holder the right, upon exercise, to receive in cash the amount of the difference between the fair value of the Company's common stock at the date of exercise and the price of the underlying common stock at the date of grant of each SAR. The SARs vest over a four-year period from the date of grant and expire ten years from the date of grant. As of March 31, 2020, 220 SARs were outstanding and none were unvested. As of March 31, 2020, there were 220 SARs exercisable and the weighted-average fair value was \$0.90 per SAR. The fair value of the SAR liability as of March 31, 2020 and December 31, 2019 was \$199 and \$264, respectively, (see Note 8) and was included in accrued expenses and other current liabilities in the accompanying condensed consolidated balance sheets.

Performance-Based Stock Units

The Company granted 983 PSUs in February 2020 to certain employees that vest over a three-year period based on the achievement of performance goals and continued performance of services. The performance goals consist solely of market-based vesting conditions, determined by the Company's level of achievement of pre-established parameters relating to the performance of the Company's stock price as set by the Board of Directors. Vesting may occur at any time during the three-year period.

Compensation expense is based on the estimated value of the awards on the grant date, and is recognized over the period from the grant date through the expected vest dates of each vesting condition, both of which were estimated based on a Monte Carlo simulation model applying the following key assumptions:

	For the Three Months Ended March 31, 2020
Risk-free interest rate	1.2%
Volatility	70.0%
Dividend yield	0.0%
Cost of equity	11.0%

The actual number of shares earned upon vesting will range up to a maximum of 983 shares if all targets are achieved. For the three months ended March 31, 2020, no shares vested.

Stock-Based Compensation Expense

Stock-based compensation expense related to stock options, RSUs, SARs and PSUs for the three months ended March 31, 2020 and 2019 was classified in the condensed consolidated statements of operations and comprehensive income (loss) as follows:

	Three Months Ended March 31,	
	2020	2019
Cost of revenue	\$ 31	\$ 71
Research and development expenses	437	141
Selling, general and administrative expenses	1,969	1,688
	<u>\$ 2,437</u>	<u>\$ 1,900</u>

As of March 31, 2020, there was \$25,143 of unrecognized compensation cost related to outstanding stock options, RSUs, SARs and PSUs, which is expected to be recognized over a weighted-average period of 2.82 years.

14. Net Income (Loss) per Share

Basic and diluted net income (loss) per share attributable to common stockholders was calculated as follows:

	Three Months Ended March 31,	
	2020	2019
Numerator:		
Net (loss) income attributable to common stockholders, basic and diluted	<u>\$ 1,162</u>	<u>\$ (15,339)</u>
Denominator:		
Weighted-average shares used to compute net (loss) income per share attributable to common stockholders, basic	83,990	83,323
Dilutive effect of stock options	885	—
Dilutive effect of restricted stock units	134	—
Weighted-average shares used to compute net (loss) income per share attributable to common stockholders, diluted	<u>85,009</u>	<u>83,323</u>
Net (loss) income per share attributable to common stockholders:		
Basic	<u>\$ 0.01</u>	<u>\$ (0.18)</u>
Diluted	<u>\$ 0.01</u>	<u>\$ (0.18)</u>

The following potential common shares, presented based on amounts outstanding at each period end, were excluded from the computation of diluted net income (loss) per share attributable to common stockholders for the periods presented because including them would have been anti-dilutive:

	Three Months Ended March 31,	
	2020	2019
Options to purchase common stock	5,941	8,957
Unvested restricted stock units	2,527	1,440
Unvested performance-based stock units	983	—

15. Revenue from Contracts with Customers

Disaggregation of revenue

The Company disaggregates its revenue by product and service in the condensed consolidated statements of operations and comprehensive income (loss). Performance obligations related to product revenue are recognized at a point in time, while performance obligations related to service revenue are recognized over time. The Company also disaggregates its revenue based on geographic locations of its customers, as determined by the customer's shipping address, summarized as follows:

	Three Months Ended March 31,	
	2020	2019
North America:		
United States	\$ 29,440	\$ 14,558
Other	4,512	3,873
Total North America	33,952	18,431
Europe, Middle East and Africa	14,098	7,366
Asia-Pacific:		
Australia	21,704	—
Other	11,484	4,724
Total Asia-Pacific	33,188	4,724
Latin America	2,385	4,965
Total revenue(1)	\$ 83,623	\$ 35,486

(1) Other than the United States and Australia, no individual countries represented 10% or more of the Company's total revenue for any of the periods presented.

The Company also disaggregates its revenue based on product line summarized as follows:

	Three Months Ended March 31,	
	2020	2019
Product revenue:		
Wireless	\$ 20,657	\$ 228
Fixed telecom	17,932	44
Cable	35,169	26,381
Total product revenue	73,758	26,653
Service revenue	9,865	8,833
Total revenue	\$ 83,623	\$ 35,486

Costs to Obtain or Fulfill a Contract

As of March 31, 2020 and December 31, 2019, the Company had short-term capitalized contract costs of \$305 and \$585, respectively, which are included in prepaid expenses and other current assets and had long-term capitalized contract costs of \$97 and \$70, respectively, which are included in other assets in the accompanying condensed consolidated balance sheets. During the three months ended March 31, 2020 and 2019, amortization expense associated with capitalized contract costs was \$253 and \$66, respectively, which were recorded to selling, general and administrative expenses in the accompanying condensed consolidated statements of operations and comprehensive income (loss).

Contract Balances

Contract liabilities consist of deferred revenue and include payments received in advance of performance under the contract. Such amounts are recognized as revenue when the Company satisfies its performance obligations, consistent with the above methodology. For the three months ended March 31, 2020, the Company recognized \$14,940 of revenue that was included in deferred revenue as of December 31, 2019. For the three months ended March 31, 2019, the Company recognized \$7,269 of revenue that was included in deferred revenue as of January 1, 2019.

The Company receives payments from customers based upon contractual billing terms. Accounts receivable are recorded when the right to consideration becomes unconditional. Contract assets include amounts related to the Company's contractual right to consideration for both completed and partially completed performance obligations that may not have been invoiced. As of March 31, 2020 and December 31, 2019, the Company included contract assets of \$110 and \$50, respectively, which is included in prepaid expenses and other current assets in the accompanying condensed consolidated balance sheets.

Transaction price allocated to the remaining performance obligations

As of March 31, 2020, the aggregate remaining amount of revenue expected to be recognized related to unsatisfied or partially unsatisfied performance obligations is \$23,000. The Company expects approximately 82% of this amount to be recognized in the next twelve months with the remaining to be recognized over the next two to five years.

Other Revenue Recognition Policies

The Company's customary payment terms are generally one year or less. If the Company provides extended payment terms that represent a significant financing component, the Company adjusts the amount of promised consideration for the time value of money using its discounted rate and recognizes interest income separate from the revenue recognized on contracts with customers. During the three months ended March 31, 2020 and 2019, the Company recorded \$34 and \$26, respectively, in interest income in the condensed consolidated statements of operations and comprehensive income (loss).

When a customer contract includes future trade-in rights, which are distinct performance obligations, the Company accounts for the customer contract by recognizing the revenue on the products transferred, deferring revenue allocated to the future product based on a relative standalone selling price, and an asset for the value of the trade-in product to be recovered from the customer upon delivery of the future product. The Company assesses and updates these estimates each reporting period, and updates to these estimates may result in either an increase or decrease in the amount of the future product liability and product return asset. The Company recognizes revenue allocated to the future product when the product has shipped or been delivered and control has transferred. As of March 31, 2020 and December 31, 2019, there were no future product liabilities or product return assets.

16. Segment Information

The Company operates as one operating segment. Operating segments are defined as components of an enterprise for which separate financial information is regularly evaluated by the Company's chief operating decision maker, or decision-making group, in deciding how to allocate resources and assess performance. The Company has determined that its chief operating decision maker is its President and Chief Executive Officer. The Company's chief operating decision maker reviews the Company's financial information on a consolidated basis for purposes of allocating resources and assessing financial performance. Since the Company operates as one operating segment, all required financial segment information can be found in these condensed consolidated financial statements.

The Company's property and equipment, net by location was as follows:

	March 31, 2020	December 31, 2019
United States	\$ 24,721	\$ 25,583
China	3,311	3,277
Australia	3,611	4,041
Other	2,588	3,009
Total property and equipment, net	<u>\$ 34,231</u>	<u>\$ 35,910</u>

17. Related Parties

Employment of Rongke Xie

Rongke Xie, who serves as Deputy General Manager of Guangzhou Casa Communication Technology LTD ("Casa China"), a subsidiary of the Company, is the sister of Lucy Xie, the Company's Senior Vice President of Operations and a member of the Company's board of directors. Casa China paid Rongke Xie \$22 and \$23 in total compensation in the three months ended March 31, 2020 and 2019, respectively, for her services as an employee.

In March 2020, February 2019 and June 2018, the Company granted to Rongke Xie 90, 8 and 5 RSUs, respectively, which vest over four annual periods. The grant-date fair value of the awards totaled \$400, which will be recorded as stock-based compensation expense over the vesting period of the awards. During the three months ended March 31, 2020 and 2019, the Company recognized selling, general and administrative expenses of \$13 and \$9 related to these awards.

18. Commitments and Contingencies

Operating Leases

The Company leases manufacturing, warehouse and office space in the United States, China, Hong Kong, Spain, Australia and the United Kingdom under non-cancelable operating leases that expire through 2023. The Company also has a lease in Ireland that expires in 2026, but provides the Company the right to terminate in 2021. Rent expense for the three months ended March 31, 2020 and 2019 was \$757 and \$327, respectively. Rent expense is recorded on a straight-line basis, and, as a result, as of March 31, 2020 and December 31, 2019, the Company had a deferred rent liability of \$177 and \$212, respectively, which is included in accrued expenses and other current liabilities in the accompanying condensed consolidated balance sheets.

Future minimum lease payments under non-cancelable operating leases as of March 31, 2020 were as follows:

<u>Year Ending December 31,</u>		
2020	\$	1,823
2021		1,422
2022		112
2023		5
2024		—
Thereafter		—
	\$	<u>3,362</u>

Indemnification

The Company has, in the ordinary course of business, agreed to defend and indemnify certain customers against third-party claims asserting infringement of certain intellectual property rights, which may include patents, copyrights, trademarks or trade secrets.

As permitted under Delaware law, the Company indemnifies its officers, directors and employees for certain events or occurrences that happen by reason of their relationship with or position held at the Company.

As of March 31, 2020 and December 31, 2019, the Company had not experienced any losses related to these indemnification obligations and no material claims were outstanding. The Company does not expect significant claims related to these indemnification obligations and, consequently, concluded that the fair value of these obligations is negligible, and no related liabilities were recorded in its condensed consolidated financial statements.

Litigation

On May 29, 2019 and July 3, 2019, two putative class action lawsuits, *Shen v. Chen et al.* and *Baig v. Chen et al.*, were filed in the Massachusetts Superior Court against the Company, certain of its current and former executive officers and directors, Summit Partners, the Company's largest investor, and the underwriters from the Company's December 15, 2017 initial public offering (the "IPO") (collectively, the "defendants"). These complaints purport to be brought on behalf of all purchasers of the Company's common stock in and/or traceable to the IPO. The complaints generally allege that (i) each of the defendants violated Section 11 and/or Section 12(a)(2) of the Securities Act of 1933, as amended, (the "Securities Act"), because documents related to the Company's IPO including its registration statement and prospectus were materially misleading by containing untrue statements of material fact and/or omitting to state material facts necessary to make such statements not misleading and (ii) the individual defendants and Summit Partners acted as controlling persons within the meaning and in violation of Section 15 of the Securities Act. On August 13, 2019, the Court consolidated these actions and referred the consolidated actions to the Business Litigation Session of the Massachusetts Superior Court (the "BLS"). On September 3, 2019, the BLS accepted the consolidated action into its session for further proceedings. On November 12, 2019, the plaintiffs filed an amended shareholder class action complaint, purportedly on behalf of all purchasers of the Company's common stock in and/or traceable to the IPO, which contains substantially similar allegations and asserts the same claims as the two initial complaints, described above. Plaintiffs seek compensatory damages, costs and expenses, including counsel and expert fees, rescission or a rescissory measure of damages, and equitable and injunctive relief. On January 14, 2020, the defendants served motions to dismiss the amended complaint, which remain pending.

On August 9, 2019, a third putative class action lawsuit, Donald Hook v. Casa Systems, Inc. et al., was filed in the Supreme Court of New York, New York County, against the Company, certain of its current and former executive officers and directors, Summit Partners, and the underwriters from the IPO. The complaint purports to be brought on behalf of all purchasers of the Company's common stock in and/or traceable to the IPO and generally alleges that (i) each of the defendants violated Section 11 and/or Section 12(a)(2) of the Securities Act of 1933, as amended, or the Securities Act, because documents related to the IPO including its registration statement and prospectus were materially misleading by containing untrue statements of material fact and/or omitting to state material facts necessary to make such statements not misleading and (ii) the individual defendants and Summit Partners acted as controlling persons within the meaning and in violation of Section 15 of the Securities Act. On November 22, 2019, the plaintiff filed an amended complaint, purportedly on behalf of all purchasers of the Company's common stock in and/or traceable to the IPO, which contains substantially similar allegations as the initial complaint, described above, and asserts claims for violations of Sections 11 and 15 of the Securities Act. The plaintiff seeks compensatory damages, costs and expenses, including counsel and expert fees, rescission or a rescissory measure of damages, disgorgement, and equitable and injunctive relief. On January 21, 2020, the defendants served motions to dismiss the amended complaint, which remain pending.

On August 13, 2019, a fourth putative class action lawsuit, Panther Partners, Inc. v. Guo et al., was filed in the Supreme Court of New York, New York County, against the Company, certain of its current and former executive officers and directors, and the underwriters from the Company's April 30, 2018 follow-on offering of common stock, (the "Follow-on Offering"). The complaint purports to be brought on behalf of all purchasers of the Company's common stock in the Follow-on Offering and generally alleges that (i) each of the defendants, other than Abraham Pucheril, violated Section 11 of the Securities Act, and each of the defendants violated Section 12(a)(2) of the Securities Act, because documents related to the Company's Follow-on Offering, including its registration statement and prospectus, were materially misleading by containing untrue statements of material fact and/or omitting to state material facts necessary to make such statements not misleading and (ii) the individual defendants acted as controlling persons within the meaning and in violation of Section 15 of the Securities Act. On November 22, 2019, the plaintiff filed an amended class action complaint, purportedly on behalf of all purchasers of the Company's common stock in the Follow-on Offering, which contains substantially similar allegations and asserts the same claims as the initial complaint, described above. The plaintiff seeks compensatory damages, costs and expenses, including counsel and expert fees, rescission or a rescissory measure of damages, and equitable and injunctive relief. On January 21, 2020, the defendants served motions to dismiss the amended complaint, which remain pending.

No amounts have been accrued for any of the putative class action lawsuits referenced above as of March 31, 2020 as the Company does not believe the likelihood of a material loss is probable. Although the ultimate outcome of these matters cannot be predicted with certainty, the resolution of any of these matters could have a material impact on the Company's results of operations if a material loss becomes probable and estimable in a future period.

Item 2. Management’s Discussion and Analysis of Financial Condition and Results of Operations.

The following discussion of our financial condition and results of operations should be read together with our condensed consolidated financial statements and related notes and other financial information included elsewhere in this Quarterly Report on Form 10-Q. The following discussion contains forward-looking statements that reflect our plans, estimates and beliefs. Our actual results could differ materially from those discussed in the forward-looking statements. Factors that could cause or contribute to these differences include those discussed below and elsewhere in this Quarterly Report on Form 10-Q, particularly in the section titled “Risk Factors.”

Overview

Our solutions are conceived, designed, and built to solve problems faced by our broadband service provider customers as they transform their networks to meet the growing demand for bandwidth and the introduction of new services. We offer converged solutions for next-generation centralized, distributed and virtualized architectures for cable broadband, fixed-line broadband and wireless networks. Our innovative products enable customers to cost-effectively and dynamically increase network speed, add bandwidth capacity and new services for consumers and enterprises, reduce network complexity and reduce operating and capital expenditures.

We have a history of innovation and being the first to market with novel products at each generational shift in network technology. For example:

- We believe we pioneered the use of a software-centric approach to leverage the programmability of field programmable gate arrays and general-purpose processors for use in the cable industry.
- In the cable market we believe we were the first to provide a solution enabling cable service providers to deliver Internet Protocol voice, digital video and data over a single port, which enables cable service providers to deliver multi-gigabit speeds to their subscribers.
- In the wireless market, we introduced our Apex Pebble, a residential femtocell, which helps to provide a faster and more reliable data experience for mobile users. We believe the device offers the innovation of an untethered Wi-Fi backhaul option in addition to the standard Ethernet connection that is required in traditional femtocells. This allows a user to place the device anywhere in his or her home where Wi-Fi is available without running or connecting additional cables to a home router.
- Our Apex Strand-mount Microcell provides wireless service providers with an additional installation option using an integrated DOCSIS modem, which provides input power and backhaul/fronthaul connectivity and helps to resolve the siting, power, and backhaul issues that accompany large-scale small cell deployments.
- Our Apex 5G Mini Macro is a high-powered 4T4R (4 transmit/4 receive) radio designed to meet coverage and capacity challenges in dense urban and suburban areas where large numbers of 5G NR, a new radio access technology developed by 3GPP for the 5G mobile network, and LTE devices are present. Unlike macro-radio solutions mounted on traditional tower sites, the Apex 5G Mini Macro can be deployed cost-effectively at the street level, such as on utility poles, roof tops and lamp posts, thereby reducing costs associated with a traditional macro site.
- We believe that we are the first to deliver a virtualized broadband network gateway that enables a multi-tenant solution at the network edge using low-cost, white box merchant silicon hardware.

We offer scalable solutions that can meet the evolving bandwidth needs of our customers and their subscribers. Our first installation in a service provider’s network frequently involves deploying our broadband products in only a portion of the provider’s network and with only a fraction of the capacity of our products enabled at the time of initial installation. Over time, our customers have generally expanded the use of our solutions to other areas of their networks to increase network capacity. Capacity expansions are accomplished either by deploying additional systems, line cards, or the sale of additional channels through the use of software. Sales of software-based capacity expansions generate higher gross margins than hardware-based deployments.

On July 1, 2019, we completed the acquisition of NetComm Wireless Limited, or NetComm, a global leader in the development of fixed wireless and distribution point broadband solutions. The combined company now offers a broad, highly competitive product portfolio for new 4G and 5G fixed wireless access products and customer premise equipment for vDSL2 and G.fast services for service providers.

COVID-19 Pandemic

The emergence of the coronavirus disease in 2019, or COVID-19, around the world, and particularly in the United States and China, and the accompanying responses of governments and businesses to the pandemic present various risks to us, not all of which we are able to fully evaluate or even to foresee at the current time. While the COVID-19 pandemic did not materially adversely affect our financial results, business operations or liquidity in the quarter ended March 31, 2020, economic and health conditions in the United States and across most of the globe have changed rapidly since the end of the quarter. Globally to date, all aspects of our business remain fully operational, our work from home contingency plans have been implemented and are operating successfully, and we are working with our supply chain and contract manufacturers to ensure continued availability of all anticipated inventory requirements. We intend to continue to monitor our business very closely for any effects of COVID-19 for as long as necessary on an ongoing basis.

Due to the above circumstances and as described generally in this Form 10-Q, our results of operations for the three-month period ended March 31, 2020 are not necessarily indicative of the results to be expected for the full year. Management cannot predict the full impact of the COVID-19 pandemic on our sales channels, supply chain, manufacturing and distribution, or on economic conditions generally, including the effects on our current and potential customers, who may curtail spending on investments in current and/or new technologies, delay new equipment evaluations and trials, and possibly delay payments based on liquidity concerns, all of which could have a material impact on our business in the future. Similarly, our supply chain and our contract manufacturers could be affected, which could cause disruptions to our ability to meet customer demand. For example, lead times have recently increased for orders with certain of our suppliers, although not to such an extent that has prevented us from timely fulfilment of orders to our customers. If COVID-19 were to cause such impacts in the future, there would likely be a material adverse impact on our financial results, liquidity and capital resource needs. The use of our revolving line of credit is currently restricted based on the financial covenants we are subject to, and Covid-19 has further created significant uncertainty within capital markets such that access to sufficient additional capital resources, if needed, may not be available. Thus, the ultimate extent of the effects of the COVID-19 pandemic on the Company is highly uncertain and dependent upon future developments, and such effects could exist for an extended period of time even after the pandemic might end.

Results of Operations

The following tables set forth our consolidated results of operations in dollar amounts and as percentage of total revenue for the periods shown:

	Three Months Ended March 31,	
	2020	2019
	(in thousands)	
Revenue:		
Product	\$ 73,758	\$ 26,653
Service	9,865	8,833
Total revenue	83,623	35,486
Cost of revenue(1):		
Product	39,644	9,429
Service	1,326	1,560
Total cost of revenue	40,970	10,989
Gross profit	42,653	24,497
Operating expenses:		
Research and development(1)	21,211	18,405
Selling, general and administrative(1)	24,991	20,193
Total operating expenses	46,202	38,598
Loss from operations	(3,549)	(14,101)
Other income (expense), net	(4,008)	(3,408)
Loss before benefit from income taxes	(7,557)	(17,509)
Benefit from income taxes	(8,719)	(2,170)
Net income (loss)	\$ 1,162	\$ (15,339)

- (1) Includes stock-based compensation expense related to stock options, stock appreciation rights, restricted stock units and performance-based stock units granted to employees and non-employee consultants as follows:

	Three Months Ended March 31,	
	2020	2019
	(in thousands)	
Cost of revenue	\$ 31	\$ 71
Research and development expense	437	141
Selling, general and administrative expense	1,969	1,688
Total stock-based compensation expense	<u>\$ 2,437</u>	<u>\$ 1,900</u>

	Three Months Ended March 31,	
	2020	2019
	(as a percentage of total revenue)	
Revenue:		
Product	88%	75%
Service	12	25
Total revenue	<u>100</u>	<u>100</u>
Cost of revenue:		
Product	47	27
Service	2	4
Total cost of revenue	<u>49</u>	<u>31</u>
Gross profit	51	69
Operating expenses:		
Research and development	25	52
Selling, general and administrative	30	57
Total operating expenses	<u>55</u>	<u>109</u>
Loss from operations	(4)	(40)
Other income (expense), net	(5)	(10)
Loss before benefit from income taxes	(9)	(49)
Benefit from income taxes	(10)	(6)
Net income (loss)	<u>1%</u>	<u>(43)%</u>

Percentages in the table above are based on actual values. As a result, some totals may not sum due to rounding.

Three Months Ended March 31, 2020 Compared to the Three Months Ended March 31, 2019

	Three Months Ended March 31,				Change	
	2020		2019			
	Amount	% of Total	Amount	% of Total	Amount	%
	(dollars in thousands)					
Revenue:						
Product	\$ 73,758	88.2%	\$ 26,653	75.1%	\$ 47,105	176.7%
Service	9,865	11.8%	8,833	24.9%	1,032	11.7%
Total revenue	<u>\$ 83,623</u>	<u>100.0%</u>	<u>\$ 35,486</u>	<u>100.0%</u>	<u>\$ 48,137</u>	135.7%
Revenue by geographic region:						
North America	\$ 33,952	40.5%	\$ 18,431	51.9%	\$ 15,521	84.2%
Europe, Middle East and Africa	14,098	16.9%	7,366	20.8%	6,732	91.4%
Asia-Pacific	33,188	39.7%	4,724	13.3%	28,464	602.5%
Latin America	2,385	2.9%	4,965	14.0%	(2,580)	(52.0)%
Total revenue	<u>\$ 83,623</u>	<u>100.0%</u>	<u>\$ 35,486</u>	<u>100.0%</u>	<u>\$ 48,137</u>	135.7%

	Three Months Ended March 31,	
	2020	2019
Product revenue:		
Wireless	\$ 20,657	\$ 228
Fixed telecom	17,932	44
Cable	35,169	26,381
Total product revenue	<u>73,758</u>	<u>26,653</u>
Service revenue	9,865	8,833
Total revenue	<u>\$ 83,623</u>	<u>\$ 35,486</u>

The increase in product revenue was primarily due to the completion of the NetComm acquisition effective July 1, 2019, which contributed \$29.5 million of revenue for the three months ended March 31, 2020, including \$17.9 million and \$11.6 million in Fixed telecom and Wireless revenues, respectively. In addition, the three months ended March 31, 2020 included significantly higher revenues from our Cable, Fixed telecom and Wireless products to existing customers.

The increase in service revenue was primarily due to an increase in professional services revenue recognized on installation services.

Cost of Revenue and Gross Profit

	Three Months Ended March 31,		Change	
	2020	2019	Amount	%
	(dollars in thousands)			
Cost of revenue:				
Product	\$ 39,644	\$ 9,429	\$ 30,215	320.4%
Service	1,326	1,560	(234)	(15.0)%
Total cost of revenue	<u>\$ 40,970</u>	<u>\$ 10,989</u>	<u>\$ 29,981</u>	272.8%

	Three Months Ended March 31,		Change	
	2020	2019	Amount	Gross Margin (bps)
	(dollars in thousands)			
Gross profit:				
Product	\$ 34,114	\$ 17,224	\$ 16,890	(1,830)
Service	8,539	7,273	1,266	430
Total gross profit	<u>\$ 42,653</u>	<u>\$ 24,497</u>	<u>\$ 18,156</u>	(1,800)

The decrease in product gross margin percentage was primarily due to the acquisition of NetComm, which sells hardware-based products that provide lower gross margins than our historical product offerings.

The increase in service gross margin was due to a decrease in subcontracted professional services rendered in the quarter.

Research and Development

	Three Months Ended March 31,		Change	
	2020	2019	Amount	%
	(dollars in thousands)			
Research and development	\$ 21,211	\$ 18,405	\$ 2,806	15.2%
Percentage of revenue	25.4%	51.9%		

The increase in research and development expense was primarily due to the acquisition of NetComm, including a \$2.4 million increase in personnel-related costs.

Selling, General and Administrative

	Three Months Ended March 31,		Change	
	2020	2019	Amount	%
	(dollars in thousands)			
Selling, general and administrative	\$ 24,991	\$ 20,193	\$ 4,798	23.8%
Percentage of revenue	29.9%	56.9%		

The increase in selling, general and administrative expense was primarily due to a \$1.9 million increase in professional services related to our audit and tax consulting services, a \$1.9 million increase in partner commissions due to increased sales volume, and increases in other costs primarily driven by the acquisition of NetComm including increases in personnel-related costs of \$1.4 million and depreciation and amortization expense of \$0.8 million. These increases were partially offset by a \$1.3 million decrease in bad debt expense due to a customer that filed for reorganization under Chapter 11 of the U.S. Bankruptcy Code in 2019 as well as a \$0.9 million decrease in transaction costs associated with the acquisition of NetComm on July 1, 2019.

Other Income (Expense), Net

	Three Months Ended March 31,		Change	
	2020	2019	Amount	%
	(dollars in thousands)			
Other income (expense), net	\$ (4,008)	\$ (3,408)	\$ (600)	17.6%
Percentage of revenue	(4.8)%	(9.6)%		

The change in other income (expense), net was primarily due to a \$1.2 million decrease in interest income due to a decrease in our portfolio of cash equivalents balances following our acquisition of NetComm on July 1, 2019, partially offset by a \$0.6 million decrease in interest expense due to decreases in both the outstanding principle balance and the interest rate on our term loan facility.

Benefit from Income Taxes

	Three Months Ended March 31,		Change	
	2020	2019	Amount	%
	(dollars in thousands)			
Benefit from income taxes	\$ (8,719)	\$ (2,170)	\$ (6,549)	301.8%
Effective tax rate	115.4%	12.4%		

The change in the benefit from income taxes for the three months ended March 31, 2020 compared to the three months ended March 31, 2019 was primarily due to the pre-tax net loss for the three months ended March 31, 2020 of \$7.6 million, coupled with the recognition of the benefit of \$9.3 million from the Coronavirus Aid, Relief, and Economic Security Act provisions concerning net operating loss carrybacks, compared to the pre-tax net loss for the three months ended March 31, 2019 of \$17.5 million.

Liquidity and Capital Resources

Since our inception, we have primarily funded our operations through issuances of shares of our convertible preferred stock, our credit agreement from our term loan facility, our initial public offering and cash flows from operations.

On February 21, 2019, we entered into a definitive agreement to acquire 100% of the equity interests in NetComm. On July 1, 2019, we closed the acquisition of NetComm for cash consideration of \$162.0 million Australian dollars, or AUD (\$112.7 million United States dollars, or USD, based on an exchange rate of USD \$0.700 per AUD \$1.00 on July 1, 2019), using amounts included in restricted cash in the accompanying condensed consolidated balance sheet as of June 30, 2019. In addition, we recognized advisory fee expenses of \$1.5 million which became due and payable upon the closing of the acquisition.

The following tables set forth our cash and cash equivalents and working capital as of March 31, 2020 and December 31, 2019 and our cash flows for the three months ended March 31, 2020 and 2019:

	March 31, 2020	December 31, 2019
	(in thousands)	
Consolidated Balance Sheet Data:		
Cash and cash equivalents	\$ 134,752	\$ 113,638
Working capital	216,530	213,977

	Three Months Ended March 31,	
	2020	2019
	(in thousands)	
Consolidated Cash Flow Data:		
Net cash provided by (used in) operating activities	\$ 26,069	\$ (13,849)
Net cash used in investing activities	(390)	(1,835)
Net cash used in financing activities	(4,151)	(1,095)

As of March 31, 2020, we had cash and cash equivalents of \$134.8 million and net accounts receivable of \$55.5 million. We maintain a \$25.0 million revolving credit facility, under which \$23.7 million was available and \$1.3 million of availability was used as collateral for two stand-by letters of credit as of March 31, 2020. However, based on the financial covenants described under the heading “Term Loan and Revolving Credit Facilities,” we are effectively restricted from utilizing the revolving credit facility.

Of our total cash and cash equivalents of \$134.8 million as of March 31, 2020, \$93.7 million was held by our foreign subsidiaries. The Tax Cuts and Jobs Act, or TCJA, established a modified territorial system requiring a mandatory deemed repatriation tax on undistributed earnings of foreign subsidiaries. As of March 31, 2020, we had \$27.1 million of undistributed earnings in China that are not indefinitely reinvested. The remaining unremitted earnings of our foreign subsidiaries are either indefinitely reinvested or could be remitted with an immaterial tax cost.

We believe our existing cash and cash equivalents, anticipated cash flows from future operations and liquidity available from our revolving credit facility will be sufficient to meet our working capital and capital expenditure needs and debt service obligations for at least the next 12 months. Our future capital requirements may vary materially from those currently planned and will depend on many factors, including our rate of revenue growth, the timing and extent of spending on research and development efforts and other business initiatives, purchases of capital equipment to support our growth, the expansion of sales and marketing activities, expansion of our business through acquisitions or our investments in complementary products, technologies or businesses, the use of working capital to purchase additional inventory, the timing of new product introductions, market acceptance of our products and overall economic conditions. To the extent that current and anticipated future sources of liquidity are insufficient to fund our future business activities and requirements, we may be required to seek additional equity or debt financing. In the event additional financing is required from outside sources, we may not be able to raise it on terms acceptable to us or at all.

Cash Flows

Operating Activities

Our primary source of cash from operating activities has been from cash collections from our customers. We expect cash flows from operating activities to be affected by increases and decreases in sales volumes and timing of collections and by purchases and shipments of inventory. Our primary uses of cash from operating activities have been for personnel costs and investment in our selling, general and administrative departments and research and development. Future cash outflows from operating activities may increase as a result of further investment in research and development and selling, general and administrative requirements, and increases in personnel costs as we continue to enhance our products and introduce new products in an effort to continue to expand our business.

During the three months ended March 31, 2020, cash provided by operating activities was \$26.1 million, primarily resulting from our net income of \$1.2 million, net cash provided by changes in our operating assets and liabilities of \$17.2 million and net non-cash adjustments of \$7.7 million. The net cash provided by changes in our operating assets and liabilities during the three months ended March 31, 2020 was primarily due to a \$38.0 million decrease in accounts receivable due to collections during the period; and an \$11.9 million decrease in inventory due to sales of inventory on hand. These sources of cash were partially offset by an \$6.4 million increase in prepaid income taxes due primarily to a tax refund receivable from carryback of net operating loss deductions that became permitted upon the enactment of the CARES Act during the three months ended March 31, 2020; a \$9.1 million decrease in accounts payable due to the timing of vendor payments; an \$8.2 million decrease in accrued expenses primarily attributable to the timing of personnel-related bonus payments; a \$7.0 million decrease in deferred revenue due to the timing of revenue recognition; and a \$1.6 million decrease in accrued income taxes.

During the three months ended March 31, 2019, cash used in operating activities was \$13.8 million, primarily resulting from our net loss of \$15.4 million and net cash used in changes in our operating assets and liabilities of \$0.7 million, partially offset by net non-cash gains of \$2.2 million. The net cash used in changes in our operating assets and liabilities during the three months ended March 31, 2019 was primarily due to a \$17.0 million increase in inventory due to anticipated growth in our business; a \$8.2 million decrease in accrued expenses primarily attributable to the timing of personnel-related bonus payments; and a \$1.7 million increase in prepaid expenses mainly related to renewals of insurance contracts. These sources of cash were partially offset by a \$25.3 million decrease in accounts receivable due to collections during the period; and a \$1.2 million decrease in accounts payable due to the timing of vendor payments.

Investing Activities

Our investing activities have consisted primarily of expenditures for lab and computer equipment and software to support the development of new products and increase our manufacturing capacity to meet customer demand for our products. In addition, our investing activities include expansion of and improvements to our facilities. As our business expands, we expect that we will continue to invest in these areas.

Net cash used in investing activities during the three months ended March 31, 2020 and 2019 was \$0.4 million and \$1.8 million, respectively, consisting of purchases of property and equipment.

Financing Activities

Net cash used in financing activities during the three months ended March 31, 2020 was \$4.2 million, consisting of repurchases of common stock of \$3.0 million; employee taxes paid related to net share settlement of equity awards of \$0.5 million; dividend and equitable adjustment payments of \$0.2 million; and debt principal repayments of \$0.8 million. These payments were partially offset by proceeds from the exercise of stock options of \$0.3 million.

Net cash used in financing activities during the three months ended March 31, 2019 was \$1.1 million and consisted of employee taxes paid related to net share settlement of equity awards of \$1.0 million, dividend and equitable adjustment payments of \$0.8 million and debt principal repayments of \$0.8 million, partially offset by proceeds from the exercise of stock options of \$1.5 million.

Commercial Mortgage Loan

In July 2015, we entered into an \$8.0 million commercial mortgage loan agreement, which matures in July 2020. The annual interest rate on the loan is 3.5%, and the loan is repayable in 60 monthly installments of principal and interest based on a 20-year amortization schedule. The loan is secured by the land and building, which are our corporate offices, purchased in March 2015, and contains annual affirmative, negative and financial covenants, including maintenance of a minimum debt service ratio. The covenants are measured annually and we were in compliance with all the covenants of the mortgage loan as of December 31, 2019. As of March 31, 2020 and December 31, 2019, the outstanding principal amount under the mortgage loan was \$6.6 million and \$6.6 million, respectively.

Term Loan and Revolving Credit Facilities

On December 20, 2016, we entered into a credit agreement with JPMorgan Chase Bank, N.A., as administrative agent, various lenders and JPMorgan Chase Bank, N.A. and Barclays Bank PLC, as joint lead arrangers and joint bookrunners, providing for:

- a term loan facility of \$300.0 million; and
- a revolving credit facility of up to \$25.0 million in revolving credit loans and letters of credit.

As of March 31, 2020 and December 31, 2019, we had borrowings of \$290.0 million and \$291.0 million, respectively, outstanding under the term loan facility and we did not have any outstanding borrowings under the revolving credit facility; however, we had used \$1.3 million under the revolving credit facility for two stand-by letters of credit, one which serves as collateral to one of our customers pursuant to a contractual obligations and one which is used as collateral for operating leases in Australia. In addition, we may, subject to certain conditions, including the consent of the administrative agent and the institutions providing such increases, increase the facilities by an unlimited amount so long as we are in compliance with specified leverage ratios, or otherwise by up to \$70.0 million.

Borrowings under the facilities bear interest at a floating rate, which can be either a Eurodollar rate plus an applicable margin or, at our option, a base rate (defined as the highest of (x) the JPMorgan Chase, N.A. prime rate, (y) the federal funds effective rate, plus one-half percent (0.50%) per annum and (z) a one-month Eurodollar rate plus 1.00% per annum) plus an applicable margin. The applicable margin for borrowings under the term loan facility is 4.00% per annum for Eurodollar rate loans (subject to a 1.00% per annum interest rate floor) and 3.00% per annum for base rate loans. As a result of the completion of our initial public offering in December 2017, the applicable margin for borrowings under the revolving credit facility is 1.75% per annum for Eurodollar rate loans and 0.75% per annum for base rate loans, subject to reduction based on our maintaining of specified net leverage ratios. The interest rates payable under the facilities are subject to an increase of 2.00% per annum during the continuance of any payment default.

For Eurodollar rate loans, we may select interest periods of one, three or six months or, with the consent of all relevant affected lenders, twelve months. Interest will be payable at the end of the selected interest period, but no less frequently than every three months within the selected interest period. Interest on any base rate loan is not set for any specified period and is payable quarterly. We have the right to convert Eurodollar rate loans into base rate loans and the right to convert base rate loans into Eurodollar rate loans at our option, subject, in the case of Eurodollar rate loans, to breakage costs if the conversion is effected prior to the end of the applicable interest period. As of March 31, 2020, the interest rate on the term loans was 5.00% per annum, which was based on a one-month Eurodollar rate at the applicable floor of 1.00% per annum plus the applicable margin of 4.00% per annum for Eurodollar rate loans. As of December 31, 2019, the interest rate on our borrowings under the term loan facility was 5.80% per annum, which was based on a one-month Eurodollar rate of 1.80% per annum plus the applicable margin of 4.00% per annum for Eurodollar rate loans.

The revolving credit facility also requires payment of quarterly commitment fees at a rate of 0.25% per annum on the difference between committed amounts and amounts actually borrowed under the facility and customary letter of credit fees.

The term loan facility matures on December 20, 2023 and the revolving credit facility matures on December 20, 2021. The term loan facility is subject to amortization in equal quarterly installments, which commenced on March 31, 2017, of principal in an annual aggregate amount equal to 1.0% of the original principal amount of the term loans of \$300.0 million, with the remaining outstanding balance payable at the date of maturity.

Voluntary prepayments of principal amounts outstanding under the term loan facility are permitted at any time; however, if a prepayment of principal is made with respect to a Eurodollar loan on a date other than the last day of the applicable interest period, we are required to compensate the lenders for any funding losses and expenses incurred as a result of the prepayment. Prior to the revolving credit facility maturity date, funds borrowed under the revolving credit facility may be borrowed, repaid and reborrowed, without premium or penalty.

In addition, we are required to make mandatory prepayments under the facilities with respect to (i) 100% of the net cash proceeds from certain asset dispositions (including casualty and condemnation events) by us or certain of our subsidiaries, subject to certain exceptions and reinvestment provisions, (ii) 100% of the net cash proceeds from the issuance or incurrence of any additional debt by us or certain of our subsidiaries, subject to certain exceptions, and (iii) 50% of our excess cash flow, as defined in the credit agreement, subject to reduction upon our achievement of specified performance targets.

The facilities are secured by, among other things, a first priority security interest, subject to permitted liens, in substantially all of our assets and all of the assets of certain of our subsidiaries and a pledge of certain of the stock of certain of our subsidiaries, in each case subject to specified exceptions. The facilities contain customary affirmative and negative covenants, including certain restrictions on our ability to pay dividends, and, with respect only to the revolving credit facility, a financial covenant requiring us to maintain a specified total net leverage ratio, in the event that on the last day of any fiscal quarter, we have utilized more than 30% of our borrowing capacity under the revolving credit facility (subject to certain exceptions). The facility contains a cross-default provision, whereby, if repayment of borrowings under the revolving credit facility are accelerated due to a default of the net leverage ratio covenant, repayment of the outstanding term loan balance could also be accelerated. Because the financial covenant under the revolving credit facility only applies if outstanding utilization thereunder exceed 30% of the total borrowing capacity on the last day of each fiscal quarter, this cross-default provision has the effect of limiting our ability to utilize more than 30% of our total borrowing capacity under the revolving credit facility of \$25.0 million if both our net leverage ratio exceeds the maximum permitted by the agreement and we would not otherwise be able to reduce our outstanding utilization of the revolving credit facility to below the 30% testing threshold prior to the last day of any quarter. Our net leverage ratio exceeded the maximum on March 31, 2020 and December 31, 2019; however, as our utilization of the revolving credit facility did not exceed the 30% testing threshold on March 31, 2020 and December 31, 2019, we were not in default of the revolving credit facility as a result of our net leverage ratio exceeding the maximum permitted amount. We were in compliance with all other applicable covenants of the facilities as of March 31, 2020 and December 31, 2019. We do not expect to require the use of the revolving credit facility to fund operations during the next 12 months.

Stock Repurchase Program

On February 21, 2019, we announced a stock repurchase program under which we were authorized to repurchase up to \$75.0 million of our common stock. During the three months ended March 31, 2020, we repurchased 1.2 million shares for a total cost of \$3.0 million. During the three months ended March 31, 2019, we did not repurchase any shares. As of March 31, 2020, approximately \$70.2 million remained authorized for repurchases of our common stock under the stock repurchase program. The stock repurchase program has no expiration date and does not require us to purchase a minimum number of shares, and we may suspend, modify or discontinue the stock repurchase program at any time without prior notice.

Contractual Obligations and Commitments

Our material contractual obligations include our term loan facility, commercial mortgage loan, operating leases and purchase agreements with our contract manufacturers and suppliers. There have been no material changes to our contractual obligations and commitments from those disclosed in our Annual Report on Form 10-K for the fiscal year ended December 31, 2019.

Critical Accounting Policies and Significant Judgments and Estimates

We prepare our condensed consolidated financial statements in accordance with generally accepted accounting principles in the United States. The preparation of condensed consolidated financial statements also requires us to make estimates and assumptions that affect the reported amounts of assets, liabilities, revenues, costs and expenses and related disclosures. We base our estimates on historical experience and on various other assumptions that we believe to be reasonable under the circumstances. Actual results could differ significantly from the estimates made by our management.

Other than our policies related to Derivative Instruments and Stock Compensation, as described in Note 2 of the above notes to the condensed consolidated financial statements, there have been no material changes to our critical accounting policies and estimates from those disclosed in our Annual Report on Form 10-K for the fiscal year ended December 31, 2019.

Off-Balance Sheet Arrangements

As of March 31, 2020 and December 31, 2019, we did not have any off-balance sheet arrangements, as defined in Item 303(a)(4)(ii) of Regulation S-K, such as the use of unconsolidated subsidiaries, structured finance, special purpose entities or variable interest entities.

Recent Accounting Pronouncements

Refer to the “Summary of Significant Accounting Policies” footnote within our condensed consolidated financial statements included elsewhere in this Quarterly Report on Form 10-Q for our analysis of recent accounting pronouncements that are applicable to our business.

Item 3. Quantitative and Qualitative Disclosures About Market Risk.

Market risk is the risk of loss to future earnings, values or future cash flows that may result from changes in the price of a financial instrument. The value of a financial instrument may change as a result of changes in interest rates, exchange rates, commodity prices, equity prices and other market changes. We are exposed to market risk related to changes in foreign currency exchange rates and interest rates. We currently mitigate certain foreign currency exchange rate risks with derivative instruments and enter into exchange rate hedging arrangements to manage certain of the risks described below. We do not engage in foreign currency speculation.

Foreign Currency Exchange Risk

We have accounts receivables denominated in foreign currencies, and our operations outside of the United States incur their operating expenses in foreign currencies. To date, the majority of our product sales and inventory purchases have been denominated in U.S. dollars. For our subsidiaries in Ireland and Australia, the U.S. dollar is the functional currency. For each of our other foreign subsidiaries, the functional currency is the local currency. During the three months ended March 31, 2020 and 2019, we incurred foreign currency transaction gains (losses) of \$0.2 million and \$(0.1) million, respectively, primarily related to unrealized and realized foreign currency gains (losses) for accounts receivable denominated in foreign currencies and operating expenses that are denominated in local currencies. These foreign currency transaction losses were recorded as a component of other income (expense), net in our condensed consolidated statements of operations and comprehensive income (loss). We believe that a 10% change in the exchange rate between the U.S. dollar and Euro would not materially impact our operating results or financial position.

Our foreign currency risk management strategy is principally designed to mitigate the potential financial impact of changes in the value of transactions and balances denominated in foreign currencies resulting from changes in foreign currency exchange rates. We enter into cash flow hedges, which utilize foreign currency forward contracts with maturities of up to 18 months, to hedge specific forecasted transactions of the Company's foreign subsidiaries with the goal of protecting our budgeted revenues and expenses against foreign currency exchange rate changes compared to our budgeted rates. As of March 31, 2020, we had entered into two cash flow hedge contracts that mature in the second and third quarters of 2020, which will be used to hedge specific operating cash flows denominated in Australian dollars.

The success of our foreign currency risk management program depends upon forecasts of transaction activity denominated in various currencies. To the extent that these forecasts are overstated or understated during periods of currency volatility, we could experience unanticipated foreign currency gains or losses that could have a material impact on our results of operations. Furthermore, our failure to identify new exposures and hedge them in an effective manner may result in material foreign currency gains or losses.

Interest Rate Sensitivity

Our cash and cash equivalents as of March 31, 2020 consisted of cash maintained in FDIC-insured operating accounts as well as investments in money market mutual funds and certificates of deposit. We also have policies requiring us to invest in high-quality issuers, limit our exposure to any individual issuer, and ensure adequate liquidity. Our primary exposure to market risk for our cash equivalents is interest income sensitivity, which is primarily affected by changes in the general level of U.S. interest rates. However, we do not believe a sudden change in the interest rates for our cash equivalents would have a material impact on our financial condition, results of operations or cash flows.

We have a credit agreement that provides us with a term loan facility of \$300.0 million and a revolving credit facility of up to \$25.0 million in revolving credit loans and letters of credit. Borrowings under the facilities bear interest at a floating rate, which can be either a Eurodollar rate plus an applicable margin or, at our option, a base rate (defined as the highest of (x) the JPMorgan Chase, N.A. prime rate, (y) the federal funds effective rate, plus one-half percent (0.50%) per annum and (z) a one-month Eurodollar rate plus 1.00% per annum) plus an applicable margin. The applicable margin for borrowings under the term loan facility is 4.00% per annum for Eurodollar rate loans (subject to a 1.00% per annum interest rate floor) and 3.00% per annum for base rate loans. As a result of the completion of our initial public offering in December 2017, the applicable margin for borrowings under the revolving credit facility is 1.75% per annum for Eurodollar rate loans and 0.75% per annum for base rate loans, subject to reduction based on our maintaining of specified net leverage ratios.

As of March 31, 2020, we had borrowings of \$290.3 million outstanding under the term loan facility, bearing interest at a rate of 5.00% per annum, which was based on a one-month Eurodollar rate at the applicable floor of 1.00% per annum plus the applicable margin of 4.00% per annum for Eurodollar rate loans. Changes in interest rates could cause interest charges on our term loan facility to fluctuate. Based on the amount of borrowings outstanding as of March 31, 2020, an increase of 10% in the one-month Eurodollar rate as of March 31, 2020 would cause pre-tax decreases to our earnings and cash flows of approximately \$0.3 million per year, assuming that such rate was to remain in effect for a year. Any decrease in the one-month Eurodollar rate as of March 31, 2020 would have no impact on our earnings and cash flows, as the interest rate in effect at March 31, 2020 was at the applicable floor of 1.00% per annum.

As of March 31, 2020, we were not exposed to interest rate risk under the revolving credit facility as a result of having no outstanding borrowings under the facility.

Inflation Risk

We do not believe that inflation has had a material effect on our business. However, if global demand for the base materials utilized in our suppliers' components were to significantly increase for the components we purchase from our suppliers to manufacture our products, our costs could become subject to significant inflationary pressures, and we may not be able to fully offset such higher costs through price increases. Our inability or failure to do so could harm our business, operating results and financial condition.

Item 4. Controls and Procedures.

Evaluation of Disclosure Controls and Procedures

Our management, with the participation of our Chief Executive Officer and Interim Chief Financial Officer, has evaluated the effectiveness 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, or the Exchange Act), as of the end of the period covered by this Quarterly Report on Form 10-Q. The term "disclosure controls and procedures," as defined in Rules 13a-15(e) and 15d-15(e) under the Exchange Act, means controls and other procedures of a company that are designed to ensure that information required to be disclosed by a company in the reports that it files or submits under the Exchange Act is recorded, processed, summarized and reported, within the time periods specified in the Securities and Exchange Commission's rules and forms. Disclosure controls and procedures include, without limitation, controls and procedures designed to ensure that information required to be disclosed by a company in the reports that it files or submits under the Exchange Act is accumulated and communicated to the company's management, including its principal executive and principal financial officers, as appropriate to allow timely decisions regarding required disclosure. Our management recognizes that any controls and procedures, no matter how well designed and operated, can provide only reasonable assurance of achieving their objectives and our management necessarily applies its judgment in evaluating the cost-benefit relationship of possible controls and procedures. Based on the evaluation of our disclosure controls and procedures as of the end of the period covered by this Quarterly Report on Form 10-Q, our Chief Executive Officer and Interim Chief Financial Officer have concluded that as of such date, our disclosure controls and procedures were effective.

Changes in Internal Control over Financial Reporting

There were no changes in our internal control over financial reporting during our most recently completed fiscal quarter that have materially affected, or are reasonably likely to materially affect, our internal control over financial reporting.

Item 1. Legal Proceedings.

From time to time, we are a party to various litigation matters and subject to claims that arise in the ordinary course of business including, for example, patent infringement lawsuits by non-practicing entities. In addition, third parties may from time to time assert claims against us in the form of letters and other communications.

On May 29, 2019 and July 3, 2019, two putative class action lawsuits, *Shen v. Chen et al.* and *Baig v. Chen et al.*, were filed in the Massachusetts Superior Court against us, certain of our current and former executive officers and directors, Summit Partners, our largest investor, and the underwriters from our December 15, 2017 initial public offering, which we refer to as our IPO. We collectively refer to these parties as the defendants. These complaints purport to be brought on behalf of all purchasers of our common stock in and/or traceable to our IPO. The complaints generally allege that (i) each of the defendants violated Section 11 and/or Section 12(a)(2) of the Securities Act of 1933, as amended, (the "Securities Act"), because documents related to our IPO including its registration statement and prospectus were materially misleading by containing untrue statements of material fact and/or omitting to state material facts necessary to make such statements not misleading and (ii) the individual defendants and Summit Partners acted as controlling persons within the meaning and in violation of Section 15 of the Securities Act. On August 13, 2019, the Court consolidated these actions and referred the consolidated actions to the Business Litigation Session of the Massachusetts Superior Court (the "BLS"). On September 3, 2019, the BLS accepted the consolidated action into its session for further proceedings. On November 12, 2019, Plaintiffs filed an Amended shareholder class action complaint, purportedly on behalf of all purchasers of our common stock in and/or traceable to our IPO, which contains substantially similar allegations and asserts the same claims as the two initial complaints, described above. Plaintiffs seek compensatory damages, costs and expenses, including counsel and expert fees, rescission or a rescissory measure of damages, and equitable and injunctive relief. On January 14, 2020, the defendants served motions to dismiss the amended complaint, which remain pending.

On August 9, 2019, a third putative class action lawsuit, *Donald Hook v. Casa Systems, Inc. et al.*, was filed in the Supreme Court of New York, New York County, against us, certain of our current and former executive officers and directors, Summit Partners, and the underwriters from our IPO. The complaint purports to be brought on behalf of all purchasers of our common stock in and/or traceable to our IPO and generally alleges that (i) each of the defendants violated Section 11 and/or Section 12(a)(2) of the Securities Act of 1933, as amended, or the Securities Act, because documents related to our IPO including its registration statement and prospectus were materially misleading by containing untrue statements of material fact and/or omitting to state material facts necessary to make such statements not misleading and (ii) the individual defendants and Summit Partners acted as controlling persons within the meaning and in violation of Section 15 of the Securities Act. On November 22, 2019, Plaintiff filed an Amended Complaint, purportedly on behalf of all purchasers of our common stock in and/or traceable to our IPO, which contains substantially similar allegations as the initial complaint, described above, and asserts claims for violations of Sections 11 and 15 of the Securities Act. Plaintiff seeks compensatory damages, costs and expenses, including counsel and expert fees, rescission or a rescissory measure of damages, disgorgement, and equitable and injunctive relief. On January 21, 2020, the defendants served motions to dismiss the amended complaint, which remains pending to date.

On August 13, 2019, a fourth putative class action lawsuit, *Panther Partners, Inc. v. Guo et al.*, was filed in the Supreme Court of New York, New York County, against us, certain of our current and former executive officers and directors, and the underwriters from our April 30, 2018 follow-on offering of common stock, which we refer to as our Follow-on Offering. The complaint purports to be brought on behalf of all purchasers of our common stock in our Follow-on Offering and generally alleges that (i) each of the defendants, other than Abraham Pucheril, violated Section 11 of the Securities Act, and each of the defendants violated Section 12(a)(2) of the Securities Act, because documents related to our Follow-on Offering, including our registration statement and prospectus, were materially misleading by containing untrue statements of material fact and/or omitting to state material facts necessary to make such statements not misleading and (ii) the individual defendants acted as controlling persons within the meaning and in violation of Section 15 of the Securities Act. On November 22, 2019, Plaintiff filed an amended class action complaint, purportedly on behalf of all purchasers of our common stock in our Follow-on Offering, which contains substantially similar allegations and asserts the same claims as the initial complaint, described above. Plaintiff seeks compensatory damages, costs and expenses, including counsel and expert fees, rescission or a rescissory measure of damages, and equitable and injunctive relief. On January 21, 2020, the defendants served motions to dismiss the amended complaint, which remain pending.

No amounts have been accrued for any of the putative class action lawsuits referenced above as of March 31, 2020, as we do not believe the likelihood of a material loss is probable. Although the ultimate outcome of these matters cannot be predicted with certainty, the resolution of any of these matters could have a material impact on our results of operations if a material loss becomes probable and estimable in a future period.

Item 1A. Risk Factors.

In addition to the other information set forth in this Quarterly Report on Form 10-Q, you should carefully consider the factors discussed in Part I, Item 1A Risk Factors in our Annual Report on Form 10-K for the fiscal year ended December 31, 2019, or the 2019 10-K, which could materially affect our business, financial condition or future results. As a supplement to the risk factors identified in the 2019 10-K, below we have revised one of our risk factors (regarding a recent decision of the Delaware Supreme Court affecting the provision in our restated certificate of incorporation that provides that the federal district courts of the United States are the sole and exclusive forum for the resolution of any complaint asserting a cause of action arising under the Securities Act) and set forth a new risk factor (regarding the COVID-19 pandemic). The COVID-19 pandemic has heightened, and in some cases manifested, certain of the risks we normally face in operating our business, including those disclosed in the 2019 10-K, and the risk factor disclosure in the 2019 10-K is qualified by the information relating to COVID-19 that is described in this Quarterly Report on Form 10-Q, including the new risk factor set forth below. Other than as provided below, there have been no material changes from the risk factors previously disclosed in the 2019 10-K.

Risks Related to Our Business and Our Industry

The coronavirus outbreak could negatively impact our operations and have an adverse effect on our revenues and/or results of operations.

The emergence of the coronavirus disease in 2019, or COVID-19, around the world, and particularly in the United States and China, and the accompanying responses of governments and businesses to the pandemic present various risks to us, not all of which we are able to fully evaluate or even to foresee at the current time. While the COVID-19 pandemic did not materially adversely affect our financial results, business operations or liquidity in the quarter ended March 31, 2020, economic and health conditions in the United States and across most of the globe have changed rapidly since the end of the quarter. Globally to date, all aspects of our business remain fully operational, our work from home contingency plans have been implemented and are operating successfully, and we are working with our supply chain and contract manufacturers to ensure continued availability of all anticipated inventory requirements. We intend to continue to monitor our business very closely for any effects of COVID-19 for as long as necessary on an ongoing basis.

Due to the above circumstances and as described generally in this Form 10-Q, our results of operations for the three-month period ended March 31, 2020 are not necessarily indicative of the results to be expected for the full year. Management cannot predict the full impact of the COVID-19 pandemic on our sales channels, supply chain, manufacturing and distribution, or on economic conditions generally, including the effects on our current and potential customers, who may curtail spending on investments in current and/or new technologies, delay new equipment evaluations and trials, and possibly delay payments based on liquidity concerns, all of which could have a material impact on our business in the future. Similarly, our supply chain and our contract manufacturers could be affected, which could cause disruptions to our ability to meet customer demand. For example, lead times have recently increased for orders with certain of our suppliers, although not to such an extent that has prevented us from timely fulfillment of orders to our customers. If COVID-19 were to cause such impacts in the future, there would likely be a material adverse impact on the Company's financial results, liquidity and capital resource needs. The use of our revolving line of credit is currently restricted based on the financial covenants we are subject to, and Covid-19 has further created significant uncertainty within capital markets such that access to sufficient additional capital resources, if needed, may not be available. This uncertainty makes it challenging for management to estimate the future performance of our businesses, particularly over the near to medium term. However, the impact of COVID-19 could have a material adverse impact on our results of operations over the near to medium term.

Risks Related to Our Common Stock

Our restated certificate of incorporation provides that the Court of Chancery of the State of Delaware will be the exclusive forum for substantially all disputes between us and our stockholders. Our restated certificate of incorporation further provides that the federal district courts of the United States are the sole and exclusive forum for the resolution of any complaint asserting a cause of action arising under the Securities Act. These choice of forum provisions could limit our stockholders' ability to obtain a more favorable judicial forum for disputes with us or our directors, officers or employees.

Our restated certificate of incorporation provides that the Court of Chancery of the State of Delaware is the exclusive forum for any derivative action or proceeding brought on our behalf; any action asserting a breach of fiduciary duty; any action asserting a claim against us arising pursuant to the Delaware General Corporation Law, our certificate of incorporation or our bylaws; or any action asserting a claim against us that is governed by the internal affairs doctrine. We do not intend to have this choice of forum provision apply to, and this choice of forum provision will not apply to, actions arising under the Securities Exchange Act of 1934, as amended, or the Exchange Act.

Our restated certificate of incorporation further provides that, unless we consent in writing to the selection of an alternative forum, the federal district courts of the United States shall, to the fullest extent permitted by law, be the sole and exclusive forum for the resolution of any complaint asserting a cause of action arising under the Securities Act of 1933, as amended, or the Securities Act. On December 19, 2018, the Delaware Court of Chancery, in *Sciabacucchi v. Salzberg, et al.*, C.A. No. 2017-0931-JTL (Del. Ch. Dec. 19, 2018), held that such federal forum selection provisions are invalid under Delaware law. Upon appeal, on March 18, 2020, the Delaware Supreme Court reversed the Court of Chancery’s judgment in all respects, upholding the facial validity of such federal forum selection provisions.

These choice of forum provisions may limit a stockholder’s ability to bring a claim in a judicial forum that it finds favorable for disputes with us or our directors, officers or other employees, which may discourage such lawsuits against us and our directors, officers and other employees. Alternatively, if a court were to find the choice of forum provisions contained in our certificate of incorporation to be inapplicable or unenforceable in an action, we may incur additional costs associated with resolving such action in other jurisdictions, which could materially adversely affect our business, financial condition, results of operations and prospects.

Item 2. Unregistered Sales of Equity Securities and Use of Proceeds.

Use of Proceeds

On December 14, 2017, the Securities and Exchange Commission, or the SEC, declared our registration statement on Form S-1 (File No. 333-221658) for our initial public offering effective. The net offering proceeds to us from the offering, after deducting underwriting discounts of \$6.3 million and offering expenses payable by us totaling \$4.1 million, were approximately \$79.3 million. No offering discounts, commissions or expenses were paid directly or indirectly to any of our directors or officers (or their associates) or persons owning 10.0% or more of any class of our equity securities or to any other affiliates. There has been no material change in the planned use of proceeds from our initial public offering as described in our final prospectus filed with the SEC on December 15, 2017 pursuant to Rule 424(b)(4). As of March 31, 2020, we had not used any of the net offering proceeds and we have invested the proceeds into an investment portfolio with the primary objective of preserving principal and providing liquidity without significantly increasing risk

Stock Repurchase Program

The following table sets forth information with respect to repurchases of shares of our common stock during the three-month period ended March 31, 2020:

Period	Total Number of Shares Purchased (In thousands)	Average Price Paid per Share (1)	Total Number of Shares Purchased as Part of Publicly Announced Plans or Programs (2) (In thousands)	Approximate Dollar Value of Shares that May Yet Be Purchased Under the Plans or Programs (In thousands)
January 1 - January 31, 2020	—	\$ —	—	\$ 73,215
February 1 - February 29, 2020	—	\$ —	—	\$ 73,215
March 1 - March 31, 2020	1,216	\$ 2.45	1,216	\$ 70,241

- (1) The calculation of average price included above excludes the cost of commissions.
- (2) On February 21, 2019, we announced that our board of directors authorized the repurchase of up to \$75.0 million of our common stock under a stock repurchase program. During the three months ended March 31, 2020, we repurchased approximately 1.2 million shares under the program. The stock repurchase program has no expiration date and does not require us to purchase a minimum number of shares. We may suspend, modify or discontinue the stock repurchase program at any time without prior notice.

Item 6. Exhibits.**Exhibit Index**

Exhibit Number	Description
2.1	<u>Deed, dated as of February 21, 2019, between Casa Systems, Inc. and NetComm Wireless Limited (incorporated by reference to Exhibit 10.1 to the Registrant's Current Report on Form 8-K (File No. 001-38324) filed on February 21, 2019)</u>
3.1	<u>Restated Certificate of Incorporation of the Registrant (incorporated by reference to Exhibit 3.1 to the Registrant's Current Report on Form 8-K (File No. 001-38324) filed on December 19, 2017)</u>
3.2	<u>By-laws of the Registrant (incorporated by reference to Exhibit 3.2 to the Registrant's Current Report on Form 8-K (File No. 001-38324) filed on December 19, 2017)</u>
10.1	<u>Offer Letter, dated October 10, 2017, by and between the Registrant and Scott Bruckner (incorporated by reference to Exhibit 10.28 to the Registrant's Annual Report on Form 10-K (File No. 001-38324) filed on February 27, 2020)</u>
10.2	<u>Form of Performance Restricted Stock Unit Agreement with Full Acceleration under 2017 Stock Incentive Plan</u>
10.3	<u>Form of Performance Restricted Stock Unit Agreement with Partial Acceleration under 2017 Stock Incentive Plan</u>
31.1	<u>Certification of Principal Executive Officer Pursuant to Rules 13a-14(a) and 15d-14(a) under the Securities Exchange Act of 1934, as Adopted Pursuant to Section 302 of the Sarbanes-Oxley Act of 2002</u>
31.2	<u>Certification of Principal Financial Officer Pursuant to Rules 13a-14(a) and 15d-14(a) under the Securities Exchange Act of 1934, as Adopted Pursuant to Section 302 of the Sarbanes-Oxley Act of 2002</u>
32.1*	<u>Certification of Principal Executive Officer Pursuant to 18 U.S.C. Section 1350, as Adopted Pursuant to Section 906 of the Sarbanes-Oxley Act of 2002</u>
32.2*	<u>Certification of Principal Financial Officer Pursuant to 18 U.S.C. Section 1350, as Adopted Pursuant to Section 906 of the Sarbanes-Oxley Act of 2002</u>
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
*	Furnished herewith.

CASA SYSTEMS, INC.

Restricted Stock Unit Agreement (Performance Vested)
2017 Stock Incentive Plan

NOTICE OF GRANT

This Restricted Stock Unit Agreement (this "Agreement") is made as of the Agreement Date between Casa Systems, Inc. (the "Company"), a Delaware corporation, and the Participant.

I. Agreement Date

Date: []

II. Participant Information

Participant: []
Participant Address: []

III. Grant Information

Grant Date: []
Number of Restricted Stock Units: []
Beginning Price of Common Stock: []

IV. Vesting Table

The Restricted Stock Units will be subject to performance-based vesting as set forth on Exhibit B. All vesting is dependent upon the Participant continuing to provide services to the Company, as provided herein.

This Agreement includes this Notice of Grant and the following Exhibits, which are expressly incorporated by reference in their entirety herein: Exhibit A (General Terms and Conditions) and Exhibit B (Vesting Criteria)

IN WITNESS WHEREOF, the parties hereto have executed this Agreement as of the Agreement Date. By executing this Notice of Grant, the Participant hereby acknowledges that the Participant has read this Notice of Grant and the terms and conditions in the following exhibits, has received and read the Plan, and understands and agrees to comply with the terms and conditions of this Agreement and the Plan.

CASA SYSTEMS, INC.

PARTICIPANT

Name:
Title:

Name:

Restricted Stock Unit Agreement (Performance Vested)
2017 Stock Incentive Plan

EXHIBIT A

GENERAL TERMS AND CONDITIONS

For valuable consideration, receipt of which is acknowledged, the parties hereto agree as follows:

1. Award of Restricted Stock Units.

In consideration of services rendered and to be rendered to the Company by the Participant, the Company has granted to the Participant, subject to the terms and conditions set forth in this Agreement and in the Company's 2017 Stock Incentive Plan (the "Plan"), an award with respect to the number of restricted shares units (the "RSUs") set forth in the Notice of Grant that forms part of this Agreement (the "Notice of Grant"). Each RSU represents the right to receive one share of common stock, \$0.001 par value per share, of the Company (the "Common Stock") upon vesting of the RSU, subject to the terms and conditions set forth herein.

2. Vesting.

(a) The RSUs shall vest in accordance with the Vesting Table set forth in the Notice of Grant (the "Vesting Table").

(b) Upon the vesting of the RSU, the Company will deliver to the Participant, for each RSU that becomes vested, one share of Common Stock, subject to the payment of any taxes pursuant to Section 7. The Common Stock will be delivered to the Participant as soon as practicable following each vesting date, but in any event within 30 days of such date. Notwithstanding anything herein to the contrary, in the sole discretion of the Board, the Company may, with respect to any applicable vesting date of the RSU, deliver to the Participant cash having a fair market value equal to the number of shares of Common Stock underlying the portion of the RSU that vested on such date, payable within 30 days of the vesting date, less applicable taxes.

3. Forfeiture of Unvested RSUs Upon Cessation of Service.

Except as otherwise provided in Exhibit B, in the event that the Participant ceases to perform services to the Company for any reason or no reason, with or without cause, all of the RSUs that are unvested as of the time of such cessation shall be forfeited immediately and automatically to the Company, without the payment of any consideration to the Participant, effective as of such cessation. The Participant shall have no further rights with respect to the unvested RSUs or any Common Stock that may have been issuable with respect thereto. If the Participant provides services to a subsidiary of the Company, any references in this Agreement to provision of services to the Company shall instead be deemed to refer to service with such subsidiary.

4.Restrictions on Transfer.

The Participant shall not sell, assign, transfer, pledge, hypothecate or otherwise dispose of, by operation of law or otherwise (collectively “transfer”) any RSUs, or any interest therein. The Company shall not be required to treat as the owner of any RSUs or issue any Common Stock to any transferee to whom such RSUs have been transferred in violation of any of the provisions of this Agreement.

5.Rights as a Shareholder.

The Participant shall have no rights as a stockholder of the Company with respect to any shares of Common Stock that may be issuable with respect to the RSUs until the issuance of the shares of Common Stock to the Participant following the vesting of the RSUs.

6.Provisions of the Plan.

This Agreement is subject to the provisions of the Plan, a copy of which is furnished to the Participant with this Agreement.

7.Tax Matters.

(a)Acknowledgments; No Section 83(b) Election. The Participant acknowledges that he or she is responsible for obtaining the advice of the Participant’s own tax advisors with respect to the award of RSUs and the Participant is relying solely on such advisors and not on any statements or representations of the Company or any of its agents with respect to the tax consequences relating to the RSUs. The Participant understands that the Participant (and not the Company) shall be responsible for the Participant’s tax liability that may arise in connection with the acquisition, vesting and/or disposition of the RSUs. The Participant acknowledges that no election under Section 83(b) of the Internal Revenue Code, as amended, is available with respect to RSUs.

(b)Withholding. The Participant acknowledges and agrees that the Company has the right to deduct from payments of any kind otherwise due to the Participant any federal, state, local or other taxes of any kind required by law to be withheld with respect to the vesting of the RSUs. On each vesting date (or other date or time at which the Company is required to withhold taxes associated with the RSUs), the Company will retain from the shares of Common Stock otherwise issuable on such date a number of shares having a fair market value (as determined by the Company in its sole discretion) equal to the Company’s minimum statutory withholding obligation. If the Company is unable to retain sufficient shares of Common Stock to satisfy such tax withholding obligations, the Participant acknowledges and agrees that the Company or an affiliate of the Company has the right to deduct from payments of any kind otherwise due to the Participant any federal, state, local or other taxes of any kind required by law to be withheld for taxes relating to the RSUs. The Company shall not deliver any shares of Common Stock to the Participant until it is satisfied that all required withholdings have been made and if such withholding taxes cannot be timely satisfied, then the Participant shall forfeit the RSUs and have no further rights with respect to the award.

8. Miscellaneous.

(a) Authority of Board. In making any decisions or taking any actions with respect to the matters covered by this Agreement, the Board of Directors of the Company (the "Board") shall have all of the authority and discretion, and shall be subject to all of the protections, provided for in the Plan. Consistent with the terms of the Plan, the Board may delegate any or all of its powers with respect to the matters covered by this Agreement to one or more committees or subcommittees of the Board. All references herein to the Board shall mean the Board or any such committee or subcommittee. All decisions and actions by the Board with respect to this Agreement shall be made in the Board's discretion and shall be final and binding on the Participant.

(b) No Right to Continued Service. The Participant acknowledges and agrees that, notwithstanding the fact that the vesting of the RSUs is contingent upon his or her continued service to the Company, this Agreement does not constitute an express or implied promise of continued service relationship with the Participant or confer upon the Participant any rights with respect to a continued service relationship with the Company.

(c) Section 409A. The RSUs awarded pursuant to this Agreement are intended to be exempt from or comply with the requirements of Section 409A of the Internal Revenue Code and the Treasury Regulations issued thereunder ("Section 409A"). The delivery of shares of Common Stock on the vesting of the RSUs may not be accelerated or deferred unless permitted or required by Section 409A.

(d) Participant's Acknowledgements. The Participant acknowledges that he or she: (i) has read this Agreement; (ii) has been represented in the preparation, negotiation and execution of this Agreement by legal counsel of the Participant's own choice or has voluntarily declined to seek such counsel; (iii) understands the terms and consequences of this Agreement; and (iv) is fully aware of the legal and binding effect of this Agreement.

(e) Governing Law. This Agreement shall be construed, interpreted and enforced in accordance with the internal laws of the State of Delaware without regard to any applicable conflicts of laws provisions.

Restricted Stock Unit Agreement (Performance Vested)
2017 Stock Incentive Plan

EXHIBIT B

VESTING CRITERIA

The RSUs shall vest based upon the Company's level of achievement of either or both of the Relative Total Shareholder Return and Absolute Stock Price Performance objectives for the Performance Period (each as defined herein) as set forth below. For the avoidance of doubt, no more than 100% of the number of RSUs set forth in the Notice of Grant may vest for the Performance Period.

Any RSUs that have not vested as of the day that the Board certifies the level of achievement of the Relative Total Shareholder Return objective at the end of the Performance Period shall be forfeited for no consideration and the Participant shall have no further rights with respect thereto. Except as provided in Section 3 below, the Participant must continue to perform services to the Company as of the applicable vesting date in order for the RSUs to vest.

1. Relative Total Shareholder Return

The level of achievement of the "Relative Total Shareholder Return" objective will be determined based on the Company's total shareholder return ("TSR") over the Performance Period (as defined below) relative to the TSR over the Performance Period of the companies in the Russell 2000 Index. The Company's performance shall be measured based on the percentile ranking of such performance within the 2000 companies in the Russell 2000 Index plus the Company.

"TSR" shall be calculated on a per-share basis for the Company and each member of the Russell 2000 as the quotient of (a) (Ending Price plus Dividends per Share Paid minus Beginning Price), divided by (b) the Beginning Price, where:

(i) "Ending Price" means the average closing stock price of one share of the applicable common stock over the five (5) trading days immediately preceding last day of the Performance Period.

(ii) "Dividends per Share Paid" means cumulative dividends per share of the applicable common stock paid by the Company or member of the Russell 2000, as applicable, during the Performance Period. Dividends are assumed to be reinvested.

(iii) "Beginning Price" means the average closing stock price of one share of the applicable common stock over the five (5) trading days immediately preceding the first day of the Performance Period. The Beginning Price of the Common Stock is set forth in the Notice of Grant.

The TSR for the Company and each member of the Russell 2000 shall be adjusted to take into account stock splits, reverse stock splits, and special stock dividends that occur during the Performance Period.

“Performance Period” means the three-year period beginning on the Agreement Date set forth in the Notice of Grant and ending on the third anniversary of the Agreement Date.

The RSUs shall vest on the day that the Board certifies the level of achievement of the Relative Total Shareholder Return objective as set forth in the table below and provided that the Participant has remained in continuous service to the Company through such certification date (except as set forth in Section 3 below).

Level of Achievement of Relative Total Shareholder Return	Percentage of RSUs That Vest
Top Quartile	100% of RSUs
Second Quartile	66% of RSUs
Third Quartile	33% of RSUs
Fourth Quartile	0% of RSUs

For the avoidance of doubt, there shall be no linear interpolation between the levels of achievement of Relative Total Shareholder Return. In the event that the calculation of the number of RSUs that vest based on the above table results in a fractional share, the number of RSUs shall be rounded down to the nearest whole share.

The number of RSUs that vest based upon achievement of the Relative Total Shareholder Return objective at the end of the Performance Period shall be reduced (but not below zero) by the number of RSUs (if any) that have previously vested under the Absolute Stock Price Performance objective during the Performance Period. If the number of RSUs that have previously vested under the Absolute Stock Price Performance objective during the Performance Period exceeds the number of RSUs that would vest based on the above table upon achievement of the Relative Total Shareholder Return objective at the end of the Performance Period, no additional RSUs shall vest at the end of the Performance Period and any RSUs that have not previously vested shall be forfeited for no consideration and the Participant shall have no further rights with respect thereto.

2. Absolute Stock Price Performance

Notwithstanding Section 1 above, the RSUs shall immediately vest as set forth in the table below if the Absolute Stock Price Performance objective is achieved (as certified by the Board in writing) as of any day during the period beginning on the Agreement Date and ending on the day prior to the last day of the Performance Period. The “Absolute Stock Price Performance” objective will be achieved if, at any point during such period, the closing price of the Common Stock has appreciated by the specified percentage set forth in the table below over the Beginning Price and such appreciation is sustained for a period of 30 consecutive days beginning on or after the Agreement Date and ending on the day prior to the last day of the Performance Period. The Participant must have been in continuous service through the date of the Board’s certification of the achievement of the Absolute Stock Price Performance objective in order for any RSUs to vest, except as set forth in Section 3 below.

Level of Achievement of Absolute Stock Price Performance	Percentage of RSUs That Vest
Appreciation by 25% Over Beginning Price	25% of RSUs
Appreciation by 50% Over Beginning Price	50% of RSUs
Appreciation by 75% Over Beginning Price	75% of RSUs
Appreciation by 100% Over Beginning Price	100% of RSUs

If a specified level of Absolute Stock Price Performance is achieved and subsequently during the same Performance Period, a higher level of Absolute Stock Price Performance is achieved, only the additional incremental percentage of RSUs shall vest. For example, if the 25% goal is achieved during the first year of the Performance Period, 25% of the RSUs will vest at such time. If the 50% goal is achieved during the second year of the Performance Period, an incremental additional 25% of the RSUs will vest, for a total vesting of 50% of the RSUs. Each specified level of achievement of Absolute Stock Price Performance may only be achieved once during the Performance Period. For the avoidance of doubt, there shall be no linear interpolation between the levels of achievement of Absolute Stock Price Performance. In the event that the calculation of the number of RSUs that vest based on the above table results in a fractional share, the actual number of RSUs that vest shall be rounded down to the nearest whole share.

3. Termination of Service

If, prior to the end of the Performance Period, the Participant's service with the Company is terminated by the Company without Cause, by the Participant for Good Reason, or as a result of the Participant's death or Disability (each as defined below), the RSUs shall vest as to 100% of the number of RSUs set forth in the Notice of Grant (reduced by the number of RSUs that have already vested pursuant to Section 1 or 2 above as of the date of such termination).

"Cause" shall mean (i) if the Participant is party to an employment or similar agreement with the Company that contains a definition of "Cause" for termination of service, the meaning ascribed to such term in such agreement, or (ii) (A) willful misconduct by the Participant or (B) willful failure by the Participant to perform his or her responsibilities to the Company (including, without limitation, breach by the Participant of any provision of any invention and non-disclosure agreement or non-competition and non-solicitation agreement with the Company). "Cause" shall be determined by the Company, which determination shall be conclusive. The Participant's employment or other service shall be considered to have been terminated for "Cause" if the Company determines, within 30 days of the Participant's resignation, that termination for Cause was warranted.

"Disability" shall have the meaning set forth in Section 22(e)(3) of the Internal Revenue Code of 1986.

“Good Reason” shall mean (i) if the Participant is party to an employment or similar agreement with the Company that contains a definition of “Good Reason” for termination of service, the meaning ascribed to such term in such agreement, or (ii) (A) a material diminution in the Participant’s base salary; (B) a material diminution in the Participant’s authority, duties or responsibilities; or (C) a material change in geographic location at which the Participant performs services. A termination of service shall not be a termination for Good Reason unless the termination is in accordance with the following series of actions: (i) the Participant reasonably determines in good faith that Good Reason exists, (ii) the Participant notifies the Company in writing of the existence of Good Reason within 60 days of the occurrence of the event that gave rise to the existence of Good Reason, (iii) the Participant cooperates in good faith with the Company’s efforts to remedy the conditions that gave rise to the existence of Good Reason for a period of 30 days following such notice (such 30 day period, the “Cure Period”), (iv) notwithstanding such efforts, Good Reason continues to exist and (v) the Participant terminates his or her employment within 30 days after the end of the Cure Period. For the avoidance of doubt, if the Company successfully remedies the conditions that gave rise to the existence of Good Reason during the Cure Period, Good Reason shall be deemed not to have existed.

4. Change in Control

In the event of a Change in Control (as defined below) during the Performance Period pursuant to which consideration is received by holders of Common Stock, the Performance Period shall be deemed to end upon the closing date of the Change in Control and the RSUs shall vest upon the closing of the Change in Control with respect to the greater of (i) the number of RSUs that would vest under the Relative Total Shareholder Return objective using the price to be paid to holders of Common Stock in connection with the Change in Control as the Ending Price for the Company and (ii) the number of RSUs that would vest under the Absolute Stock Price Performance objective using the price to be paid to holders of Common Stock to determine the appreciation over the Beginning Price, in each case as determined by the Board.

For the avoidance of doubt, in no event may more than 100% of the RSUs subject to this award vest upon the Change in Control. The number of RSUs that would vest upon the Change in Control based on the level of achievement of the Relative Total Shareholder Return objective and/or the Absolute Stock Price Performance objective shall be reduced by the number of RSUs (if any) that previously vested during the Performance Period under the Absolute Stock Price Performance objective.

“Change in Control” shall mean any of the following events provided that such event constitutes a “change in control event” within the meaning of Treasury Regulation Section 1.409A-3(i)(5)(i): the sale of all or substantially all of the outstanding shares of capital stock, assets or business of the Company, by merger, consolidation, sale of assets or otherwise (other than a merger or consolidation in which all or substantially all of the individuals and entities who were beneficial owners of the Company’s voting securities immediately prior to such transaction beneficially own, directly or indirectly, more than 50% (determined on an as-converted basis) of the outstanding securities entitled to vote generally in the election of directors of the resulting, surviving or acquiring corporation in such transaction).

CASA SYSTEMS, INC.

Restricted Stock Unit Agreement (Performance Vested)
2017 Stock Incentive Plan

NOTICE OF GRANT

This Restricted Stock Unit Agreement (this "Agreement") is made as of the Agreement Date between Casa Systems, Inc. (the "Company"), a Delaware corporation, and the Participant.

I. Agreement Date

Date: []

II. Participant Information

Participant: []
Participant Address: []

III. Grant Information

Grant Date: []
Number of Restricted Stock Units: []
Beginning Price of Common Stock: []

IV. Vesting Table

The Restricted Stock Units will be subject to performance-based vesting as set forth on Exhibit B. All vesting is dependent upon the Participant continuing to provide services to the Company, as provided herein.

This Agreement includes this Notice of Grant and the following Exhibits, which are expressly incorporated by reference in their entirety herein: Exhibit A (General Terms and Conditions) and Exhibit B (Vesting Criteria)

IN WITNESS WHEREOF, the parties hereto have executed this Agreement as of the Agreement Date. By executing this Notice of Grant, the Participant hereby acknowledges that the Participant has read this Notice of Grant and the terms and conditions in the following exhibits, has received and read the Plan, and understands and agrees to comply with the terms and conditions of this Agreement and the Plan.

CASA SYSTEMS, INC.

PARTICIPANT

Name:
Title:

Name:

Restricted Stock Unit Agreement (Performance Vested)
2017 Stock Incentive Plan

EXHIBIT A

GENERAL TERMS AND CONDITIONS

For valuable consideration, receipt of which is acknowledged, the parties hereto agree as follows:

1. Award of Restricted Stock Units.

In consideration of services rendered and to be rendered to the Company by the Participant, the Company has granted to the Participant, subject to the terms and conditions set forth in this Agreement and in the Company's 2017 Stock Incentive Plan (the "Plan"), an award with respect to the number of restricted shares units (the "RSUs") set forth in the Notice of Grant that forms part of this Agreement (the "Notice of Grant"). Each RSU represents the right to receive one share of common stock, \$0.001 par value per share, of the Company (the "Common Stock") upon vesting of the RSU, subject to the terms and conditions set forth herein.

2. Vesting.

(a) The RSUs shall vest in accordance with the Vesting Table set forth in the Notice of Grant (the "Vesting Table").

(b) Upon the vesting of the RSU, the Company will deliver to the Participant, for each RSU that becomes vested, one share of Common Stock, subject to the payment of any taxes pursuant to Section 7. The Common Stock will be delivered to the Participant as soon as practicable following each vesting date, but in any event within 30 days of such date. Notwithstanding anything herein to the contrary, in the sole discretion of the Board, the Company may, with respect to any applicable vesting date of the RSU, deliver to the Participant cash having a fair market value equal to the number of shares of Common Stock underlying the portion of the RSU that vested on such date, payable within 30 days of the vesting date, less applicable taxes.

3. Forfeiture of Unvested RSUs Upon Cessation of Service.

Except as otherwise provided in Exhibit B, in the event that the Participant ceases to perform services to the Company for any reason or no reason, with or without cause, all of the RSUs that are unvested as of the time of such cessation shall be forfeited immediately and automatically to the Company, without the payment of any consideration to the Participant, effective as of such cessation. The Participant shall have no further rights with respect to the unvested RSUs or any Common Stock that may have been issuable with respect thereto. If the Participant provides services to a subsidiary of the Company, any references in this Agreement to provision of services to the Company shall instead be deemed to refer to service with such subsidiary.

4.Restrictions on Transfer.

The Participant shall not sell, assign, transfer, pledge, hypothecate or otherwise dispose of, by operation of law or otherwise (collectively “transfer”) any RSUs, or any interest therein. The Company shall not be required to treat as the owner of any RSUs or issue any Common Stock to any transferee to whom such RSUs have been transferred in violation of any of the provisions of this Agreement.

5.Rights as a Shareholder.

The Participant shall have no rights as a stockholder of the Company with respect to any shares of Common Stock that may be issuable with respect to the RSUs until the issuance of the shares of Common Stock to the Participant following the vesting of the RSUs.

6.Provisions of the Plan.

This Agreement is subject to the provisions of the Plan, a copy of which is furnished to the Participant with this Agreement.

7.Tax Matters.

(a)Acknowledgments; No Section 83(b) Election. The Participant acknowledges that he or she is responsible for obtaining the advice of the Participant’s own tax advisors with respect to the award of RSUs and the Participant is relying solely on such advisors and not on any statements or representations of the Company or any of its agents with respect to the tax consequences relating to the RSUs. The Participant understands that the Participant (and not the Company) shall be responsible for the Participant’s tax liability that may arise in connection with the acquisition, vesting and/or disposition of the RSUs. The Participant acknowledges that no election under Section 83(b) of the Internal Revenue Code, as amended, is available with respect to RSUs.

(b)Withholding. The Participant acknowledges and agrees that the Company has the right to deduct from payments of any kind otherwise due to the Participant any federal, state, local or other taxes of any kind required by law to be withheld with respect to the vesting of the RSUs. On each vesting date (or other date or time at which the Company is required to withhold taxes associated with the RSUs), the Company will retain from the shares of Common Stock otherwise issuable on such date a number of shares having a fair market value (as determined by the Company in its sole discretion) equal to the Company’s minimum statutory withholding obligation. If the Company is unable to retain sufficient shares of Common Stock to satisfy such tax withholding obligations, the Participant acknowledges and agrees that the Company or an affiliate of the Company has the right to deduct from payments of any kind otherwise due to the Participant any federal, state, local or other taxes of any kind required by law to be withheld for taxes relating to the RSUs. The Company shall not deliver any shares of Common Stock to the Participant until it is satisfied that all required withholdings have been made and if such withholding taxes cannot be timely satisfied, then the Participant shall forfeit the RSUs and have no further rights with respect to the award.

8. Miscellaneous.

(a) Authority of Board. In making any decisions or taking any actions with respect to the matters covered by this Agreement, the Board of Directors of the Company (the "Board") shall have all of the authority and discretion, and shall be subject to all of the protections, provided for in the Plan. Consistent with the terms of the Plan, the Board may delegate any or all of its powers with respect to the matters covered by this Agreement to one or more committees or subcommittees of the Board. All references herein to the Board shall mean the Board or any such committee or subcommittee. All decisions and actions by the Board with respect to this Agreement shall be made in the Board's discretion and shall be final and binding on the Participant.

(b) No Right to Continued Service. The Participant acknowledges and agrees that, notwithstanding the fact that the vesting of the RSUs is contingent upon his or her continued service to the Company, this Agreement does not constitute an express or implied promise of continued service relationship with the Participant or confer upon the Participant any rights with respect to a continued service relationship with the Company.

(c) Section 409A. The RSUs awarded pursuant to this Agreement are intended to be exempt from or comply with the requirements of Section 409A of the Internal Revenue Code and the Treasury Regulations issued thereunder ("Section 409A"). The delivery of shares of Common Stock on the vesting of the RSUs may not be accelerated or deferred unless permitted or required by Section 409A.

(d) Participant's Acknowledgements. The Participant acknowledges that he or she: (i) has read this Agreement; (ii) has been represented in the preparation, negotiation and execution of this Agreement by legal counsel of the Participant's own choice or has voluntarily declined to seek such counsel; (iii) understands the terms and consequences of this Agreement; and (iv) is fully aware of the legal and binding effect of this Agreement.

(e) Governing Law. This Agreement shall be construed, interpreted and enforced in accordance with the internal laws of the State of Delaware without regard to any applicable conflicts of laws provisions.

Restricted Stock Unit Agreement (Performance Vested)
2017 Stock Incentive Plan

EXHIBIT B

VESTING CRITERIA

The RSUs shall vest based upon the Company's level of achievement of either or both of the Relative Total Shareholder Return and Absolute Stock Price Performance objectives for the Performance Period (each as defined herein) as set forth below. For the avoidance of doubt, no more than 100% of the number of RSUs set forth in the Notice of Grant may vest for the Performance Period.

Any RSUs that have not vested as of the day that the Board certifies the level of achievement of the Relative Total Shareholder Return objective at the end of the Performance Period shall be forfeited for no consideration and the Participant shall have no further rights with respect thereto. Except as provided in Section 3 below, the Participant must continue to perform services to the Company as of the applicable vesting date in order for the RSUs to vest.

1. Relative Total Shareholder Return

The level of achievement of the "Relative Total Shareholder Return" objective will be determined based on the Company's total shareholder return ("TSR") over the Performance Period (as defined below) relative to the TSR over the Performance Period of the companies in the Russell 2000 Index. The Company's performance shall be measured based on the percentile ranking of such performance within the 2000 companies in the Russell 2000 Index plus the Company.

"TSR" shall be calculated on a per-share basis for the Company and each member of the Russell 2000 as the quotient of (a) (Ending Price plus Dividends per Share Paid minus Beginning Price), divided by (b) the Beginning Price, where:

(i) "Ending Price" means the average closing stock price of one share of the applicable common stock over the five (5) trading days immediately preceding last day of the Performance Period.

(ii) "Dividends per Share Paid" means cumulative dividends per share of the applicable common stock paid by the Company or member of the Russell 2000, as applicable, during the Performance Period. Dividends are assumed to be reinvested.

(iii) "Beginning Price" means the average closing stock price of one share of the applicable common stock over the five (5) trading days immediately preceding the first day of the Performance Period. The Beginning Price of the Common Stock is set forth in the Notice of Grant.

The TSR for the Company and each member of the Russell 2000 shall be adjusted to take into account stock splits, reverse stock splits, and special stock dividends that occur during the Performance Period.

“Performance Period” means the three-year period beginning on the Agreement Date set forth in the Notice of Grant and ending on the third anniversary of the Agreement Date.

The RSUs shall vest on the day that the Board certifies the level of achievement of the Relative Total Shareholder Return objective as set forth in the table below and provided that the Participant has remained in continuous service to the Company through such certification date (except as set forth in Section 3 below).

Level of Achievement of Relative Total Shareholder Return	Percentage of RSUs That Vest
Top Quartile	100% of RSUs
Second Quartile	66% of RSUs
Third Quartile	33% of RSUs
Fourth Quartile	0% of RSUs

For the avoidance of doubt, there shall be no linear interpolation between the levels of achievement of Relative Total Shareholder Return. In the event that the calculation of the number of RSUs that vest based on the above table results in a fractional share, the number of RSUs shall be rounded down to the nearest whole share.

The number of RSUs that vest based upon achievement of the Relative Total Shareholder Return objective at the end of the Performance Period shall be reduced (but not below zero) by the number of RSUs (if any) that have previously vested under the Absolute Stock Price Performance objective during the Performance Period. If the number of RSUs that have previously vested under the Absolute Stock Price Performance objective during the Performance Period exceeds the number of RSUs that would vest based on the above table upon achievement of the Relative Total Shareholder Return objective at the end of the Performance Period, no additional RSUs shall vest at the end of the Performance Period and any RSUs that have not previously vested shall be forfeited for no consideration and the Participant shall have no further rights with respect thereto.

2. Absolute Stock Price Performance

Notwithstanding Section 1 above, the RSUs shall immediately vest as set forth in the table below if the Absolute Stock Price Performance objective is achieved (as certified by the Board in writing) as of any day during the period beginning on the Agreement Date and ending on the day prior to the last day of the Performance Period. The “Absolute Stock Price Performance” objective will be achieved if, at any point during such period, the closing price of the Common Stock has appreciated by the specified percentage set forth in the table below over the Beginning Price and such appreciation is sustained for a period of 30 consecutive days beginning on or after the Agreement Date and ending on the day prior to the last day of the Performance Period. The Participant must have been in continuous service through the date of the Board’s certification of the achievement of the Absolute Stock Price Performance objective in order for any RSUs to vest, except as set forth in Section 3 below.

Level of Achievement of Absolute Stock Price Performance	Percentage of RSUs That Vest
Appreciation by 25% Over Beginning Price	25% of RSUs
Appreciation by 50% Over Beginning Price	50% of RSUs
Appreciation by 75% Over Beginning Price	75% of RSUs
Appreciation by 100% Over Beginning Price	100% of RSUs

If a specified level of Absolute Stock Price Performance is achieved and subsequently during the same Performance Period, a higher level of Absolute Stock Price Performance is achieved, only the additional incremental percentage of RSUs shall vest. For example, if the 25% goal is achieved during the first year of the Performance Period, 25% of the RSUs will vest at such time. If the 50% goal is achieved during the second year of the Performance Period, an incremental additional 25% of the RSUs will vest, for a total vesting of 50% of the RSUs. Each specified level of achievement of Absolute Stock Price Performance may only be achieved once during the Performance Period. For the avoidance of doubt, there shall be no linear interpolation between the levels of achievement of Absolute Stock Price Performance. In the event that the calculation of the number of RSUs that vest based on the above table results in a fractional share, the actual number of RSUs that vest shall be rounded down to the nearest whole share.

3. Termination of Service

If, prior to the end of the Performance Period, the Participant's service with the Company is terminated by the Company without Cause, by the Participant for Good Reason, or as a result of the Participant's death or Disability (each as defined below), the RSUs shall vest pro rata based on the portion of the Performance Period that has elapsed through the date of the Participant's termination of service plus the lesser of (i) one (1) year and (ii) the remainder of the Performance Period (reduced by the number of RSUs that have already vested pursuant to Section 1 or 2 above as of the date of such termination).

"Cause" shall mean (i) if the Participant is party to an employment or similar agreement with the Company that contains a definition of "Cause" for termination of service, the meaning ascribed to such term in such agreement, or (ii) (A) willful misconduct by the Participant or (B) willful failure by the Participant to perform his or her responsibilities to the Company (including, without limitation, breach by the Participant of any provision of any invention and non-disclosure agreement or non-competition and non-solicitation agreement with the Company). "Cause" shall be determined by the Company, which determination shall be conclusive. The Participant's employment or other service shall be considered to have been terminated for "Cause" if the Company determines, within 30 days of the Participant's resignation, that termination for Cause was warranted.

"Disability" shall have the meaning set forth in Section 22(e)(3) of the Internal Revenue Code of 1986.

“Good Reason” shall mean (i) if the Participant is party to an employment or similar agreement with the Company that contains a definition of “Good Reason” for termination of service, the meaning ascribed to such term in such agreement, or (ii) (A) a material diminution in the Participant’s base salary; (B) a material diminution in the Participant’s authority, duties or responsibilities; or (C) a material change in geographic location at which the Participant performs services. A termination of service shall not be a termination for Good Reason unless the termination is in accordance with the following series of actions: (i) the Participant reasonably determines in good faith that Good Reason exists, (ii) the Participant notifies the Company in writing of the existence of Good Reason within 60 days of the occurrence of the event that gave rise to the existence of Good Reason, (iii) the Participant cooperates in good faith with the Company’s efforts to remedy the conditions that gave rise to the existence of Good Reason for a period of 30 days following such notice (such 30 day period, the “Cure Period”), (iv) notwithstanding such efforts, Good Reason continues to exist and (v) the Participant terminates his or her employment within 30 days after the end of the Cure Period. For the avoidance of doubt, if the Company successfully remedies the conditions that gave rise to the existence of Good Reason during the Cure Period, Good Reason shall be deemed not to have existed.

4. Change in Control

In the event of a Change in Control (as defined below) during the Performance Period pursuant to which consideration is received by holders of Common Stock, the Performance Period shall be deemed to end upon the closing date of the Change in Control and the RSUs shall vest upon the closing of the Change in Control with respect to the greater of (i) the number of RSUs that would vest under the Relative Total Shareholder Return objective using the price to be paid to holders of Common Stock in connection with the Change in Control as the Ending Price for the Company and (ii) the number of RSUs that would vest under the Absolute Stock Price Performance objective using the price to be paid to holders of Common Stock to determine the appreciation over the Beginning Price, in each case as determined by the Board.

For the avoidance of doubt, in no event may more than 100% of the RSUs subject to this award vest upon the Change in Control. The number of RSUs that would vest upon the Change in Control based on the level of achievement of the Relative Total Shareholder Return objective and/or the Absolute Stock Price Performance objective shall be reduced by the number of RSUs (if any) that previously vested during the Performance Period under the Absolute Stock Price Performance objective.

“Change in Control” shall mean any of the following events provided that such event constitutes a “change in control event” within the meaning of Treasury Regulation Section 1.409A-3(i)(5)(i): the sale of all or substantially all of the outstanding shares of capital stock, assets or business of the Company, by merger, consolidation, sale of assets or otherwise (other than a merger or consolidation in which all or substantially all of the individuals and entities who were beneficial owners of the Company’s voting securities immediately prior to such transaction beneficially own, directly or indirectly, more than 50% (determined on an as-converted basis) of the outstanding securities entitled to vote generally in the election of directors of the resulting, surviving or acquiring corporation in such transaction).

