CADENCE DESIGN SYSTEMS INC
Form 10-Q
October 22, 2018

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

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FORM 10-Q

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(Mark One)

x QUARTERLY REPORT PURSUANT TO SECTION 13 OR 15(d) OF THE SECURITIES EXCHANGE ACT OF 1934

For the quarterly period ended September 29, 2018

OR

.. TRANSITION REPORT PURSUANT TO SECTION 13 OR 15(d) OF THE SECURITIES EXCHANGE ACT OF 1934

For the transition period from to

Commission file number 000-15867

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CADENCE DESIGN SYSTEMS, INC.
(Exact Name of Registrant as Specified in Its Charter)

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| | |
|---|---|
| Delaware | 00-0000000 |
| (State or Other Jurisdiction of Incorporation or Organization) | (I.R.S. Employer Identification No.) |
| 2655 Seely Avenue, Building 5, San Jose, California | 95134 |
| (Address of Principal Executive Offices) | (Zip Code) |

(408) 943-1234
Registrant's Telephone Number, including Area Code

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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 x No ¨

Indicate by check mark whether the registrant has submitted electronically every Interactive Data File required to be submitted pursuant to Rule 405 of Regulation S-T during the preceding 12 months (or for such shorter period that the registrant was required to submit such files). Yes x No ¨

Indicate by check mark whether the registrant is a large accelerated filer, an accelerated filer, a non-accelerated filer, 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. (Check one):

Large accelerated filer x Accelerated filer o Smaller reporting company o

Non-accelerated filer o Emerging growth company o

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 x

On September 29, 2018, approximately 282,142,000 shares of the registrant's common stock, $0.01 par value, were outstanding.

CADENCE DESIGN SYSTEMS, INC.
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PART I. FINANCIAL INFORMATION

Item 1. Financial Statements
CADENCE DESIGN SYSTEMS, INC.
CONDENSED CONSOLIDATED BALANCE SHEETS
(In thousands)
(Unaudited)

| | As of September 29, 2018 | December 30, 2017 |
|---|---|---|
| ASSETS | | |
| Current assets: | | |
| Cash and cash equivalents | $544,585 | $688,087 |
| Short-term investments | 5,446 | 4,455 |
| Receivables, net | 240,836 | 190,426 |
| Inventories | 30,535 | 33,209 |
| Prepaid expenses and other | 66,979 | 63,811 |
| Total current assets | 888,381 | 979,988 |
| Property, plant and equipment, net of accumulated depreciation of $685,212 and $658,377, respectively | 248,165 | 251,342 |
| Goodwill | 661,341 | 666,009 |
| Acquired intangibles, net | 238,385 | 278,835 |
| Long-term receivables | 4,395 | 12,239 |
| Other assets | 232,540 | 230,301 |
| Total assets | $2,273,207 | $2,418,714 |
| LIABILITIES AND STOCKHOLDERS' EQUITY | | |
| Current liabilities: | | |
| Revolving credit facility | $— | $85,000 |
| Accounts payable and accrued liabilities | 212,153 | 221,101 |
| Current portion of deferred revenue | 329,168 | 336,297 |
| Total current liabilities | 541,321 | 642,398 |
| Long-term liabilities: | | |
| Long-term portion of deferred revenue | 49,343 | 61,513 |
| Long-term debt | 345,113 | 644,369 |
| Other long-term liabilities | 80,013 | 81,232 |
| Total long-term liabilities | 474,469 | 787,114 |
| Commitments and contingencies (Note 13) | | |
| Stockholders' equity: | | |
| Common stock and capital in excess of par value | 1,897,749 | 1,829,950 |
| Treasury stock, at cost | (1,292,265) | (1,178,121) |
| Retained earnings | 674,284 | 341,003 |
| Accumulated other comprehensive loss | (22,351) | (3,630) |
| Total stockholders' equity | 1,257,417 | 989,202 |
| Total liabilities and stockholders' equity | $2,273,207 | $2,418,714 |

See notes to condensed consolidated financial statements.

CADENCE DESIGN SYSTEMS, INC.
CONDENSED CONSOLIDATED INCOME STATEMENTS
(In thousands, except per share amounts)
(Unaudited)

| | Three Months Ended | | Nine Months Ended | |
|---|---|---|---|---|
| | September 29, 2018 | September 30, 2017 | September 29, 2018 | September 30, 2017 |
| Revenue: | | | | |
| Product and maintenance | $494,990 | $ 451,229 | $1,463,469 | $ 1,346,483 |
| Services | 37,478 | 34,169 | 104,703 | 94,827 |
| Total revenue | 532,468 | 485,398 | 1,568,172 | 1,441,310 |
| Costs and expenses: | | | | |
| Cost of product and maintenance | 36,406 | 34,825 | 118,263 | 117,371 |
| Cost of services | 24,048 | 19,657 | 64,360 | 59,735 |
| Marketing and sales | 108,608 | 104,263 | 327,056 | 311,507 |
| Research and development | 223,231 | 206,568 | 666,545 | 600,755 |
| General and administrative | 33,247 | 36,302 | 101,421 | 100,892 |
| Amortization of acquired intangibles | 3,470 | 3,453 | 10,618 | 11,145 |
| Restructuring and other credits | (172) | (55) | (2,610) | (2,772) |
| Total costs and expenses | 428,838 | 405,013 | 1,285,653 | 1,198,633 |
| Income from operations | 103,630 | 80,385 | 282,519 | 242,677 |
| Interest expense | (5,177) | (6,225) | (18,821) | (18,952) |
| Other income, net | 1,106 | 12,387 | 4,055 | 14,370 |
| Income before provision for income taxes | 99,559 | 86,547 | 267,753 | 238,095 |
| Provision for income taxes | 241 | 5,390 | 20,401 | 19,552 |
| Net income | $99,318 | $ 81,157 | $247,352 | $ 218,543 |
| Net income per share - basic | $0.36 | $ 0.30 | 0.90 | 0.80 |
| Net income per share - diluted | $0.35 | $ 0.29 | 0.88 | 0.78 |
| Weighted average common shares outstanding – basic | 273,716 | 273,156 | 273,718 | 271,739 |
| Weighted average common shares outstanding – diluted | 281,646 | 281,400 | 281,391 | 279,554 |

See notes to condensed consolidated financial statements.

CADENCE DESIGN SYSTEMS, INC.
CONDENSED CONSOLIDATED STATEMENTS OF COMPREHENSIVE INCOME
(In thousands)
(Unaudited)

| | Three Months Ended | | Nine Months Ended | |
|---|---|---|---|---|
| | September 29, 2018 | September 30, 2017 | September 29, 2018 | September 30, 2017 |
| Net income | $99,318 | $ 81,157 | $247,352 | $ 218,543 |
| Other comprehensive income (loss), net of tax effects: | | | | |
| Foreign currency translation adjustments | (9,186) | 3,549 | (16,237) | 13,803 |
| Changes in unrealized holding gains or losses on available-for-sale securities, net of reclassification adjustment for realized gains and losses | — | 1,000 | — | 1,248 |
| Changes in defined benefit plan liabilities | 7 | 19 | 154 | 89 |
| Total other comprehensive income (loss), net of tax effects | (9,179) | 4,568 | (16,083) | 15,140 |
| Comprehensive income | $90,139 | $ 85,725 | $231,269 | $ 233,683 |

See notes to condensed consolidated financial statements.

CADENCE DESIGN SYSTEMS, INC.
CONDENSED CONSOLIDATED STATEMENTS OF CASH FLOWS
(In thousands)
(Unaudited)

| | Nine Months Ended | |
|---|---|---|
| | September 29, 2018 | September 30, 2017 |
| Cash and cash equivalents at beginning of period | $688,087 | $ 465,232 |
| Cash flows from operating activities: | | |
| Net income | 247,352 | 218,543 |
| Adjustments to reconcile net income to net cash provided by operating activities: | | |
| Depreciation and amortization | 89,003 | 86,605 |
| Amortization of debt discount and fees | 950 | 920 |
| Stock-based compensation | 125,121 | 94,008 |
| Gain on investments, net | (2,617) | (12,502) |
| Deferred income taxes | (3,221) | 212 |
| Provisions for losses on receivables | 4,790 | 1,499 |
| Other non-cash items | 1,589 | 3,763 |
| Changes in operating assets and liabilities, net of effect of acquired businesses: | | |
| Receivables | (28,471) | (9,539) |
| Inventories | (1,455) | 2,282 |
| Prepaid expenses and other | 2,018 | (4,627) |
| Other assets | 3,571 | (14,469) |
| Accounts payable and accrued liabilities | (41,718) | (41,127) |
| Deferred revenue | 77,370 | 14,245 |
| Other long-term liabilities | (1,415) | 4,071 |
| Net cash provided by operating activities | 472,867 | 343,884 |
| Cash flows from investing activities: | | |
| Proceeds from the sale of available-for-sale securities | — | 421 |
| Proceeds from the sale of long-term investments | — | 9,108 |
| Purchases of property, plant and equipment | (41,761) | (39,676) |
| Cash paid in business combinations and asset acquisitions, net of cash acquired | — | (550) |
| Net cash used for investing activities | (41,761) | (30,697) |
| Cash flows from financing activities: | | |
| Proceeds from revolving credit facility | — | 50,000 |
| Payment on revolving credit facility | (85,000) | (100,000) |
| Principal payments on term loan | (300,000) | — |
| Payment of debt issuance costs | — | (793) |
| Proceeds from issuance of common stock | 38,190 | 45,419 |
| Stock received for payment of employee taxes on vesting of restricted stock | (59,619) | (54,130) |
| Payments for repurchases of common stock | (150,036) | (50,013) |
| Change in book overdraft | (3,867) | — |
| Net cash used for financing activities | (560,332) | (109,517) |
| Effect of exchange rate changes on cash and cash equivalents | (14,276) | 9,382 |
| Increase (decrease) in cash and cash equivalents | (143,502) | 213,052 |
| Cash and cash equivalents at end of period | $544,585 | $ 678,284 |
| | | |
| Supplemental cash flow information: | | |
| Cash paid for interest | $15,360 | $ 14,188 |
| Cash paid for taxes, net | $29,858 | $ 40,021 |

See notes to condensed consolidated financial statements.

CADENCE DESIGN SYSTEMS, INC.
NOTES TO CONDENSED CONSOLIDATED FINANCIAL STATEMENTS
(Unaudited)

## NOTE 1. BASIS OF PRESENTATION AND SUMMARY OF SIGNIFICANT ACCOUNTING POLICIES

### Basis of Presentation

The condensed consolidated financial statements included in this Quarterly Report on Form 10-Q have been prepared by Cadence Design Systems, Inc. ("Cadence") without audit, pursuant to the rules and regulations of the United States Securities and Exchange Commission (the "SEC"). Certain information and footnote disclosures normally included in consolidated financial statements prepared in accordance with United States generally accepted accounting principles ("U.S. GAAP") have been condensed or omitted pursuant to such rules and regulations. However, Cadence believes that the disclosures contained in this Quarterly Report on Form 10-Q comply with the requirements of Section 13(a) of the Securities Exchange Act of 1934, as amended, (the "Exchange Act") for a Quarterly Report on Form 10-Q and are adequate to make the information presented not misleading. These condensed consolidated financial statements are meant to be, and should be, read in conjunction with the consolidated financial statements and the Notes thereto included in Cadence's Annual Report on Form 10-K for the fiscal year ended December 30, 2017.

The unaudited condensed consolidated financial statements included in this Quarterly Report on Form 10-Q reflect all adjustments (which include only normal, recurring adjustments and those items discussed in these Notes) that are, in the opinion of management, necessary to state fairly the results of operations, cash flows and financial position for the periods and dates presented. The results for such periods are not necessarily indicative of the results to be expected for the full fiscal year. Certain prior period balances have been reclassified to conform to the current year presentation. Management has evaluated subsequent events through the issuance date of the unaudited condensed consolidated financial statements.

### Use of Estimates

Preparation of the condensed consolidated financial statements in conformity with U.S. GAAP requires management to make estimates and assumptions that affect the reported amounts of assets and liabilities and disclosure of contingent assets and liabilities at the date of the condensed consolidated financial statements and the reported amounts of revenue and expenses during the reporting period. Actual results could differ from those estimates.

### Comparability

Effective on the first day of fiscal 2018, Cadence adopted multiple new accounting standards. Prior periods were not retrospectively restated, so the consolidated balance sheet as of December 30, 2017 and the condensed consolidated income statements for the three and nine months ended September 30, 2017 were prepared using accounting standards that were different than those in effect for the three and nine months ended September 29, 2018. Therefore, the consolidated balance sheets as of September 29, 2018 and December 30, 2017 are not directly comparable, nor are the results of operations for the three and nine months ended September 29, 2018 and September 30, 2017.

### Recently Adopted Accounting Standards

#### Revenue from Contracts with Customers

In May 2014, the Financial Accounting Standards Board ("FASB") issued ASU 2014-09, "Revenue from Contracts with Customers (Topic 606)," which supersedes the revenue recognition requirements in "Revenue Recognition (Topic 605)" and Subtopic 985-605 "Software - Revenue Recognition." Topic 605 and Subtopic 985-605 are collectively referred to as "Topic 605" or "prior GAAP." Under Topic 606, revenue is recognized when a customer obtains control of promised goods or services in an amount that reflects the consideration to which the entity expects to be entitled in exchange for those goods or services. In addition, Topic 606 requires enhanced disclosures, including disclosure of the nature, amount, timing, and uncertainty of revenue and cash flows arising from contracts with customers. The FASB issued several amendments to the standard, including updates on accounting for licenses of intellectual property ("IP") and identifying performance obligations.

Cadence adopted Topic 606 on the first day of fiscal 2018 using the modified retrospective transition method. Under this method, Cadence evaluated contracts that were in effect at the beginning of fiscal 2018 as if those contracts had been accounted for under Topic 606. Cadence did not evaluate individual modifications for those periods prior to the adoption date, but the aggregate effect of all modifications as of the adoption date and such effects are provided below. Under the modified retrospective transition approach, periods prior to the adoption date were not adjusted and

continue to be reported in accordance with historical, pre-Topic 606 accounting. A cumulative catch up adjustment was recorded to beginning retained earnings to reflect the impact of all existing arrangements under Topic 606.

The most significant impacts of the adoption of Topic 606 are as follows:

- At the adoption date, Cadence increased retained earnings by $85.4 million for uncompleted contracts for which revenue will not be recognized in future periods under Topic 606. This revenue would otherwise have been recognized in prior periods, so the beginning balance of receivables increased by $47.3 million, contract assets were established at $4.0 million, deferred revenue decreased by $57.4 million and accrued liabilities increased by $23.3 million;
- Revenue generated under Topic 606 is expected to be slightly lower than revenue would have been under Topic 605 in fiscal 2018. This is the result of a combination of factors, including the elimination of deferred revenue that, under Topic 605, would have continued to be recognized into revenue in 2018 and beyond, as well as changes in the timing of revenue recognition as discussed below. The actual effects on revenue recognized for the first three quarters of fiscal 2018 are reported in the table below; and
- Cadence capitalized $27.3 million of incremental sales commission costs at the adoption date directly related to obtaining customer contracts and is amortizing these costs over the life of the contract.

Cadence will continue to recognize revenue over time for its time-based software arrangements, which generate a majority of total revenue. However, the reason for the similar accounting treatment is different under Topic 606 than under Topic 605. Under Topic 605, Cadence could not establish vendor specific objective evidence (“VSOE”) for its undelivered elements and therefore was not able to separate its delivered software licenses from those undelivered elements, such as technical support and unspecified (when-and-if available) update rights. Topic 606 no longer requires separability of promised goods or services, such as software licenses, technical support, or unspecified update rights on the basis of VSOE. Rather, Topic 606 requires Cadence to identify the performance obligations in the contract — that is, those promised goods and services (or bundles of promised goods or services) that are distinct — and allocate the transaction price of the contract to those performance obligations on the basis of stand-alone selling prices (“SSPs”). The transaction price allocated to each performance obligation is then recognized either at a point in time or over time using an appropriate measure of progress. Under Topic 606, Cadence has concluded that its software licenses in time-based arrangements are not distinct from each other, or from its obligation to provide unspecified software updates to the licensed software throughout the license term, because the multiple software licenses represent inputs to a single, combined offering, and timely, relevant software updates are integral to maintaining the utility of the software licenses. Cadence will recognize revenue for the combined performance obligation, which also includes the co-terminus technical support provided to the customer, ratably over the term of the arrangement.

In contrast to the similar accounting result for time-based software arrangements, revenue related to certain IP licenses will now be recognized upon delivery under Topic 606, as opposed to over time under Topic 605, because the requirement to have VSOE for undelivered elements under current accounting standards is eliminated under Topic 606. Certain perpetual software licenses will now be recognized over time under Topic 606, as opposed to upon delivery under Topic 605, because these software licenses and the when-and-if available updates provided to the customer are accounted for together as one performance obligation and recognized over time.

The timing of revenue recognition for hardware and professional services is expected to remain substantially unchanged. Cadence’s overall mix of revenue recognized at a point in time versus over time is expected to remain relatively constant, with approximately 90% recognizable over time.

The following table summarizes the effects of adopting Topic 606 on Cadence's condensed consolidated balance sheet as of September 29, 2018:

| | As reported under Topic 606 | Adjustments | Balances under Prior GAAP |
|---|---|---|---|
| | (In thousands) | | |
| Receivables, net | $240,836 | $ (21,647) | $219,189 |
| Prepaid expenses and other | 66,979 | (11,789) | 55,190 |
| Long-term receivables | 4,395 | 1,453 | 5,848 |
| Other assets | 232,540 | (12,663) | 219,877 |
| Accounts payable and accrued liabilities* | 212,153 | (22,623) | 189,530 |
| Current portion of deferred revenue | 329,168 | 51,315 | 380,483 |
| Long-term portion of deferred revenue | 49,343 | 13,639 | 62,982 |
| Retained earnings | 674,284 | (87,726) | 586,558 |
| Accumulated other comprehensive loss | (22,351) | 749 | (21,602) |

* Cadence has certain arrangements under which consideration is received from customers prior to identifying the specific goods or services to be delivered under the contract. Cadence records an accrued liability on a contract-by-contract basis at the end of each reporting period for cash consideration received.

The following table summarizes the effects of adopting Topic 606 on Cadence's condensed consolidated income statement for the three months ended September 29, 2018:

| | As reported under Topic 606 | Adjustments | Balances under Prior GAAP |
|---|---|---|---|
| | (In thousands, except per share amounts) | | |
| Product and maintenance revenue | $494,990 | $ (5,505) | $489,485 |
| Services revenue | 37,478 | (1,004) | 36,474 |
| Cost of product and maintenance | 36,406 | (2,654) | 33,752 |
| Marketing and sales expense | 108,608 | (1,150) | 107,458 |
| Provision for income taxes | 241 | 1,953 | 2,194 |
| Net income | 99,318 | (4,658) | 94,660 |
| Net income per share - basic | 0.36 | (0.01) | 0.35 |
| Net income per share - diluted | 0.35 | (0.01) | 0.34 |

The following table summarizes the effects of adopting Topic 606 on Cadence's condensed consolidated income statement for the nine months ended September 29, 2018:

| | As reported under Topic 606 | Adjustments | Balances under Prior GAAP |
|---|---|---|---|
| | (In thousands, except per share amounts) | | |
| Product and maintenance revenue | $1,463,469 | $ (3,941) | $1,459,528 |
| Services revenue | 104,703 | 2,296 | 106,999 |
| Cost of product and maintenance | 118,263 | (2,791) | 115,472 |
| Marketing and sales expense | 327,056 | (5,126) | 321,930 |
| Provision for income taxes | 20,401 | 2,359 | 22,760 |
| Net income | 247,352 | 3,913 | 251,265 |
| Net income per share - basic | 0.90 | 0.02 | 0.92 |
| Net income per share - diluted | 0.88 | 0.01 | 0.89 |

Cadence's net cash provided by operating activities for the nine months ended September 29, 2018 did not change due to the adoption of Topic 606. The following table summarizes the effects of adopting Topic 606 on the financial statement line items of Cadence's condensed consolidated statement of cash flows for the nine months ended September 29, 2018:

| | As reported under Topic 606 | Adjustments | Balances under Prior GAAP |
|---|---|---|---|
| | (In thousands) | | |
| Net income | $247,352 | $ 3,913 | $251,265 |
| Changes in operating assets and liabilities: | | | |
| Receivables | (28,471) | (22,568) | (51,039) |
| Prepaid expenses and other | 2,018 | 7,883 | 9,901 |
| Other assets | 3,571 | (2,010) | 1,561 |
| Accounts payable and accrued liabilities | (41,718) | 5,194 | (36,524) |
| Deferred revenue | 77,370 | 7,588 | 84,958 |

Financial Instruments

In January 2016, the FASB issued ASU 2016-01, "Financial Instruments—Overall (Subtopic 825-10): Recognition and Measurement of Financial Assets and Financial Liabilities." Cadence adopted this standard on the first day of fiscal 2018, modifying its accounting and required disclosures for investments in equity securities, other than those accounted for using the equity method of accounting.

Cadence's marketable investments in equity securities consist of investments in a publicly-held company and are presented as short-term investments in the condensed consolidated balance sheets. Prior to the adoption of the updated standard, these investments were classified as available-for-sale, and changes in the fair value of these investments were reported in accumulated other comprehensive loss in the condensed consolidated balance sheets. The new standard eliminated the available-for-sale classification for equity securities and requires changes in the fair value of these investments to be recognized through net income for the three and nine months ended September 29, 2018 and each subsequent reporting period. Upon adoption, Cadence recorded a cumulative-effect adjustment to increase retained earnings in the amount of $2.6 million related to unrealized holding gains previously recorded in accumulated other comprehensive loss. For additional information regarding changes in the fair value of Cadences investments in marketable equity securities during the three and nine months ended September 29, 2018, see Note 3 in the notes to condensed consolidated financial statements under the heading "Short-Term Investments."

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Cadence's non-marketable investments in equity securities consist of investments in privately-held companies and are presented as other assets in the condensed consolidated balance sheets. Prior to the adoption of the updated standard, non-marketable investments that were not accounted for using the equity method of accounting were recorded at cost, less impairment. The new standard eliminated the cost method of accounting for investments in equity securities that do not have readily determinable fair values and permits the election of a measurement alternative that allows such securities to be recorded at cost, less impairment, if any, plus or minus changes resulting from observable price changes in market-based transactions for an identical or similar investment of the same issuer. Cadence adopted the provisions of the new standard applicable to its investments in equity securities without a readily determinable fair value on a prospective basis and elected the measurement alternative for non-marketable investments previously accounted for under the cost method of accounting. Gains and losses resulting from observable price changes or impairment will be recorded through net income in the period incurred. During the nine months ended September 29, 2018, there were no observable price changes or impairments related to Cadence's non-marketable investments in equity securities. Cadence's non-marketable investments, including those accounting for using the equity method of accounting, had a carrying value of $2.9 million and $3.0 million as of September 29, 2018 and December 30, 2017, respectively.

Income Tax

In October 2016, the FASB issued ASU 2016-16, "Income taxes (Topic 740): Intra-entity Transfers of Assets Other Than Inventory." The new guidance requires the recognition of the income tax consequences of an intra-entity asset transfer when the transfer occurs rather than when the asset has been sold to a third party. For intra-entity transfers of inventory, the income tax effects will continue to be deferred until the inventory has been sold to a third party. Cadence adopted the new standard on the first day of fiscal 2018 using the modified retrospective transition approach and recorded a cumulative-effect adjustment to decrease retained earnings in the amount of $8.3 million. The cumulative-effect adjustment includes the write-off of income tax consequences deferred from prior intra-entity transfers involving assets other than inventory and new deferred tax assets for amounts not recognized under U.S. GAAP. We anticipate the potential for increased volatility in future effective tax rates from the adoption of this guidance.

Stock-based Compensation

In May 2017, the FASB issued ASU 2017-09, "Compensation—Stock Compensation (Topic 718): Scope of Modification Accounting," that provides guidance about which changes to the terms or conditions of a share-based payment award require an entity to apply modification accounting. Cadence adopted the standard on the first day of fiscal 2018. The adoption of this standard did not impact Cadence's condensed consolidated financial statements or the related disclosures.

Retained Earnings

The following table presents the cumulative effect adjustments, net of income tax effects, to beginning retained earnings for new accounting standards adopted by Cadence on the first day of fiscal 2018:

| | Retained Earnings (In thousands) |
|---|---|
| Balance, December 30, 2017, as previously reported | $341,003 |
| Cumulative effect adjustment from the adoption of new accounting standards: | |
| Revenue from Contracts with Customers (Topic 606) | 91,640 |
| Financial Instruments—Overall (Subtopic 825-10): Recognition and Measurement of Financial Assets and Financial Liabilities | 2,638 |
| Income taxes (Topic 740): Intra-entity Transfers of Assets Other Than Inventory | (8,349) |
| Balance, December 30, 2017, as adjusted | 426,932 |
| Net Income | 247,352 |
| Balance, September 29, 2018 | $674,284 |

NOTE 2. DEBT

Cadence's outstanding debt as of September 29, 2018 and December 30, 2017 was as follows:

| | September 29, 2018 (In thousands) | | | December 30, 2017 | | |
|---|---|---|---|---|---|---|
| | Principal | Unamortized Discount | Carrying Value | Principal | Unamortized Discount | Carrying Value |
| Revolving Credit Facility | $— | $ — | $— | $85,000 | $ — | $85,000 |
| 2019 Term Loan | — | — | — | 300,000 | (226) | 299,774 |
| 2024 Notes | 350,000 | (4,887) | 345,113 | 350,000 | (5,405) | 344,595 |
| Total outstanding debt | $350,000 | $ (4,887) | $345,113 | $735,000 | $ (5,631) | $729,369 |

Revolving Credit Facility

On January 30, 2017, Cadence entered into a five-year senior unsecured revolving credit facility with a group of lenders led by JPMorgan Chase Bank, N.A., as administrative agent, which replaced Cadence's existing revolving credit facility. The credit facility provides for borrowings up to $350.0 million, with the right to request increased capacity up to an additional $250.0 million upon the receipt of lender commitments, for total maximum borrowings of $600.0 million. The credit facility expires on January 28, 2022 and has no subsidiary guarantors. Any outstanding loans drawn under the credit facility are due at maturity on January 28, 2022. Outstanding borrowings may be paid at any time prior to maturity.

Interest accrues on borrowings under the credit facility at either LIBOR plus a margin between 1.25% and 1.875% per annum or at the base rate plus a margin between 0.25% and 0.875% per annum. A commitment fee ranging from 0.15% to 0.30% is assessed on the daily average undrawn portion of revolving commitments.

The credit facility contains customary negative covenants that, among other things, restrict Cadence's ability to incur additional indebtedness, grant liens, make certain investments (including acquisitions), dispose of certain assets and make certain payments, including share repurchases and dividends. In addition, the credit facility contains financial covenants that require Cadence to maintain a funded debt to EBITDA ratio not greater than 3.00 to 1, with a step up to 3.50 to 1 for one year following an acquisition by Cadence of at least $250.0 million that results in a pro forma leverage ratio between 2.75 to 1 and 3.25 to 1. As of September 29, 2018, Cadence was in compliance with all financial covenants associated with the revolving credit facility.

2019 Term Loan

In January 2016, Cadence entered into a $300.0 million three-year senior unsecured non-amortizing term loan facility due on January 28, 2019 (the "2019 Term Loan") with a group of lenders led by JPMorgan Chase Bank, N.A., as administrative agent. In July 2018, Cadence prepaid the outstanding principal amount of $300.0 million and all accrued interest.

2024 Notes

In October 2014, Cadence issued $350.0 million aggregate principal amount of 4.375% Senior Notes due October 15, 2024 (the "2024 Notes"). Cadence received net proceeds of $342.4 million from the issuance of the 2024 Notes, net of a discount of $1.4 million and issuance costs of $6.2 million. Both the discount and issuance costs are being amortized to interest expense over the term of the 2024 Notes using the effective interest method. Interest is payable in cash semi-annually in April and October. The 2024 Notes are unsecured and rank equal in right of payment to all of Cadence's existing and future senior indebtedness.

Cadence may redeem the 2024 Notes, in whole or in part, at a redemption price equal to the greater of (a) 100% of the principal amount of the notes to be redeemed and (b) the sum of the present values of the remaining scheduled payments of principal and interest, plus any accrued and unpaid interest, as more particularly described in the indenture governing the 2024 Notes.

The indenture governing the 2024 Notes includes customary representations, warranties and restrictive covenants, including, but not limited to, restrictions on Cadence's ability to grant liens on assets, enter into sale and lease-back transactions, or merge, consolidate or sell assets, and also includes customary events of default. As of September 29, 2018, Cadence was in compliance with all financial covenants associated with the 2024 Notes.

NOTE 3. CASH, CASH EQUIVALENTS AND INVESTMENTS

Cadence's cash, cash equivalents and short-term investments at fair value as of September 29, 2018 and December 30, 2017 were as follows:

| | As of | |
|---|---|---|
| | September 29, 2018 | December 30, 2017 |
| | (In thousands) | |
| Cash and cash equivalents | $544,585 | $ 688,087 |
| Short-term investments | 5,446 | 4,455 |
| Cash, cash equivalents and short-term investments | $550,031 | $ 692,542 |

Cash and Cash Equivalents

Cadence considers all highly liquid investments with original maturities of three months or less on the date of purchase to be cash equivalents. The amortized cost of Cadence's cash equivalents approximates fair value. The following table summarizes Cadence's cash and cash equivalents at fair value as of September 29, 2018 and December 30, 2017:

| | As of | |
|---|---|---|
| | September 29, 2018 | December 30, 2017 |
| | (In thousands) | |
| Cash and interest bearing deposits | $202,066 | $ 184,153 |
| Money market funds | 342,519 | 503,934 |
| Total cash and cash equivalents | $544,585 | $ 688,087 |

Short-Term Investments

Cadence's short-term investments are comprised of marketable equity securities of publicly-held entities. During the three and nine months ended September 29, 2018, Cadence recorded losses of $0.4 million and gains of $1.0 million, respectively, to other income, net in the condensed consolidated income statements from its investments in marketable equity securities held as of September 29, 2018.

NOTE 4. RECEIVABLES, NET

Cadence's current and long-term receivables balances as of September 29, 2018 and December 30, 2017 were as follows:

| | As of | |
|---|---|---|
| | September 29, 2018 | December 30, 2017 |
| | (In thousands) | |
| Accounts receivable | $117,387 | $ 119,325 |
| Unbilled accounts receivable | 127,699 | 71,101 |
| Long-term receivables | 4,395 | 12,239 |
| Total receivables | 249,481 | 202,665 |
| Less allowance for doubtful accounts | (4,250) | — |
| Total receivables, net | $245,231 | $ 202,665 |

Cadence's customers are primarily concentrated within the semiconductor and electronics systems industries. As of September 29, 2018, no one customer accounted for 10% or more of Cadence's total receivables. As of December 30, 2017, one customer accounted for 17% of Cadence's total receivables.

NOTE 5. REVENUE

Revenue is recognized upon transfer of control of promised products or services to customers in an amount that reflects the consideration to which Cadence expects to be entitled in exchange for promised goods or services. Cadence's performance obligations are satisfied either over time or at a point in time. Revenue from performance obligations that transferred to customers over time accounted for approximately 90% of Cadence's total revenue for the three and nine months ended September 29, 2018.

Product and maintenance revenue includes Cadence's licenses of time-based and perpetual software, sales of emulation hardware, licenses of per-use IP, and the related maintenance on these licenses and sales.

Service revenue includes revenue received for performing engineering services (which are generally not related to the functionality of other licensed products), customized IP on a fixed fee basis, and sales from cloud-based solutions that provide customers with software and services over a period of time.

Cadence enters into contracts that can include various combinations of licenses, products and services, some of which are distinct and are accounted for as separate performance obligations. For contracts with multiple performance obligations, Cadence allocates the transaction price of the contract to each performance obligation, generally on a relative basis using its standalone selling price. The stated contract value is generally the transaction price to be allocated to the separate performance obligations. Revenue is recognized net of any taxes collected from customers that are subsequently remitted to governmental authorities.

Nature of Products and Services

Software

Cadence's time-based license arrangements grant customers the right to access and use all of the licensed products at the outset of an arrangement and updates are generally made available throughout the entire term of the arrangement, which is generally two to three years. Cadence's updates provide continued access to evolving technology as customers' designs migrate to more advanced nodes and as our customers' technological requirements evolve. In addition, certain time-based license arrangements include remix rights and unspecified additional products that become commercially available during the term of the agreement. Payments are generally received in equal or near equal installments over the term of the agreement.

As explained in Note 1, the multiple software licenses, related updates, and technical support in these time-based arrangements constitute a single, combined performance obligation and revenue is recognized over the term of the license, commencing upon the later of the effective date of the arrangement or transfer of the software license. Remix rights are not an additional promised good or service in the contract, and where unspecified additional software product rights are part of the contract with the customer, such rights are accounted for as part of the single performance obligation that includes the licenses, updates, and technical support because such rights are provided for the same period of time and have the same time-based pattern of transfer to the customer.

Hardware

Cadence generally has two performance obligations in arrangements involving the sale or lease of hardware products. The first performance obligation is to transfer the hardware product (which includes software integral to the functionality of the hardware product). The second performance obligation is to provide maintenance on hardware and its embedded software, which includes rights to technical support, hardware repairs and software updates that are all provided over the same term and have the same time-based pattern of transfer to the customer. Transaction price allocated to the hardware product is generally recognized as revenue at the time of delivery because the customer obtains control of the product at that point in time. Cadence has concluded that control generally transfers at that point in time because the customer has title to the hardware, physical possession, and a present obligation to pay for the hardware. Transaction price allocated to maintenance is recognized as revenue ratably over the maintenance term. Payments for hardware contracts are generally received upon delivery of the hardware product.

IP

Cadence generally licenses IP under nonexclusive license agreements that provide usage rights for specific designs. In addition, for certain of Cadence's IP license agreements, royalties are collected as customers ship their own products that incorporate Cadence IP. These arrangements generally have two performance obligations — transferring the licensed IP and associated maintenance, which includes rights to technical support and software updates that are all provided over the maintenance term and have a time-based pattern of transfer to the customer. Revenue allocated to

the IP license is recognized at a point in time upon the later of the delivery of the IP or the beginning of the license period and revenue allocated to the maintenance is recognized over the maintenance term. Royalties are recognized as revenue in the quarter in which the applicable Cadence customer ships its products that incorporate Cadence IP. Payments for IP contracts are generally received upon delivery of the IP. Cadence customizes certain IP and revenue related to this customization is recognized as “Services” below.

Services

Revenue from service contracts is recognized over time, generally using costs incurred or hours expended to measure progress. Cadence has a history of accurately estimating project status and the costs necessary to complete projects. A number of internal and external factors can affect these estimates, including labor rates, utilization and efficiency variances and specification and testing requirement changes. Payments for services are generally due upon milestones in the contract or upon consumption of the hourly resources.

Cadence combines its products and technologies into five product groups related to major design activities. The following table shows the percentage of product and related maintenance revenue contributed by each of Cadence's five product groups and services for the three and nine months ended September 29, 2018 and September 30, 2017:

| | Three Months Ended | | Nine Months Ended | |
|---|---|---|---|---|
| | September 29, 2018 | September 30, 2017 | September 29, 2018 | September 30, 2017 |
| Functional Verification, including Emulation and Prototyping Hardware | 22 % | 21 % | 24 % | 22 % |
| Digital IC Design and Signoff | 30 % | 30 % | 29 % | 29 % |
| Custom IC Design | 26 % | 28 % | 26 % | 27 % |
| System Interconnect and Analysis | 9 % | 10 % | 9 % | 10 % |
| IP | 13 % | 11 % | 12 % | 12 % |
| Total | 100 % | 100 % | 100 % | 100 % |

Revenue by product group fluctuates from period to period based on demand for products and services, and Cadence's available resources to deliver them. Certain of Cadence's licensing arrangements allow customers the ability to remix among software products. Cadence also has arrangements with customers that include a combination of products, with the actual product selection and number of licensed users to be determined at a later date. For these arrangements, Cadence estimates the allocation of the revenue to product groups based upon the expected usage of products. The actual usage of Cadence's products by these customers may differ and, if that proves to be the case, the revenue allocation in the table above would differ.

Significant Judgments

More judgments and estimates are required under Topic 606 than were required under Topic 605. Due to the complexity of certain contracts, the actual revenue recognition treatment required under Topic 606 for the Company's arrangements may be dependent on contract-specific terms and may vary in some instances.

Cadence's contracts with customers often include promises to transfer multiple software and/or IP licenses and services, including professional services, technical support services, and rights to unspecified updates to a customer. Determining whether licenses and services are distinct performance obligations that should be accounted for separately, or not distinct and thus accounted for together, requires significant judgment. In some arrangements, such as most of Cadence's IP license arrangements, Cadence has concluded that the licenses and associated services are distinct from each other. In others, like Cadence's time-based software arrangements, the licenses and certain services are not distinct from each other. As described in Note 1, Cadence's time-based software arrangements include multiple software licenses and updates to the licensed software products, as well as technical support, and Cadence has concluded that these promised goods and services are a single, combined performance obligation.

Judgment is required to determine the SSP for each distinct performance obligation. Cadence rarely licenses or sells products on a standalone basis, so Cadence is required to estimate the range of SSPs for each performance obligation. In instances where SSP is not directly observable because Cadence does not sell the license, product or service separately, Cadence determines the SSP using information that may include market conditions and other observable inputs. Cadence typically has more than one SSP for individual performance obligations due to the stratification of those items by classes of customers and circumstances. In these instances, Cadence may use information such as the size of the customer and geographic region of the customer in determining the SSP.

Revenue is recognized over time for Cadence's maintenance and professional services that are separate performance obligations, and also for Cadence's combined performance obligations that include software licenses, updates, and technical support. For Cadence's professional services, revenue is recognized over time, generally using costs incurred or hours expended to measure progress. Judgment is required in estimating project status and the costs necessary to complete projects. A number of internal and external factors can affect these estimates, including labor rates,

utilization and efficiency variances and specification and testing requirement changes. For Cadence's other performance obligations recognized over time, revenue is generally recognized using a time-based measure of progress reflecting generally consistent efforts to satisfy those performance obligations throughout the arrangement term.

If a group of agreements are so closely related that they are, in effect, part of a single arrangement, such agreements are deemed to be one arrangement for revenue recognition purposes. Cadence exercises significant judgment to evaluate the relevant facts and circumstances in determining whether the separate agreements should be accounted for separately or as, in substance, a single arrangement. Cadence's judgments about whether a group of contracts comprise a single arrangement can affect the allocation of consideration to the distinct performance obligations, which could have an effect on results of operations for the periods involved.

Cadence is required to estimate the total consideration expected to be received from contracts with customers. In limited circumstances, the consideration expected to be received is variable based on the specific terms of the contract or based on Cadence's expectations of the term of the contract. Generally, Cadence has not experienced significant returns or refunds to customers. These estimates require significant judgment and the change in these estimates could have an effect on its results of operations during the periods involved.

Contract Balances

The timing of revenue recognition may differ from the timing of invoicing to customers and these timing differences result in receivables, contract assets, or contract liabilities (deferred revenue) on Cadence's condensed consolidated balance sheet. Cadence records a contract asset when revenue is recognized prior to invoicing, or deferred revenue when revenue is recognized subsequent to invoicing. For Cadence's time-based software agreements, customers are generally invoiced in equal, quarterly amounts, although some customers prefer to be invoiced in single or annual amounts. For certain hardware and IP agreements with payment plans, Cadence records a receivable related to revenue recognized upon delivery because it has an unconditional right to invoice and receive payment in the future related to those deliveries.

The contract assets indicated below are presented as prepaid expenses and other in the condensed consolidated balance sheet and primarily relate to Cadence's rights to consideration for work completed but not billed as of September 29, 2018 on services and customized IP contracts. The contract assets are transferred to receivables when the rights become unconditional, usually upon completion of a milestone.

Cadence's contract balances as of September 29, 2018 were as follows:

| | As of September 29, 2018 | December 30, 2017 As Adjusted |
|---|---|---|
| | (In thousands) | |
| Contract assets | $15,151 | $ 3,964 |
| Deferred revenue | 378,511 | 336,060 |

During the three and nine months ended September 29, 2018, Cadence recognized revenue of $39.9 million and $250.2 million, respectively, that was included in the deferred revenue balance, as adjusted for Topic 606, as of December 30, 2017. All other activity in deferred revenue is due to the timing of invoices in relation to the timing of revenue as described above.

Revenue allocated to remaining performance obligations represents the transaction price allocated to the performance obligations that are unsatisfied, or partially unsatisfied, which includes unearned revenue and amounts that will be invoiced and recognized as revenue in future periods. The Company has elected to exclude the future royalty payments from the remaining performance obligations. Contracted but unsatisfied performance obligations were approximately $2.4 billion as of September 29, 2018, of which Cadence expects to recognize approximately 60% of the revenue over the next 12 months and the remainder thereafter.

Payment terms and conditions vary by contract type, although terms generally include a requirement of payment within 30 to 60 days. In instances where the timing of revenue recognition differs from the timing of invoicing, Cadence has determined that its contracts generally do not include a significant financing component. The primary purpose of invoicing terms is to provide customers with simplified and predictable ways of purchasing Cadence's products and services, and not to facilitate financing arrangements.

During the three and nine months ended September 29, 2018, Cadence recognized revenue of $10.8 million and $25.3 million, respectively, from performance obligations satisfied in previous periods. These amounts represent royalties earned during the period and exclude contracts with nonrefundable prepaid royalties. Nonrefundable prepaid royalties

are recognized upon delivery of the IP because Cadence's right to the consideration is not contingent upon customers' future shipments.

Deferred Sales Commissions

Cadence records an asset for the incremental costs of obtaining a contract with a customer, including direct sales commissions that are earned upon execution of the contract. Cadence uses the portfolio method to recognize the amortization expense related to these capitalized costs related to initial contracts and renewals and such expense is recognized over a period associated with the revenue of the related portfolio, which is generally two to three years for Cadence's software arrangements and upon delivery for its hardware and IP arrangements. Incremental costs related to initial contracts and renewals are amortized over the same period because the commissions paid on both the initial contract and renewals are commensurate with one another. Total capitalized costs as of September 29, 2018 were $22.1 million and are included in other assets in Cadence's condensed consolidated balance sheet. Amortization of these assets during the three and nine months ended September 29, 2018 was $5.8 million and $16.9 million, respectively, and is included in sales and marketing expense in Cadence's condensed consolidated income statement.

NOTE 6. INCOME TAXES

Cadence's provision for income taxes of $20.4 million for the nine months ended September 29, 2018 primarily resulted from the federal income tax effects of the U.S. Tax Cuts and Jobs Act (the "Tax Act") and state and foreign income taxes on anticipated fiscal 2018 income, partially offset by $20.5 million of tax benefit related to stock-based compensation that vested or was exercised during the period.

The Tax Act was enacted in December 2017 and included several new tax provisions related to the taxation of foreign earnings and a reduction in the federal corporation income tax rate from 35% to 21% as of January 1, 2018. Cadence reduced its provisional estimate for the fiscal 2017 deemed repatriation transition tax by $2.6 million during the nine months ended September 29, 2018 based on its continuing analysis of the earnings and cash balances of foreign subsidiaries and the additional guidance issued by the applicable tax authorities. Cadence has not yet completed the accounting for the fiscal 2017 effects of the Tax Act because of the complexity and ambiguity of certain of its tax and accounting effects. Cadence expects to complete the accounting for the Tax Act during the fourth quarter of fiscal 2018 as it obtains, prepares and analyzes additional information in accordance with Staff Accounting Bulletin No. 118. For further discussion regarding the income tax effects of the Tax Act, see Note 6 in the notes to consolidated financial statements in Cadence's Annual Report on Form 10-K for the fiscal year ended December 30, 2017.

NOTE 7. STOCK-BASED COMPENSATION

Stock-based compensation expense is reflected in Cadence's condensed consolidated income statements for the three and nine months ended September 29, 2018 and September 30, 2017 as follows:

| | Three Months Ended | | Nine Months Ended | |
|---|---|---|---|---|
| | September 29, 2018 | September 30, 2017 | September 29, 2018 | September 30, 2017 |
| | (In thousands) | | | |
| Cost of product and maintenance | $736 | $ 612 | $1,932 | $ 1,632 |
| Cost of services | 1,078 | 895 | 2,825 | 2,373 |
| Marketing and sales | 9,528 | 7,422 | 25,410 | 19,667 |
| Research and development | 28,668 | 21,792 | 77,003 | 55,288 |
| General and administrative | 6,254 | 5,369 | 17,951 | 15,048 |
| Total stock-based compensation expense | $46,264 | $ 36,090 | $125,121 | $ 94,008 |

Cadence had total unrecognized compensation expense related to stock option and restricted stock grants of $305.6 million as of September 29, 2018, which will be recognized over the remaining vesting period. The remaining weighted-average vesting period of unvested awards is 2.1 years.

NOTE 8. GOODWILL AND ACQUIRED INTANGIBLES

Goodwill

The changes in the carrying amount of goodwill during the nine months ended September 29, 2018 were as follows:

| | Gross Carrying Amount |
|---|---|
| | (In thousands) |
| Balance as of December 30, 2017 | $ 666,009 |
| Effect of foreign currency translation | (4,668) |
| Balance as of September 29, 2018 | $ 661,341 |

Acquired Intangibles, Net

Acquired intangibles as of September 29, 2018 were as follows, excluding intangibles that were fully amortized as of December 30, 2017:

| | Gross Carrying Amount | Accumulated Amortization | Acquired Intangibles, Net |
|---|---|---|---|
| | (In thousands) | | |
| Existing technology | $330,667 | $ (216,345) | $ 114,322 |
| Agreements and relationships | 146,359 | (96,632) | 49,727 |
| Tradenames, trademarks and patents | 10,718 | (7,882) | 2,836 |
| Total acquired intangibles with definite lives | 487,744 | (320,859) | 166,885 |
| In-process technology | 71,500 | — | 71,500 |
| Total acquired intangibles | $559,244 | $ (320,859) | $ 238,385 |

In-process technology as of September 29, 2018 consisted of acquired projects that, if completed, will contribute to Cadence's design IP offerings. As of September 29, 2018, these projects were expected to be completed in approximately three to fifteen months. During the nine months ended September 29, 2018, there were no transfers from in-process technology to existing technology.

Acquired intangibles as of December 30, 2017 were as follows, excluding intangibles that were fully amortized as of December 31, 2016:

| | Gross Carrying Amount | Accumulated Amortization | Acquired Intangibles, Net |
|---|---|---|---|
| | (In thousands) | | |
| Existing technology | $342,810 | $ (199,529) | $ 143,281 |
| Agreements and relationships | 151,063 | (90,675) | 60,388 |
| Tradenames, trademarks and patents | 10,918 | (7,252) | 3,666 |
| Total acquired intangibles with definite lives | 504,791 | (297,456) | 207,335 |
| In-process technology | 71,500 | — | 71,500 |
| Total acquired intangibles | $576,291 | $ (297,456) | $ 278,835 |

Amortization expense from existing technology and maintenance agreements is included in cost of product and maintenance. Amortization of acquired intangibles for the three and nine months ended September 29, 2018 and September 30, 2017 was as follows:

| | Three Months Ended | | Nine Months Ended | |
|---|---|---|---|---|
| | September 29, 2018 | September 30, 2017 | September 29, 2018 | September 30, 2017 |
| | (In thousands) | | | |
| Cost of product and maintenance | $9,505 | $ 10,165 | $29,773 | $ 31,611 |
| Amortization of acquired intangibles | 3,470 | 3,453 | 10,618 | 11,145 |
| Total amortization of acquired intangibles | $12,975 | $ 13,618 | $40,391 | $ 42,756 |

Estimated amortization expense for acquired intangible assets with definite lives for the following five fiscal years and thereafter is as follows:

| | (In thousands) |
|---|---|
| 2018 – remaining period | $ 12,941 |
| 2019 | 46,208 |
| 2020 | 40,608 |
| 2021 | 36,115 |
| 2022 | 17,810 |
| Thereafter | 13,203 |
| Total estimated amortization expense | $ 166,885 |

NOTE 9. RESTRUCTURING AND OTHER CHARGES

Cadence has initiated restructuring plans in an effort to better align its resources with its business strategy. These restructuring plans have primarily been comprised of severance payments and termination benefits related to headcount reductions, estimated lease losses related to facilities vacated under the restructuring plans and charges related to assets abandoned as part of the restructuring plans. During the nine months ended September 29, 2018, Cadence revised certain estimates made in connection with its prior restructuring plans and recorded credits of approximately $2.6 million. As of September 29, 2018, total liabilities related to prior restructuring plans were $0.9 million. Cadence expects to make cash payments for severance and related benefits for the prior restructuring plans through the first quarter of fiscal 2019.

The following table presents activity relating to Cadence’s restructuring plans during the nine months ended September 29, 2018:

| | Severance and Benefits | Excess Facilities | Total |
|---|---|---|---|
| | (In thousands) | | |
| Balance, December 30, 2017 | $13,535 | $ 249 | $13,784 |
| Restructuring and other charges (credits) | (3,029) | 419 | (2,610) |
| Cash payments | (9,963) | (257) | (10,220) |
| Effect of foreign currency translation | (36) | (11) | (47) |
| Balance, September 29, 2018 | $507 | $ 400 | $907 |

The remaining liability for Cadence's restructuring plans is recorded in the condensed consolidated balance sheet as follows:

| | As of September 29, 2018 |
|---|---|
| | (In thousands) |
| Accounts payable and accrued liabilities | $ 695 |
| Other long-term liabilities | 212 |
| Total liabilities | $ 907 |

NOTE 10. NET INCOME PER SHARE

Basic net income per share is computed by dividing net income during the period by the weighted average number of shares of common stock outstanding during that period, less unvested restricted stock awards. Diluted net income per share is impacted by equity instruments considered to be potential common shares, if dilutive, computed using the treasury stock method of accounting.

The calculations for basic and diluted net income per share for the three and nine months ended September 29, 2018 and September 30, 2017 are as follows:

| | Three Months Ended | | Nine Months Ended | |
|---|---|---|---|---|
| | September 29, 2018 | September 30, 2017 | September 29, 2018 | September 30, 2017 |
| | (In thousands, except per share amounts) | | | |
| Net income | $99,318 | $ 81,157 | $247,352 | $ 218,543 |
| Weighted average common shares used to calculate basic net income per share | 273,716 | 273,156 | 273,718 | 271,739 |
| Stock-based awards | 7,930 | 8,244 | 7,673 | 7,815 |
| Weighted average common shares used to calculate diluted net income per share | 281,646 | 281,400 | 281,391 | 279,554 |
| Net income per share - basic | $0.36 | $ 0.30 | $0.90 | $ 0.80 |
| Net income per share - diluted | $0.35 | $ 0.29 | $0.88 | $ 0.78 |

The following table presents shares of Cadence's common stock outstanding for the three and nine months ended September 29, 2018 and September 30, 2017 that were excluded from the computation of diluted net income per share because the effect of including these shares in the computation of diluted net income per share would have been anti-dilutive:

| | Three Months Ended | | Nine Months Ended | |
|---|---|---|---|---|
| | September 29, 2018 | September 30, 2017 | September 29, 2018 | September 30, 2017 |
| | (In thousands) | | | |
| Long-term performance-based stock awards | — | 100 | 50 | 186 |
| Options to purchase shares of common stock | 701 | — | 606 | 404 |
| Non-vested shares of restricted stock | 3 | 12 | 367 | 62 |
| Total potential common shares excluded | 704 | 112 | 1,023 | 652 |

NOTE 11. STOCK REPURCHASE PROGRAM

In January 2017, Cadence's Board of Directors authorized the repurchase of shares of Cadence's common stock with a value of up to $525.0 million in the aggregate. The actual timing and amount of repurchases are subject to business and market conditions, corporate and regulatory requirements, acquisition opportunities and other factors. As of September 29, 2018, $275.0 million remained available to repurchase shares of Cadence common stock under the current authorization.

The shares repurchased under Cadence's repurchase authorizations and the total cost of repurchased shares, including commissions, during the three and nine months ended September 29, 2018 and September 30, 2017 were as follows:

| | Three Months Ended | | Nine Months Ended | |
|---|---|---|---|---|
| | September 29, 2018 | September 30, 2017 | September 29, 2018 | September 30, 2017 |
| | (In thousands) | | | |
| Shares repurchased | 1,098 | 1,331 | 3,611 | 1,331 |
| Total cost of repurchased shares | $50,011 | $ 50,013 | $150,036 | $ 50,013 |

NOTE 12. FAIR VALUE

Inputs to valuation techniques are observable or unobservable. Observable inputs reflect market data obtained from independent sources, while unobservable inputs reflect Cadence's market assumptions. These two types of inputs have created the following fair value hierarchy:

- Level 1 – Quoted prices for identical instruments in active markets;
- Level 2 – Quoted prices for similar instruments in active markets, quoted prices for identical or similar instruments in markets that are not active, and model-derived valuations in which all significant inputs and significant value drivers are observable in active markets; and
- Level 3 – Valuations derived from valuation techniques in which one or more significant inputs or significant value drivers are unobservable.

This hierarchy requires Cadence to minimize the use of unobservable inputs and to use observable market data, if available, when determining fair value. Cadence recognizes transfers between levels of the hierarchy based on the fair values of the respective financial instruments at the end of the reporting period in which the transfer occurred. There were no transfers between levels of the fair value hierarchy during the nine months ended September 29, 2018.

On a quarterly basis, Cadence measures at fair value certain financial assets and liabilities. The fair value of financial assets and liabilities was determined using the following levels of inputs as of September 29, 2018 and December 30, 2017:

| | Fair Value Measurements as of September 29, 2018 | | | |
|---|---|---|---|---|
| | Total | Level 1 | Level 2 | Level 3 |
| | (In thousands) | | | |
| Assets | | | | |
| Cash equivalents: | | | | |
| Money market funds | $342,519 | $342,519 | $— | $ — |
| Short-term investments: | | | | |
| Marketable equity securities | 5,446 | 5,446 | — | — |
| Trading securities held in Non-Qualified Deferred Compensation ("NQDC") trust | 30,386 | 30,386 | — | — |
| Foreign currency exchange contracts | 2,394 | — | 2,394 | — |
| Total Assets | $380,745 | $378,351 | $2,394 | $ — |

As of September 29, 2018, Cadence did not have any financial liabilities requiring a recurring fair value measurement.

| | Fair Value Measurements as of December 30, 2017 | | | |
|---|---|---|---|---|
| | Total | Level 1 | Level 2 | Level 3 |
| | (In thousands) | | | |
| Assets | | | | |
| Cash equivalents: | | | | |
| Money market funds | $503,934 | $503,934 | $— | $ — |
| Short-term investments: | | | | |
| Marketable equity securities | 4,455 | 4,455 | — | — |
| Trading securities held in NQDC trust | 31,473 | 31,473 | — | — |
| Foreign currency exchange contracts | 2,937 | — | 2,937 | — |
| Total Assets | $542,799 | $539,862 | $2,937 | $ — |

As of December 30, 2017, Cadence did not have any financial liabilities requiring a recurring fair value measurement.

NOTE 13. CONTINGENCIES

Legal Proceedings

From time to time, Cadence is involved in various disputes and litigation that arise in the ordinary course of business. These include disputes and lawsuits related to intellectual property, indemnification obligations, mergers and acquisitions, licensing, contracts, distribution arrangements and employee relations matters. At least quarterly, Cadence reviews the status of each significant matter and assesses its potential financial exposure. If the potential loss from any claim or legal proceeding is considered probable and the amount or the range of loss can be estimated, Cadence accrues a liability for the estimated loss. Legal proceedings are subject to uncertainties, and the outcomes are difficult to predict. Because of such uncertainties, accruals are based on Cadence's judgments using the information available at the time. As additional information becomes available, Cadence reassesses the potential liability related to pending claims and litigation matters and may revise estimates.

Other Contingencies

Cadence provides its customers with a warranty on certain of its products, generally for a 90-day period. Cadence did not incur any significant costs related to warranty obligations during the three and nine months ended September 29, 2018 and September 30, 2017.

Cadence's product license and services agreements typically include a limited indemnification provision for claims from third parties relating to Cadence's intellectual property. If the potential loss from any indemnification claim is considered probable and the amount or the range of loss can be estimated, Cadence accrues a liability for the estimated loss. The indemnification is generally limited to the amount paid by the customer. Cadence did not incur any significant losses from indemnification claims during the three and nine months ended September 29, 2018 and September 30, 2017.

NOTE 14. ACCUMULATED OTHER COMPREHENSIVE LOSS

Cadence's accumulated other comprehensive loss is comprised of the aggregate impact of foreign currency translation gains and losses and changes in defined benefit plan liabilities and is presented in Cadence's condensed consolidated statements of comprehensive income. Aggregate changes in unrealized holding gains on available-for-sale securities net of reclassifications for realized gains and losses were also included through December 30, 2017.

Accumulated other comprehensive loss was comprised of the following as of September 29, 2018 and December 30, 2017:

| | As of | |
|---|---|---|
| | September 29, 2018 | December 30, 2017 |
| | (In thousands) | |
| Foreign currency translation loss | $(19,213) | $ (2,976) |
| Changes in defined benefit plan liabilities | (3,138) | (3,292) |
| Unrealized holding gains on available-for-sale securities | — | 2,638 |
| Total accumulated other comprehensive loss | $(22,351) | $ (3,630) |

For the three and nine months ended September 29, 2018 and September 30, 2017 there were no significant amounts reclassified from accumulated other comprehensive loss to net income.

NOTE 15. SEGMENT REPORTING

Segment reporting is based on the “management approach,” following the method that management organizes the company’s reportable segments for which separate financial information is made available to, and evaluated regularly by, the chief operating decision maker in allocating resources and in assessing performance. Cadence’s chief operating decision maker is its CEO, who reviews Cadence’s consolidated results as one operating segment. In making operating decisions, the CEO primarily considers consolidated financial information, accompanied by disaggregated information about revenues by geographic region.

Outside the United States, Cadence markets and supports its products and services primarily through its subsidiaries. Revenue is attributed to geography based upon the country in which the product is used or services are delivered. Long-lived assets are attributed to geography based on the country where the assets are located.

The following table presents a summary of revenue by geography for the three and nine months ended September 29, 2018 and September 30, 2017:

| | Three Months Ended | | Nine Months Ended | |
|---|---|---|---|---|
| | September 29, 2018 | September 30, 2017 | September 29, 2018 | September 30, 2017 |
| | (In thousands) | | | |
| Americas: | | | | |
| United States | $224,458 | $ 208,348 | $679,934 | $ 620,525 |
| Other Americas | 9,003 | 7,938 | 24,351 | 25,749 |
| Total Americas | 233,461 | 216,286 | 704,285 | 646,274 |
| Asia | 156,887 | 131,890 | 431,233 | 385,708 |
| Europe, Middle East and Africa | 101,452 | 94,681 | 311,833 | 284,415 |
| Japan | 40,668 | 42,541 | 120,821 | 124,913 |
| Total | $532,468 | $ 485,398 | $1,568,172 | $ 1,441,310 |

The following table presents a summary of long-lived assets by geography as of September 29, 2018 and December 30, 2017:

| | As of September 29, 2018 | December 30, 2017 |
|---|---|---|
| | (In thousands) | |
| Americas: | | |
| United States | $197,760 | $ 198,744 |
| Other Americas | 499 | 611 |
| Total Americas | 198,259 | 199,355 |
| Asia | 36,408 | 37,678 |
| Europe, Middle East and Africa | 12,724 | 13,615 |
| Japan | 774 | 694 |
| Total | $248,165 | $ 251,342 |

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

The following discussion should be read in conjunction with the condensed consolidated financial statements and notes thereto included in this Quarterly Report on Form 10-Q (this "Quarterly Report") and in conjunction with our Annual Report on Form 10-K for the fiscal year ended December 30, 2017. This Quarterly Report contains statements that are not historical in nature, are predictive, or that depend upon or refer to future events or conditions or contain other forward-looking statements. Statements including, but not limited to, statements regarding the extent and timing of future revenues and expenses and customer demand, statements regarding the deployment of our products and services, statements regarding our reliance on third parties and other statements using words such as "anticipates," "believes," "could," "estimates," "expects," "forecasts," "intends," "may," "plans," "projects," "should," "will" and "would," a similar import and the negatives thereof, constitute forward-looking statements. These statements are predictions based upon our current expectations about future events. Actual results could vary materially as a result of certain factors, including, but not limited to, those expressed in these statements. We refer you to the "Risk Factors," "Results of Operations," "Quantitative and Qualitative Disclosures About Market Risk," and "Liquidity and Capital Resources" sections contained in this Quarterly Report, and the risks discussed in our other Securities and Exchange Commission ("SEC") filings, which identify important risks and uncertainties that could cause actual results to differ materially from those contained in the forward-looking statements.

We urge you to consider these factors carefully in evaluating the forward-looking statements contained in this Quarterly Report. All subsequent written or oral forward-looking statements attributable to our company or persons acting on our behalf are expressly qualified in their entirety by these cautionary statements. The forward-looking statements included in this Quarterly Report are made only as of the date of this Quarterly Report. We do not intend, and undertake no obligation, to update these forward-looking statements.

Overview

We enable our customers to design electronic products. Our products and services are designed to give our customers a competitive edge in their development of electronic systems, integrated circuits ("ICs"), electronic devices and increasingly sophisticated manufactured products. Our products and services do this by optimizing performance, minimizing power consumption, shortening the time to bring our customers' products to market and reducing their design, development and manufacturing costs. We offer software, hardware, services and reusable IC design blocks, which are commonly referred to as intellectual property ("IP").

Our strategy, which we call System Design Enablement ("SDE"), is to provide the technologies necessary for our customers to develop a complete and functional electronic product. Our SDE strategy enables us to address the growing trends of electronic systems companies developing their own ICs as part of their end product systems, as well as semiconductor companies delivering greater portions of the systems into which their IC products are integrated.

Our products and services enable our customers to design complex and innovative electronic products, so demand for our products is driven by our customers' investment in new designs and products. Historically, the industry that provided the tools used by IC engineers was referred to as Electronic Design Automation ("EDA"). Today, our offerings include and extend beyond EDA tools to include SDE.

We combine our products and technologies into categories related to major design activities:

- Functional Verification, including Emulation and Prototyping Hardware;
- Digital IC Design and Signoff;
- Custom IC Design;
- System Interconnect and Analysis; and
- IP.

For additional information about our products, see the discussion in Item 1, "Business," under the heading "Products and Product Strategy," in our Annual Report on Form 10-K for the fiscal year ended December 30, 2017.

We have identified certain items that management uses as performance indicators to manage our business, including revenue, certain elements of operating expenses and cash flow from operations, and we describe these items further below under the headings "Results of Operations" and "Liquidity and Capital Resources."

Critical Accounting Estimates

In preparing our condensed consolidated financial statements, we make assumptions, judgments and estimates that can have a significant impact on our revenue, operating income and net income, as well as on the value of certain assets and liabilities on our condensed consolidated balance sheets. We base our assumptions, judgments and estimates on historical experience and various other factors that we believe to be reasonable under the circumstances. Actual results could differ materially from these estimates under different assumptions or conditions. At least quarterly, we evaluate our assumptions, judgments and estimates, and make changes as deemed necessary. For further information about our critical accounting estimates, see the discussion in Item 7, "Management's Discussion and Analysis of Financial Condition and Results of Operations," under the heading "Critical Accounting Estimates" in our Annual Report on Form 10-K for the fiscal year ended December 30, 2017.

New Accounting Standards

Leases

In February 2016, the Financial Accounting Standards Board ("FASB") issued Accounting Standards Update ("ASU") 2016-02, "Leases (Topic 842)," requiring, among other things, the recognition of lease liabilities and corresponding right-of-use assets on the balance sheet by lessees for certain lease arrangements that are classified as operating leases under the previous standard. While we are continuing to assess the potential impacts of the standard, we anticipate that the adoption of this standard will have a material impact on our consolidated balance sheet, but we do not expect a material impact on our consolidated income statement. We currently expect the most significant impact will be the recognition of right-of-use assets and lease liabilities for operating leases. We are implementing a new lease accounting system and updating our processes in preparation for the adoption of the new standard. The updated standard will become effective for us in the first quarter of fiscal 2019.

Credit Losses

In June 2016, the FASB issued ASU 2016-13, "Measurement of Credit Losses on Financial Instruments," which supersedes current guidance requiring recognition of credit losses when it is probable that a loss has been incurred. The new standard requires the establishment of an allowance for estimated credit losses on financial assets, including trade and other receivables, at each reporting date. The new standard will result in earlier recognition of allowances for losses on trade and other receivables and other contractual rights to receive cash. The new standard will be effective for us in the first quarter of fiscal 2020, and early adoption is permitted. We are currently reviewing this standard to assess the impact on our condensed consolidated financial statements and the related disclosures.

Goodwill Impairment

In January 2017, the FASB issued ASU 2017-04, "Simplifying the Test for Goodwill Impairment," that eliminates "Step 2" from the goodwill impairment test. The new standard is effective for us in the first quarter of fiscal 2020, and early adoption is permitted. The new guidance must be applied on a prospective basis. We do not anticipate that the adoption of this standard will have a significant impact on our consolidated financial statements or the related disclosures.

Income Tax Effects within Accumulated Other Comprehensive Income

In February 2018, the FASB issued ASU 2018-02, "Reclassification of Certain Tax Effects from Accumulated Other Comprehensive Income," which allows a reclassification of the income tax effects of the Tax Act on items within accumulated other comprehensive income to retained earnings. The new guidance may be applied at the beginning of the period of adoption or retrospectively to each period in which the effect of the change in federal income tax rate from the Tax Act is recognized. The new standard will be effective for us in the first quarter of fiscal 2019. We do not anticipate that the adoption of this standard will impact our consolidated financial statements or the related disclosures.

Stock-based Compensation

In June 2018, the FASB issued ASU 2018-07, "Improvements to Nonemployee Share-Based Payment Accounting," to simplify the accounting for share-based transactions with nonemployees in which the grantor acquires goods or services to be used or consumed. Under the new standard, most of the guidance on recording share-based compensation granted to nonemployees will be aligned with the requirements for share-based compensation granted to employees. This standard will be effective for us in the first quarter of fiscal 2019, and early adoption is permitted. We do not expect the adoption of this standard to have a material impact on our condensed consolidated financial

statements.

Fair Value Measurements

In August 2018, the FASB issued ASU 2018-13, “Disclosure Framework — Changes to the Disclosure Requirements for Fair Value Measurement,” which modifies the disclosure requirements on fair value measurements. The new standard is effective for us in the first quarter of fiscal 2020, and early adoption is permitted. While we continue to assess the potential impact of this standard, we do not expect the adoption of this standard to have a material impact on our condensed consolidated financial statements.

Internal-use Software

In August 2018, the FASB issued ASU 2018-15, “Customer’s Accounting for Implementation Costs Incurred in a Cloud Computing Arrangement That Is a Service Contract,” which clarifies the accounting for implementation costs in cloud computing arrangements. The new standard is effective for us in the first quarter of fiscal 2020, and early adoption is permitted. We are currently reviewing this standard to assess the impact on our condensed consolidated financial statements.

Results of Operations

Financial results for the three and nine months ended September 29, 2018, as compared to the three and nine months ended September 30, 2017, reflect the following:

- the effects of adopting ASU 2014-09, "Revenue from Contracts with Customers (Topic 606)," which provided a new basis of accounting for our revenue arrangements during fiscal 2018;
- increased product and maintenance revenue resulting from overall growth in our software, hardware and IP business, particularly in North America and Asia; and
- continued investment in research and development activities focused on creating and enhancing our products.

The adoption of Topic 606 limits the comparability of revenue and certain expenses, including sales commissions, presented in the results of operations for the three and nine months ended September 29, 2018, when compared to the three and nine months ended September 30, 2017. For additional information regarding the adoption of this and other accounting standards at the beginning of fiscal 2018, refer to Note 1 in the notes to condensed consolidated financial statements under the heading "Recently Adopted Accounting Standards."

Revenue

We primarily generate revenue from licensing our software and IP, selling or leasing our emulation and prototyping hardware technology, providing maintenance for our software, hardware and IP, providing engineering services and earning royalties generated from the use of our IP. The timing of our revenue is significantly affected by the mix of software, hardware and IP products generating revenue in any given period and whether the revenue is recognized over time or at a point in time, upon completion of delivery. For an additional description of our acquisitions, see Note 7 in the notes to consolidated financial statements in our Annual Report on Form 10-K for the fiscal year ended December 30, 2017.

Approximately 90% of our revenue is recognized over time, and the remainder of the resulting revenue is recognized at the point in time that control is transferred to the customer. Revenue recognized over time includes revenue from our software arrangements, services, royalties from certain IP arrangements, maintenance on IP licenses and hardware, and operating leases of hardware. Revenue recognized at a point in time is primarily generated by our sales of emulation and prototyping hardware and IP licenses. Our ability to maintain this mix in any single fiscal period may be impacted primarily by delivery of hardware and IP products to our customers.

During the three and nine months ended September 29, 2018, we recognized revenue based on the ASU 2014-09, "Revenue from Contracts with Customers (Topic 606)," but during the three and nine months ended September 30, 2017, we recognized revenue based on Topic 605. Therefore, the periods are not directly comparable. For additional information on the impact of the new accounting standard on our revenue, see Note 1 in the notes to condensed consolidated financial statements.

Revenue by Period

The following table shows our revenue for the three months ended September 29, 2018 and September 30, 2017 and the change in revenue between periods:

| | Three Months Ended | | Change | |
|---|---|---|---|---|
| | September 29, 2018 | September 30, 2017 | Amount | Percentage |
| | (In millions, except percentages) | | | |
| Product and maintenance | $495.0 | $ 451.2 | $43.8 | 10 % |
| Services | 37.5 | 34.2 | 3.3 | 10 % |
| Total revenue | $532.5 | $ 485.4 | $47.1 | 10 % |

The following table shows our revenue for the nine months ended September 29, 2018 and September 30, 2017 and the change in revenue between periods:

| | Nine Months Ended | | Change | |
|---|---|---|---|---|
| | September 29, 2018 | September 30, 2017 | Amount | Percentage |
| | (In millions, except percentages) | | | |
| Product and maintenance | $1,463.5 | $ 1,346.5 | $117.0 | 9 % |
| Services | 104.7 | 94.8 | 9.9 | 10 % |
| Total revenue | $1,568.2 | $ 1,441.3 | $126.9 | 9 % |

Product and maintenance revenue may fluctuate from period to period and by geography based on demand for our hardware and IP offerings. Product and maintenance revenue increased during the three and nine months ended September 29, 2018, as compared to the three and nine months ended September 30, 2017, because of growth in our software and emulation and prototyping hardware business as well as an increase in IP business levels.

Services revenue may fluctuate from period to period based on the timing of fulfillment of our services and IP performance obligations.

No one customer accounted for 10% or more of total revenue during the three and nine months ended September 29, 2018 or September 30, 2017.

Revenue by Product Group

The following table shows the percentage of revenue contributed by each of our five product categories and services for the past five consecutive quarters:

| | Three Months Ended | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | September 29, 2018 | | June 30, 2018 | | March 31, 2018 | | December 30, 2017 | | September 30, 2017 | |
| Functional Verification, including Emulation and Prototyping Hardware | 22 | % | 23 | % | 26 | % | 23 | % | 21 | % |
| Digital IC Design and Signoff | 30 | % | 30 | % | 30 | % | 29 | % | 30 | % |
| Custom IC Design | 26 | % | 26 | % | 26 | % | 26 | % | 28 | % |
| System Interconnect and Analysis | 9 | % | 9 | % | 9 | % | 10 | % | 10 | % |
| IP | 13 | % | 12 | % | 9 | % | 12 | % | 11 | % |
| Total | 100 | % | 100 | % | 100 | % | 100 | % | 100 | % |

Revenue by product group fluctuates from period to period based on demand for our products and services and our available resources to deliver and support them. Certain of our licensing arrangements allow customers the ability to remix among software products. Additionally, we have arrangements with customers that include a combination of our products, with the actual product selection and number of licensed users to be determined at a later date. For these arrangements, we estimate the allocation of the revenue to product groups based upon the expected usage of our products. The actual usage of our products by these customers may differ and, if that proves to be the case, the revenue allocation in the table above would differ.

Revenue by Geography

| | Three Months Ended | | Change | |
|---|---|---|---|---|
| | September 29, 2018 | September 30, 2017 | Amount | Percentage |
| | (In millions, except percentages) | | | |
| United States | $224.5 | $ 208.4 | $16.1 | 8 % |
| Other Americas | 9.0 | 7.9 | 1.1 | 14 % |
| Asia | 156.9 | 131.9 | 25.0 | 19 % |
| Europe, Middle East and Africa | 101.4 | 94.7 | 6.7 | 7 % |
| Japan | 40.7 | 42.5 | (1.8) | (4)% |
| Total revenue | $532.5 | $ 485.4 | $47.1 | 10 % |

| | Nine Months Ended | | Change | |
|---|---|---|---|---|
| | September 29, 2018 | September 30, 2017 | Amount | Percentage |
| | (In millions, except percentages) | | | |
| United States | $680.0 | $ 620.5 | $59.5 | 10 % |
| Other Americas | 24.4 | 25.8 | (1.4) | (5)% |
| Asia | 431.2 | 385.7 | 45.5 | 12 % |
| Europe, Middle East and Africa | 311.8 | 284.4 | 27.4 | 10 % |
| Japan | 120.8 | 124.9 | (4.1) | (3)% |
| Total revenue | $1,568.2 | $ 1,441.3 | $126.9 | 9 % |

Revenue by Geography as a Percent of Total Revenue

| | Three Months Ended | | Nine Months Ended | |
|---|---|---|---|---|
| | September 29, 2018 | September 30, 2017 | September 29, 2018 | September 30, 2017 |
| United States | 42 % | 43 % | 43 % | 43 % |
| Other Americas | 2 % | 2 % | 2 % | 2 % |
| Asia | 29 % | 27 % | 27 % | 26 % |
| Europe, Middle East and Africa | 19 % | 19 % | 20 % | 20 % |
| Japan | 8 % | 9 % | 8 % | 9 % |
| Total | 100 % | 100 % | 100 % | 100 % |

Revenue by geography fluctuates from period to period based on demand for our products and services and our available resources to deliver and support them.

Most of our revenue is transacted in the United States dollar. However, certain revenue transactions are denominated in foreign currencies. For an additional description of how changes in foreign exchange rates affect our condensed consolidated financial statements, see the discussion under Item 3, “Quantitative and Qualitative Disclosures About Market Risk – Foreign Currency Risk.”

Cost of Revenue

| | Three Months Ended | | Change | |
|---|---|---|---|---|
| | September 29, 2018 | September 30, 2017 | Amount | Percentage |
| | (In millions, except percentages) | | | |
| Cost of product and maintenance | $36.4 | $ 34.8 | $1.6 | 5 % |
| Cost of services | 24.0 | 19.7 | 4.3 | 22 % |

| | Nine Months Ended | | Change | |
|---|---|---|---|---|
| | September 29, 2018 | September 30, 2017 | Amount | Percentage |
| | (In millions, except percentages) | | | |
| Cost of product and maintenance | $118.3 | $ 117.4 | $0.9 | 1 % |
| Cost of services | 64.4 | 59.7 | 4.7 | 8 % |

Cost of Product and Maintenance

Cost of product and maintenance includes costs associated with the sale and lease of our emulation and prototyping hardware and licensing of our software and IP products, certain employee salary and benefits and other employee-related costs, cost of our customer support services, amortization of technology-related and maintenance-related acquired intangibles, costs of technical documentation and royalties payable to third-party vendors. Costs associated with our emulation and prototyping hardware products include components, assembly, testing, applicable reserves and overhead. These hardware manufacturing costs make our cost of emulation and prototyping hardware products higher, as a percentage of revenue, than our cost of software and IP products.

A summary of cost of product and maintenance is as follows:

| | Three Months Ended | | Change | |
|---|---|---|---|---|
| | September 29, 2018 | September 30, 2017 | Amount | Percentage |
| | (In millions, except percentages) | | | |
| Product and maintenance-related costs | $26.9 | $ 24.6 | $2.3 | 9 % |
| Amortization of acquired intangibles | 9.5 | 10.2 | (0.7) | (7)% |
| Total cost of product and maintenance | $36.4 | $ 34.8 | $1.6 | 5 % |

| | Nine Months Ended | | Change | |
|---|---|---|---|---|
| | September 29, 2018 | September 30, 2017 | Amount | Percentage |
| | (In millions, except percentages) | | | |
| Product and maintenance-related costs | $88.5 | $ 85.8 | $2.7 | 3 % |
| Amortization of acquired intangibles | 29.8 | 31.6 | (1.8) | (6)% |
| Total cost of product and maintenance | $118.3 | $ 117.4 | $0.9 | 1 % |

Cost of product and maintenance depends primarily on our hardware product sales in any given period. Cost of product and maintenance is also affected by employee salary and benefits and other employee-related costs, reserves for inventory, as well as the timing and extent to which we acquire intangible assets, acquire or license third-parties' intellectual property or technology and sell our products that include such acquired or licensed intellectual property or technology.

The changes in product and maintenance-related costs for the three and nine months ended September 29, 2018, as compared to the three and nine months ended September 30, 2017, were due to the following:

| | Change | |
|---|---|---|
| | Three Months Ended | Nine Months Ended |
| | (In millions) | |
| Emulation and prototyping hardware costs | $2.0 | $ 1.9 |
| Other items | 0.3 | 0.8 |
| Total change in product and maintenance-related costs | $2.3 | $ 2.7 |

Gross margins on our hardware products will fluctuate based on product life cycle, product competition, product mix and pricing strategies.

Cost of Services

Cost of services primarily includes employee salary, benefits and other employee-related costs to perform work on revenue-generating projects, costs to maintain the infrastructure necessary to manage a services organization, and provisions for contract losses, if any. Cost of services will fluctuate from period to period based on our utilization of design services engineers on revenue-generating projects or on internal development projects.

Operating Expenses

Our operating expenses include marketing and sales, research and development and general and administrative expenses. Factors that tend to cause our operating expenses to fluctuate include changes in the number of employees due to hiring and acquisitions, restructuring activities, foreign exchange rate movements, stock-based compensation and the impact of our variable compensation programs that are driven by operating results.

Salary, benefits and other employee-related costs and facilities and other infrastructure costs included in operating expenses increased overall during the three and nine months ended September 29, 2018, as compared to the three and nine months ended September 30, 2017, primarily due to an increase in headcount resulting from additional hiring and our 2017 acquisitions.

Stock-based compensation included in our operating expenses increased during the three and nine months ended September 29, 2018, as compared to the three and nine months ended September 30, 2017, primarily because successive increases in the price of our common stock between grant dates have resulted in higher grant date fair values for the mix of stock awards expensed in each period. We expect stock-based compensation included in operating expenses to increase during the remainder of fiscal 2018, as compared to fiscal 2017, due to higher grant date fair values of stock awards vesting during fiscal 2018.

Many of our operating expenses are transacted in various foreign currencies. We recognize lower expenses in periods when the United States dollar strengthens in value against other currencies and we recognize higher expenses when the United States dollar weakens against other currencies. For an additional description of how changes in foreign exchange rates affect our condensed consolidated financial statements, see the discussion in Item 3, “Quantitative and Qualitative Disclosures About Market Risk – Foreign Currency Risk.”

Our operating expenses for the three and nine months ended September 29, 2018 and September 30, 2017 were as follows:

| | Three Months Ended | | Change | |
|---|---|---|---|---|
| | September 29, 2018 | September 30, 2017 | Amount | Percentage |
| | (In millions, except percentages) | | | |
| Marketing and sales | $108.6 | $ 104.3 | $4.3 | 4 % |
| Research and development | 223.2 | 206.6 | 16.6 | 8 % |
| General and administrative | 33.2 | 36.3 | (3.1) | (9)% |
| Total operating expenses | $365.0 | $ 347.2 | $17.8 | 5 % |

| | Nine Months Ended | | Change | |
|---|---|---|---|---|
| | September 29, 2018 | September 30, 2017 | Amount | Percentage |
| | (In millions, except percentages) | | | |
| Marketing and sales | $327.1 | $ 311.5 | $15.6 | 5 % |
| Research and development | 666.5 | 600.8 | 65.7 | 11 % |
| General and administrative | 101.4 | 100.9 | 0.5 | — % |
| Total operating expenses | $1,095.0 | $ 1,013.2 | $81.8 | 8 % |

Our operating expenses, as a percentage of total revenue, for the three and nine months ended September 29, 2018 and September 30, 2017 were as follows:

| | Three Months Ended | | Nine Months Ended | |
|---|---|---|---|---|
| | September 29, 2018 | September 30, 2017 | September 29, 2018 | September 30, 2017 |
| Marketing and sales | 21 % | 21 % | 21 % | 22 % |
| Research and development | 42 % | 43 % | 43 % | 42 % |
| General and administrative | 6 % | 7 % | 6 % | 7 % |
| Total operating expenses | 69 % | 71 % | 70 % | 71 % |

Marketing and Sales

The changes in marketing and sales expense for the three and nine months ended September 29, 2018, as compared to the three and nine months ended September 30, 2017, were due to the following:

| | Change | |
|---|---|---|
| | Three Months Ended | Nine Months Ended |
| | (In millions) | |
| Salary, benefits and other employee-related costs | $1.7 | $8.2 |
| Stock-based compensation | 2.1 | 5.7 |
| Professional services | 1.3 | 2.4 |
| Other items | (0.8) | (0.7) |
| Total change in marketing and sales expense | $4.3 | $15.6 |

Research and Development

The changes in research and development expense for the three and nine months ended September 29, 2018, as compared to the three and nine months ended September 30, 2017, were due to the following:

| | Change | |
|---|---|---|
| | Three Months Ended | Nine Months Ended |
| | (In millions) | |
| Salary, benefits and other employee-related costs | $15.0 | $43.9 |
| Stock-based compensation | 6.9 | 21.7 |
| Materials and other pre-production costs | (2.6) | (0.5) |
| Facilities and other infrastructure costs | (3.0) | (1.2) |
| Other items | 0.3 | 1.8 |
| Total change in research and development expense | $16.6 | $65.7 |

We must invest significantly in product research and development to keep pace with the latest manufacturing technology. The demand for new IC manufacturing technology directly impacts the demand for our newest products and we must keep pace with our customers' technical developments, satisfy industry standards and meet our customers' increasingly demanding performance, productivity, quality and predictability requirements. Therefore, we expect research and development expense to increase during the remainder of fiscal 2018, as compared to fiscal 2017.

General and Administrative

The changes in general and administrative expense for the three and nine months ended September 29, 2018, as compared to the three and nine months ended September 30, 2017, were due to the following:

| | Change | |
|---|---|---|
| | Three Months Ended | Nine Months Ended |
| | (In millions) | |
| Bad debt | $2.4 | 3.3 |
| Stock-based compensation | 0.9 | 2.9 |
| Professional services and related costs | (3.5) | (1.4) |
| Salary, benefits and other employee-related costs | (1.4) | (2.3) |
| Other items | (1.5) | (2.0) |
| Total change in general and administrative expense | $(3.1) | $ 0.5 |

Restructuring and Other Charges

We have initiated restructuring plans in recent years to better align our resources with our business strategy. Because the restructuring charges and related benefits are derived from management's estimates made during the formulation of the restructuring plans, based on then-currently available information, our restructuring plans may not achieve the benefits anticipated on the timetable or at the level contemplated. Demand for our products and services and, ultimately, our future financial performance, is difficult to predict with certainty. Accordingly, additional actions, including further restructuring of our operations, may be required in the future.

During the nine months ended September 29, 2018, we revised certain estimates made in connection with prior restructuring plans and recorded credits of approximately $2.6 million. For additional information about our restructuring plans, see Note 9 in the notes to condensed consolidated financial statements.

Interest Expense

| | Three Months Ended | | Nine Months Ended | |
|---|---|---|---|---|
| | September 29, 2018 | September 30, 2017 | September 29, 2018 | September 30, 2017 |
| | (In millions) | | | |
| Contractual interest expense: | | | | |
| 2019 Term Loan | $0.9 | $ 1.9 | $5.4 | $ 5.7 |
| 2024 Notes | 3.8 | 3.8 | 11.4 | 11.4 |
| Revolving credit facility | 0.1 | 0.1 | 0.9 | 0.8 |
| Amortization of debt discount: | | | | |
| 2019 Term Loan | 0.1 | 0.1 | 0.2 | 0.2 |
| 2024 Notes | 0.2 | 0.2 | 0.5 | 0.5 |
| Other | 0.1 | 0.1 | 0.4 | 0.4 |
| Total interest expense | $5.2 | $ 6.2 | $18.8 | $ 19.0 |

For an additional description of our debt arrangements, see Note 2 in the notes to condensed consolidated financial statements.

Income Taxes

The following table presents the provision for income taxes and the effective tax rate for the three and nine months ended September 29, 2018 and September 30, 2017:

| | Three Months Ended | | Nine Months Ended | |
|---|---|---|---|---|
| | September 29, 2018 | September 30, 2017 | September 29, 2018 | September 30, 2017 |
| | (In millions, except percentages) | | | |
| Provision for income taxes | $0.2 | $ 5.4 | $20.4 | $ 19.6 |
| Effective tax rate | 0.2 % | 6.2 % | 7.6 % | 8.2 % |

We adopted a new accounting standard related to the accounting for intra-entity transfers of assets other than inventory on the first day of fiscal 2018, which required all income tax effects of intra-entity transfers of assets other than inventory to be recognized in our condensed consolidated income statement when the transfer occurs. For intra-entity transfers of inventory, the income tax effects will continue to be deferred until the inventory has been sold to a third party. For further discussion regarding new accounting standards, see Note 1 in the notes to condensed consolidated financial statements under the heading “Recently Adopted Accounting Standards.”

The U.S. Tax Cuts and Jobs Act (the “Tax Act”) was enacted in December 2017, and significantly affected U.S. tax law by changing how the U.S. imposes income tax on multinational corporations such as Cadence. The Tax Act requires complex computations not previously required by U.S. tax law. The Internal Revenue Service (“IRS”) and the U.S. Department of Treasury have broad authority to issue regulations and interpretative guidance that may significantly impact our application of the law and our provision for income taxes for fiscal 2018. As additional interpretative guidance is issued by the applicable authorities, we will likely need to revise our current estimates in future periods.

Our provision for income taxes for the three and nine months ended September 29, 2018 primarily resulted from the federal income tax effects of the U.S. Tax Act and state and foreign income taxes on anticipated fiscal 2018 income. Our provision for income taxes for the three and nine months ended September 29, 2018 was partially offset by $10.0 million and $20.5 million, respectively, of tax benefit related to stock-based compensation that vested or was exercised during the period. We also reduced our provisional estimate for the fiscal 2017 deemed repatriation transition tax during the nine months ended September 29, 2018 by $2.6 million, based on our continuing analysis of the earnings and cash balances of our foreign subsidiaries and additional guidance issued by the applicable tax authorities. We expect to complete our accounting for the Tax Act during the fourth quarter of fiscal 2018.

Our provision for income taxes for the three and nine months ended September 30, 2017 was primarily attributable to federal, state and foreign income taxes on our then-anticipated fiscal 2017 income. Our provision for income taxes for the three and nine months ended September 30, 2017 was partially offset by $14.7 million and $28.0 million, respectively, of tax benefit related to stock-based compensation that vested or was exercised during the period.

Our future effective tax rates may be materially impacted by tax amounts associated with our foreign earnings at rates different from the United States federal statutory rate, research credits, the tax impact of stock-based compensation, accounting for uncertain tax positions, business combinations, closure of statutes of limitations or settlement of tax audits, changes in valuation allowance and changes in tax law. A significant amount of our foreign earnings is generated by our subsidiaries organized in Ireland and Hungary. Our future effective tax rates may be adversely affected if our earnings were to be lower in countries where we have lower statutory tax rates. We currently expect that our fiscal 2018 effective tax rate will be approximately 10%. We expect that our quarterly effective tax rates will vary from our fiscal 2018 effective tax rate as a result of recognizing the income tax effects of stock-based awards in the periods when the awards vest or are settled as well as other items that we cannot anticipate. We may also revise our fiscal 2018 effective tax rate as a result of further analyzing the implications of the Tax Act and as we complete the accounting for the Tax Act. For additional discussion about how our effective tax rate could be affected by various risks, see Part II, Item 1A, “Risk Factors.” For further discussion regarding our income taxes, see Note 6 in the notes to condensed consolidated financial statements.

Liquidity and Capital Resources

| | As of September 29, 2018 | December 30, 2017 | Change |
|---|---|---|---|
| | (In millions) | | |
| Cash, cash equivalents and short-term investments | $550.0 | $ 692.5 | $(142.5) |
| Net working capital | $347.1 | $ 337.6 | $9.5 |

Cash, Cash Equivalents and Short-term Investments

As of September 29, 2018, our principal sources of liquidity consisted of $550.0 million of cash, cash equivalents and short-term investments, as compared to $692.5 million as of December 30, 2017.

Our primary sources of cash, cash equivalents and short-term investments during the nine months ended September 29, 2018 were cash generated from operations, proceeds from the exercise of stock options and proceeds from stock purchases under our employee stock purchase plan.

Our primary uses of cash, cash equivalents and short-term investments during the nine months ended September 29, 2018 were payments related to salaries and benefits, other employee-related costs and operating expenses, principal payments on the 2019 Term Loan, repurchases of our common stock, payment on our revolving credit facility, payment of taxes on vesting of restricted stock held by employees and purchases of property, plant and equipment.

Approximately 75% of our cash, cash equivalents and short-term investments were held by our foreign subsidiaries as of September 29, 2018. We expect that current cash, cash equivalents and short-term investment balances, cash flows that are generated from operations and cash borrowings available under our revolving credit facility will be sufficient to meet our domestic and international working capital needs, and other capital and liquidity requirements, including acquisitions and share repurchases for at least the next 12 months.

Net Working Capital

Net working capital is comprised of current assets less current liabilities, as shown on our condensed consolidated balance sheets. The increase in our net working capital as of September 29, 2018, as compared to December 30, 2017, is primarily due to an increase in accounts receivable and decreases in current liabilities for our revolving credit facility, accounts payable and accrued liabilities, partially offset by a decrease in cash and cash equivalents.

Cash Flows from Operating Activities

| | Nine Months Ended | | |
|---|---|---|---|
| | September 29, 2018 | September 30, 2017 | Change |
| | (In millions) | | |
| Cash provided by operating activities | $472.9 | $ 343.9 | $129.0 |

Cash flows from operating activities include net income, adjusted for certain non-cash items, as well as changes in the balances of certain assets and liabilities. Our cash flows from operating activities are significantly influenced by business levels and the payment terms set forth in our customer agreements. The increase in cash flows from operating activities for the nine months ended September 29, 2018, as compared to the nine months ended September 30, 2017, was primarily due to the improved results from operations and timing of cash receipts from customers and disbursements made to vendors.

We expect that cash flows from operating activities will fluctuate in future periods due to a number of factors, including our operating results, the timing of our billings, collections and disbursements and tax payments.

Cash Flows from Investing Activities

| | Nine Months Ended | | |
|---|---|---|---|
| | September 29, 2018 | September 30, 2017 | Change |
| | (In millions) | | |
| Cash used for investing activities | $(41.8) | $ (30.7) | $(11.1) |

Cash used for investing activities increased during the nine months ended September 29, 2018, as compared to the nine months ended September 30, 2017, due to an increase in cash used for purchases of property, plant and equipment and a decrease in proceeds from the sale of investments in equity securities. We expect to continue our investing activities, including purchasing property, plant and equipment, purchasing intangible assets, business combinations, purchasing software licenses, and making equity investments.

Cash Flows from Financing Activities

| | Nine Months Ended | | |
|---|---|---|---|
| | September 29, 2018 | September 30, 2017 | Change |
| | (In millions) | | |
| Cash used for financing activities | $(560.3) | $ (109.5) | $(450.8) |

Cash used for financing activities increased during the nine months ended September 29, 2018, as compared to the nine months ended September 30, 2017, primarily due to the $300.0 million prepayment of the principal balance on our 2019 Term Loan, an increase in repurchases of common stock and payments on our revolving credit facility.

Other Factors Affecting Liquidity and Capital Resources

Tax Act

The Tax Act provides that we may repatriate earnings from our foreign subsidiaries in fiscal 2018 and future years without additional U.S. federal income taxes. We are currently evaluating our plans for our earnings from foreign subsidiaries. We currently do not expect to indefinitely reinvest our earnings from our foreign subsidiaries, although we are continuing to assess our plans, including the impact of the Tax Act.

Stock Repurchase Program

In January 2017, our Board of Directors authorized the repurchase of shares of our common stock with a value of up to $525.0 million in the aggregate. The actual timing and amount of future repurchases are subject to business and market conditions, corporate and regulatory requirements, acquisition opportunities and other factors. As of September 29, 2018, approximately $275 million remained available under this authorization. See Part II, Item 2, “Unregistered Sales of Equity Securities and Use of Proceeds” for additional information.

Revolving Credit Facility

Our senior unsecured revolving credit facility provides for borrowings up to $350.0 million, with the right to request increased capacity up to an additional $250.0 million upon the receipt of lender commitments, for total maximum borrowings of $600.0 million. The credit facility expires on January 28, 2022 and currently has no subsidiary guarantors. Any outstanding loans drawn under the credit facility are due at maturity on January 28, 2022. Outstanding borrowings may be paid at any time prior to maturity. As of September 29, 2018, there was no outstanding balance under our revolving credit facility.

2024 Notes

In October 2014, we issued $350.0 million aggregate principal amount of 4.375% Senior Notes due October 15, 2024. We received net proceeds of $342.4 million from the issuance of the 2024 Notes, net of a discount of $1.4 million and issuance costs of $6.2 million. Interest is payable in cash semi-annually. The 2024 Notes are unsecured and rank equal in right of payment to all of our existing and future senior indebtedness. The proceeds from the 2024 Notes are available for general corporate purposes, which may include the retirement of debt, working capital, capital expenditures, acquisitions and strategic transactions.

For additional information relating to our debt arrangements, see Note 2 in the notes to condensed consolidated financial statements.

Item 3. Quantitative and Qualitative Disclosures About Market Risk

Foreign Currency Risk

A material portion of our revenue, expenses and business activities are transacted in the U.S. dollar. In certain foreign countries where we price our products and services in U.S. dollars, a decrease in value of the local currency relative to the U.S. dollar results in an increase in the prices for our products and services compared to those products of our competitors that are priced in local currency. This could result in our prices being uncompetitive in certain markets. In certain countries where we may invoice customers in the local currency our revenues benefit from a weaker dollar and are adversely affected by a stronger dollar. The opposite impact occurs in countries where we record expenses in local currencies. In those cases, our costs and expenses benefit from a stronger dollar and are adversely affected by a weaker dollar. The fluctuations in our operating expenses outside the United States resulting from volatility in foreign exchange rates are not generally moderated by corresponding fluctuations in revenues from existing contracts.

We enter into foreign currency forward exchange contracts to protect against currency exchange risks associated with existing assets and liabilities. A foreign currency forward exchange contract acts as a hedge by increasing in value when underlying assets decrease in value or underlying liabilities increase in value due to changes in foreign exchange rates. Conversely, a foreign currency forward exchange contract decreases in value when underlying assets increase in value or underlying liabilities decrease in value due to changes in foreign exchange rates. These forward contracts are not designated as accounting hedges, so the unrealized gains and losses are recognized in other income, net, in advance of the actual foreign currency cash flows with the fair value of these forward contracts being recorded as accrued liabilities or other current assets.

We do not use forward contracts for trading purposes. Our forward contracts generally have maturities of 90 days or less. We enter into foreign currency forward exchange contracts based on estimated future asset and liability exposures, and the effectiveness of our hedging program depends on our ability to estimate these future asset and liability exposures. Recognized gains and losses with respect to our current hedging activities will ultimately depend on how accurately we are able to match the amount of foreign currency forward exchange contracts with actual underlying asset and liability exposures.

The following table provides information about our foreign currency forward exchange contracts as of September 29, 2018. The information is provided in United States dollar equivalent amounts. The table presents the notional amounts, at contract exchange rates, and the weighted average contractual foreign currency exchange rates expressed as units of the foreign currency per United States dollar, which in some cases may not be the market convention for quoting a particular currency. All of these forward contracts mature before or during November 2018.

| | Notional Principal | Weighted Average Contract Rate |
|---|---|---|
| | (In millions) | |
| Forward Contracts: | | |
| European Union euro | $ 97.8 | 0.87 |
| British pound | 97.7 | 0.78 |
| Japanese yen | 76.5 | 110.70 |
| Israeli shekel | 35.0 | 3.64 |
| Indian rupee | 32.7 | 71.38 |
| South Korean won | 28.0 | 1,120.21 |
| Swedish krona | 17.3 | 9.03 |
| Chinese renminbi | 11.7 | 6.88 |
| Canadian dollar | 9.6 | 1.31 |
| Other | 9.6 | N/A |
| Total | $ 415.9 | |
| Estimated fair value | $ 2.4 | |

We actively monitor our foreign currency risks, but our foreign currency hedging activities may not substantially offset the impact of fluctuations in currency exchange rates on our results of operations, cash flows and financial

position.

Interest Rate Risk

Our exposure to market risk for changes in interest rates relates primarily to our portfolio of cash and cash equivalents and balances outstanding on our revolving credit facility, if any. We are exposed to interest rate fluctuations in many of the world's leading industrialized countries, but our interest income and expense is most sensitive to fluctuations in the general level of United States interest rates. In this regard, changes in United States interest rates affect the interest earned on our cash and cash equivalents and the costs associated with foreign currency hedges.

All highly liquid securities with a maturity of three months or less at the date of purchase are considered to be cash equivalents. The carrying value of our interest-bearing instruments approximated fair value as of September 29, 2018. Interest rates under our revolving credit facility are variable, so interest expense could be adversely affected by changes in interest rates, particularly for periods when we maintain a balance outstanding under the revolving credit facility. Interest rates for our revolving credit facility can fluctuate based on changes in market interest rates and in an interest rate margin that varies based on our consolidated leverage ratio. As of September 29, 2018, there was no outstanding balance under our revolving credit facility. For an additional description of the revolving credit facility, see Note 2 in the notes to condensed consolidated financial statements.

Equity Price Risk

Equity Investments

We have a portfolio of equity investments that includes marketable equity securities and non-marketable investments. Our equity investments are made primarily in connection with our strategic investment program. Under our strategic investment program, from time to time, we make cash investments in companies with technologies that are potentially strategically important to us. See Note 1 in the notes to condensed consolidated financial statements for an additional description of these investments.

Item 4. Controls and Procedures

Evaluation of Disclosure Controls and Procedures

As required by Rule 13a-15 of the Securities Exchange Act of 1934, as amended, or the Exchange Act, under the supervision and with the participation of our management, including our Chief Executive Officer ("CEO") and our Chief Financial Officer ("CFO") we evaluated the effectiveness of the design and operation of our disclosure controls and procedures (as defined in Rules 13a-15(e) and 15d-15(e) under the Exchange Act) as of September 29, 2018.

The evaluation of our disclosure controls and procedures included a review of our processes and the effect on the information generated for use in this Quarterly Report on Form 10-Q. In the course of this evaluation, we sought to identify any material weaknesses in our disclosure controls and procedures, to determine whether we had identified any acts of fraud involving personnel who have a significant role in our disclosure controls and procedures, and to confirm that any necessary corrective action, including process improvements, was taken. This type of evaluation is done every fiscal quarter so that our conclusions concerning the effectiveness of these controls can be reported in our periodic reports filed with the SEC. The overall goals of these evaluation activities are to monitor our disclosure controls and procedures and to make modifications as necessary. We intend to maintain these disclosure controls and procedures, modifying them as circumstances warrant.

Based on their evaluation as of September 29, 2018, our CEO and CFO have concluded that our disclosure controls and procedures were effective to provide reasonable assurance that the information required to be disclosed by us in our reports filed or submitted under the Exchange Act is recorded, processed, summarized and reported within the time periods specified in the SEC's rules and forms and is accumulated and communicated to our management, including the CEO and CFO, as appropriate to allow timely decisions regarding required disclosure.

Changes in Internal Control Over Financial Reporting

There were no changes in our internal control over financial reporting during the fiscal quarter ended September 29, 2018 that materially affected, or are reasonably likely to materially affect, our internal control over financial reporting.

Inherent Limitations on Effectiveness of Controls

Our management, including our CEO and CFO, does not expect that our disclosure controls and procedures or our internal control over financial reporting will prevent or detect all errors and all fraud. Internal control over financial reporting, no matter how well conceived and operated, can provide only reasonable, not absolute, assurance that the objectives of internal control are met. Further, the design of internal control must reflect the fact that there are resource constraints, and the benefits of the control must be considered relative to their costs. While our disclosure controls and procedures and internal control over financial reporting are designed to provide reasonable assurance of their effectiveness, because of the inherent limitations in all control systems, no evaluation of controls can provide absolute assurance that all control issues and instances of fraud, if any, within Cadence, have been detected.

PART II. OTHER INFORMATION

Item 1. Legal Proceedings

From time to time, we are involved in various disputes and litigation that arise in the ordinary course of business. These include disputes and lawsuits related to intellectual property, indemnification obligations, mergers and acquisitions, licensing, contracts, distribution arrangements and employee relations matters. At least quarterly, we review the status of each significant matter and assess its potential financial exposure. If the potential loss from any claim or legal proceeding is considered probable and the amount or the range of loss can be estimated, we accrue a liability for the estimated loss. Legal proceedings are subject to uncertainties, and the outcomes are difficult to predict. Because of such uncertainties, accruals are based on our judgments using the information available at the time. As additional information becomes available, we reassess the potential liability related to pending claims and litigation matters and may revise estimates.

Item 1A. Risk Factors

Our operations and financial results are subject to various risks and uncertainties, including those described in the sections below, that could adversely affect our business, financial condition, results of operations, cash flows, and the trading price of our common stock.

Risks Related to Our Business

Any periods of uncertainty in the global economy and international trade relations, and any potential downturn in the semiconductor and electronics industries, may negatively impact our business and reduce our bookings levels and revenue.

Purchases of our products and services are dependent upon the commencement of new design projects by IC manufacturers and electronics systems companies. The IC and electronics systems industries are cyclical and are characterized by constant and rapid technological change, rapid product obsolescence and price erosion, evolving standards, short product life cycles and wide fluctuations in product supply and demand.

The IC and electronics systems industries have also experienced significant downturns in connection with, or in anticipation of, maturing product cycles of both these industries' and their customers' products. While spending on EDA products and services has grown in recent years, the current outlook for the semiconductor industry is uncertain and may result in a decrease in spending on EDA products and services, which are a part of our overall SDE offering. While we cannot predict global economic conditions, uncertainty about future political and economic conditions, adverse changes to international trade relationships with the United States or future decline in consumer spending could negatively impact our customers' businesses, reducing the number of new chip designs and their overall research and development spending, including their spending on our products and services, and as a result decrease demand for our products. Decreased bookings for our products and services, customer bankruptcies, consolidation among our customers, or problems or delays with our hardware suppliers or with the supply or delivery of our hardware products could also adversely affect our ability to grow our business or adversely affect our future revenues and financial results. Our future business and financial results are subject to considerable uncertainty that could impact our stock price. If economic conditions or international trade relationships with the United States deteriorate in the future, or, in particular, if semiconductor or electronics systems industry revenues do not grow, the ability to export or import products or services by the semiconductor or electronics systems industry is adversely restricted, or our suppliers of our hardware components and products are subject to problems or delays, our future revenues and financial results could be adversely affected. However, if economic conditions improve for our customers, the positive impact on our revenues and financial results may be deferred due to cautious customer research and development spending and our mix of licenses that yield revenue recognized over time.

Customer consolidation could affect our operating results.

There has been a trend toward customer consolidation in the semiconductor industry through business combinations, including mergers, asset acquisitions and strategic partnerships. As this trend continues, it could make us dependent on fewer customers who may be able to exert increased pressure on our prices and other contract terms and could increase the portion of our total sales concentration for any single customer. Customer consolidation activity could

also reduce the demand for our products and services if such customers streamline research and development or operations, reduce purchases or delay purchasing decisions. These outcomes could negatively impact our financial condition.

Our failure to respond quickly to technological developments or customers' increasing technological requirements could make our products uncompetitive and obsolete.

The industries in which we compete experience rapid technology developments, rapid changes in industry standards and customer requirements, and frequent introductions and improvements of new products. Currently, the industries we serve are experiencing the following trends:

- changes in the design and manufacturing of ICs, including migration to advanced process nodes and three-dimensional transistors, such as FinFETs, present major challenges to the semiconductor industry, particularly in IC design, design automation, design of manufacturing equipment, and the manufacturing process itself. With migration to advanced process nodes, the industry must adapt to more complex physics and manufacturing challenges such as the need to draw features on silicon that are many times smaller than the wavelength of light used to draw the features via lithography. Models of each component's electrical properties and behavior also become more complex as do requisite analysis, design, verification and manufacturing capabilities. Novel design tools and methodologies must be invented and enhanced quickly to remain competitive in the design of electronics in the smallest nanometer ranges;
- the ability to design systems-on-chip ("SoCs") increases the complexity of managing a design that, at the lowest level, is represented by billions of shapes on fabrication masks. In addition, SoCs typically incorporate microprocessors and digital signal processors that are programmed with software, requiring simultaneous design of the IC and the related software embedded on the IC;
- with the availability of seemingly endless gate capacity, there is an increase in design reuse, or the combining of off-the-shelf design IP with custom logic to create ICs or SoCs. The unavailability of a broad range of high-quality design IP (including our own) that can be reliably incorporated into a customer's design with our software products and services could lead to reduced demand for our products and services;
- increased technological capability of the FPGA, which is a programmable logic chip, creates an alternative to IC implementation for some electronics companies. This could reduce demand for our IC implementation products and services;
- a growing number of low-cost engineering services businesses could reduce the need for some IC companies to invest in EDA products; and
- adoption of cloud computing technologies with accompanying new business models for an increasing number of software categories.

If we are unable to respond quickly and successfully to these trends, we may lose our competitive position, and our products or technologies may become obsolete. To compete successfully, we must develop, acquire or license new products and improve our existing products and processes on a schedule that keeps pace with technological developments and the requirements for products addressing a broad spectrum of designers and designer expertise in our industries. We must provide frequent and relevant updates to our software products in order to provide substantial benefit to the customer throughout the license periods because of the rapid changes in our customer's industries. The market must also accept our new and improved products. Our hardware platforms must be enhanced periodically to reduce the likelihood that a competitor surpasses the capabilities we offer. Our introduction of new products could reduce the demand and revenue of our older products or affect their pricing. We must also be able to support a range of changing computer software, hardware platforms and customer preferences. A rapid transition to different business models associated with cloud computing technologies could result in reduced revenue. We cannot guarantee that we will be successful in keeping pace with all, or any, of the customer trends.

Competitive pressures may require us to reduce our pricing, which could have an adverse effect on our results of operations.

The highly competitive markets in which we do business can put pressure on us to reduce the prices of our software, emulation and prototyping hardware and IP. If our competitors offer deep discounts on certain products in an effort to recapture or gain market share or to sell other software or hardware products, we may then need to lower our prices or offer other favorable terms to compete successfully. Any such changes would be likely to reduce our profit margins and could adversely affect our operating results. Any substantial changes to our prices and pricing policies could cause revenues to decline or be delayed as our sales force implements and our customers adjust to the new pricing policies. Some of our competitors bundle products for promotional purposes or as a long-term pricing strategy or provide guarantees of prices and product implementations. These practices could, over time, significantly constrain

the prices that we can charge for our products. If we cannot offset price reductions with a corresponding increase in the number of sales or with lower spending, then the reduced revenues resulting from lower prices could have an adverse effect on our results of operations.

Our System Design Enablement strategy requires the development or acquisition of products and expertise in new areas of technology. Our inability to develop or acquire these capabilities could impede our ability to address the technical requirements in technology segments which are expected to contribute to our growth.

Our SDE strategy is meant to increase our business among electronic systems companies, which are now designing their own ICs. SDE is also meant to increase our business among semiconductor companies, which are increasing their contribution to the end products into which their ICs are incorporated. Part of this strategy involves addressing the needs of new categories of electronic systems, including hyperscale computing, machine learning, augmented reality, virtual reality, internet-of-things and autonomous vehicle sub-systems, where increased investment is expected by our customers. Each of these categories requires technologies and expertise that are application-specific. If we are unable to develop or acquire the application-specific technologies and expertise necessary to address the requirements of these categories, it could impede our ability to expand our business in these categories and ultimately affect our future growth.

We have experienced varied operating results, and our operating results for any particular fiscal period are affected by the timing of revenue recognition, particularly for our emulation and prototyping hardware and IP products.

Various factors affect our operating results, and some of them are not within our control. Our operating results for any period are affected by the timing of revenue recognition, particularly for our emulation and prototyping hardware and IP products. In addition, we have recorded net losses in the past and may record net losses in the future.

A substantial portion of the product revenue related to our hardware business and some of our IP offerings is recognized upon delivery, and our forecasted revenue results are based, in part, on our expectations of hardware and IP to be delivered in a particular quarter. Therefore, changes in hardware and IP bookings or deliveries relative to expectations will have a more immediate impact on our revenue than changes in software or services bookings, for which revenue is generally recognized over time.

In recent years, we made significant investments to expand our IP offerings through, among other things, research and development and acquisitions. As we continue to expand our IP offerings, a portion of the revenue related to our IP bookings will be deferred until we complete and deliver the licensed IP to our customers. As a result, costs related to the research and development of the IP may be incurred prior to the recognition of the related revenue.

Revenue related to our hardware and IP products is inherently difficult to predict because sales of our hardware and IP products depend on the commencement of new projects for the design and development of complex ICs and systems by our customers, our customers' willingness to expend capital to deploy our hardware or IP products in those projects and the availability of our hardware or IP products for delivery. Therefore, our hardware or IP sales may be delayed or may decrease if our customers delay or cancel projects because their spending is constrained or if there are problems or delays with the supply or delivery of our hardware or IP products or our hardware suppliers. Moreover, the hardware and IP markets are highly competitive, and our customers may choose to purchase a competitor's hardware or IP product based on cost, performance or other factors. These factors may result in lower revenue, which would have an adverse effect on our business, results of operations or cash flows.

A substantial proportion of our licenses yield revenue recognized over time, which may make it difficult for us to rapidly increase our revenue in future fiscal periods.

We plan our operating expenses based on forecasted revenue, expected business needs and other factors. These expenses and the effect of long-term commitments are relatively fixed in the short term. Bookings and the related revenue are harder to forecast in a difficult economic environment. If we experience a shortfall in bookings, our operating results could differ from our expectations because we may not be able to quickly reduce our expenses in response to short-term business changes.

The methods, estimates and judgments that we use in applying our accounting policies have a significant impact on our results of operations (see "Critical Accounting Estimates" under Part I, Item 2, "Management's Discussion and Analysis of Financial Condition and Results of Operations"). Such methods, estimates and judgments are, by their nature, subject to substantial risks, uncertainties and assumptions, and factors may arise over time that may lead us to change our methods, estimates and judgments. Changes in those methods, estimates and judgments could significantly affect our results of operations.

Historical results of operations should not be viewed as reliable indicators of our future performance. If our revenue, operating results or business outlook for future periods fall short of the levels expected by us, securities analysts or

investors, the trading price of our common stock could decline.

We have invested and expect to continue to invest in research and development efforts for new and existing products and technologies and technical sales support. Such investments may affect our operating results, and, if the return on these investments is lower or develops more slowly than we expect, our revenue and operating results may suffer.

We have invested and expect to continue to invest in research and development for new and existing products, technologies and services in response to our customers' increasing technological requirements. Such investments may be in related areas, such as technical sales support. These investments may involve significant time, risks and uncertainties, including the risk that the expenses associated with these investments may affect our margins and operating results and that such investments may not generate sufficient revenues to offset liabilities assumed and expenses associated with these new investments. We believe that we must continue to invest a significant amount of time and resources in our research and development efforts and technical sales support to maintain and improve our competitive position. If we do not achieve the benefits anticipated from these investments, if the achievement of these benefits is delayed, or if customers reduce or slow the need to upgrade or enhance their EDA or IP products and design flows, our revenue and operating results may be adversely affected.

We have acquired and expect to acquire other companies and businesses and may not realize the expected benefits of these acquisitions.

We have acquired and expect to acquire other companies and businesses in order to expand our product offerings. Our future revenue growth and expansion of our business is dependent on our successful integration of our acquisitions. We may incur significant costs in connection with potential transactions, including acquisitions that are not consummated. Potential and completed acquisitions involve a number of risks. If any of the following acquisition-related risks occur, our business, operating results or financial condition could be adversely impacted:

- the failure to realize anticipated benefits such as cost savings and revenue enhancements;
- overlapping customers and product sets that impact our ability to maintain revenue at historical rates;
- the failure to understand, compete and operate effectively in markets where we have limited experience;
- the failure to integrate and manage acquired products and businesses effectively;
- the failure to integrate and retain key employees of the acquired company or business;
- difficulties in combining previously separate companies or businesses into a single unit;
- the substantial diversion of management's attention from day-to-day business when evaluating and negotiating these transactions and integrating an acquired company or business;
- the discovery, after completion of the acquisition, of unanticipated liabilities assumed from the acquired company, business or assets, such that we cannot realize the anticipated value of the acquisition;
- difficulties related to integrating the products of an acquired company or business in, for example, distribution, engineering, licensing models or customer support areas;
- unanticipated costs; or
- unwillingness of customers of the acquired business to continue licensing or buying products from us following the acquisition.

In a number of our completed acquisitions, we have agreed to make future payments, either in the form of employee retention bonuses or contingent purchase price payments, based on the achievement of specified milestones. The performance goals pursuant to which these future payments may be made generally relate to the achievement by the acquired company or business, or by the employees who joined us with the acquired company or business, of certain specified bookings, revenue, run rate, product proliferation, product development or employee retention goals during a specified period following completion of the applicable acquisition. The specific performance goal levels and amounts and timing of employee bonuses or contingent purchase price payments vary with each acquisition. We may continue to use contingent payments in connection with acquisitions in the future and while we expect to derive value from an acquisition in excess of such contingent payment obligations, we may be required to make certain contingent payments without deriving the anticipated value.

Future acquisitions may involve issuances of stock as full or partial payment of the purchase price for the acquired company or business, grants of restricted stock, restricted stock units or stock options to employees of the acquired companies or businesses (which may be dilutive to existing stockholders), expenditure of substantial cash resources or the incurrence of a material amount of debt. These arrangements may impact our liquidity, financial position and results of operations or increase dilution of our stockholders' equity interests in the company.

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The competition in our industries is substantial, and we may not be able to continue to successfully compete in our industries.

The EDA industry, the commercial electronics engineering services industry and the IP industry are highly competitive. If we fail to compete successfully in these industries, it could seriously harm our business, operating results or financial condition. To compete in these industries, we must identify and develop or acquire innovative and cost-competitive products, integrate them into platforms and market them in a timely manner. We may not be able to compete successfully in these industries. Factors that could affect our ability to compete successfully include:

- the development by others of competitive products or platforms and engineering services, possibly resulting in a shift of customer preferences away from our products and services and significantly decreased revenue;
- aggressive pricing competition by some of our competitors may cause us to lose our competitive position, which could result in lower revenues or profitability and could adversely impact our ability to realize the revenue and profitability forecasts for our software or emulation and prototyping hardware systems products;
- the challenges of advanced node design may lead some customers to work with more mature, less risky manufacturing processes that may reduce their need to upgrade or enhance their EDA products and design flows;
- the challenges of developing (or acquiring externally developed) technology solutions, including hardware and IP offerings, that are adequate and competitive in meeting the rapidly evolving requirements of next-generation design challenges;
- intense competition to attract acquisition targets, possibly making it more difficult for us to acquire companies or technologies at an acceptable price, or at all;
- the low cost of entry in our business;
- the combination of our competitors or collaboration among many companies to deliver more comprehensive offerings than they could individually; and
- decisions by electronics manufacturers to perform engineering services or IP development internally, rather than purchase these services from outside vendors due to budget constraints or excess engineering capacity.

We compete most frequently with Synopsys, Inc. and Mentor Graphics Corporation, which was acquired by Siemens AG in 2017, and also with numerous other EDA providers, manufacturers of electronic devices that have developed, acquired or have the capability to develop their own EDA products, electronics design and consulting companies, and other IP companies.These include Altium Limited, Ansys, Inc., CEVA, Inc., Keysight Technologies, Inc. and Zuken Ltd.

Failure to obtain export licenses or restrictions on trade imposed by the United States or other countries could harm our business by rendering us unable to sell or ship products and transfer our technology outside of the United States.

We must comply with regulations of the United States and of certain other countries in selling or shipping our products and transferring our technology outside the United States and to foreign nationals. Changes in these regulations or restrictions due to changes in trade relationships with the United States, including new tariffs, trade protection measures, import or export licensing requirements, sanctions, trade embargoes and other trade barriers, could harm our business, operating results or financial condition.

The effect of foreign exchange rate fluctuations may adversely impact our revenue, expenses, cash flows and financial condition.

We have significant operations outside the United States. Our revenue from international operations as a percentage of total revenue was approximately 57% during the nine months ended September 29, 2018 and September 30, 2017. We expect that revenue from our international operations will continue to account for a significant portion of our total revenue. We also transact business in various foreign currencies, although the majority of our revenue contracts worldwide are denominated in U.S. dollars. Volatility of currencies in countries where we conduct business, most notably the U.S. dollar, Chinese renminbi, Japanese yen, European Union euro, British pound and Indian rupee have had and may in the future have an effect on our revenue or operating results.

Fluctuations in the rate of exchange between the U.S. dollar and the currencies of other countries where we conduct business could seriously affect our business, operating results or financial condition. For example, when a foreign currency declines in value relative to the U.S. dollar, it takes more of the foreign currency to purchase the same amount of U.S. dollars than before the change. If we price our products and services in the foreign currency, we receive fewer U.S. dollars than we did before the change. If we price our products and services in U.S. dollars, the decrease in value of the local currency results in an increase in the price for our products and services compared to those products of our competitors that are priced in local currency. This could result in our prices being uncompetitive in markets where business is transacted in the local currency. On the other hand, when a foreign currency increases in value relative to the U.S. dollar, it takes more U.S. dollars to purchase the same amount of the foreign currency. As we use the foreign currency to fund payroll costs and other operating expenses in our international operations, this results in an increase in operating expenses. Approximately 30% of our total costs and expenses are transacted in foreign currencies. Our attempts to reduce the effect of foreign currency fluctuations may be unsuccessful, and significant exchange rate movements may adversely impact our results of operations as expressed in U.S. dollars.

Our operating results could be adversely affected by an increase in our effective tax rate as a result of tax law changes, outcomes of current or future tax examinations, or by material differences between our forecasted and actual effective tax rates.

Our operations are subject to income and transaction taxes in the United States and in multiple foreign jurisdictions, with a significant amount of our foreign earnings generated by our subsidiaries organized in Ireland and Hungary. Any significant change in our future effective tax rates could adversely impact our results of operations for future periods. Our future effective tax rates could be adversely affected by the following:

- changes in tax laws or the interpretation of such tax laws in the United States, Ireland, Hungary, the United Kingdom, China, the Republic of Korea, Japan, India or other international locations where we have operations;
- earnings being lower than anticipated in countries where we are taxed at lower rates as compared to the United States federal and state statutory tax rates;
- an increase in expenses not deductible for tax purposes;
- an increase in corporate minimum taxes;
- changes in tax benefits from stock-based compensation;
- changes in the valuation allowance against our deferred tax assets;
- changes in judgment from the evaluation of new information that results in a recognition, derecognition or change in measurement of a tax position taken in a prior period;
- increases to interest or penalty expenses classified in the financial statements as income taxes;
- new accounting standards or interpretations of such standards; or
- results of examinations by the IRS, state, and foreign tax or other governmental authorities.

The IRS and other tax authorities regularly examine our income tax returns and other non-income tax returns, such as payroll, sales, use, value-added, net worth or franchise, property, goods and services, consumption, import, stamp, and excise taxes, in both the United States and foreign jurisdictions. The calculation of our provision for income taxes and our accruals for other taxes requires us to use significant judgment and involves dealing with uncertainties in the application of complex tax laws and regulations. In determining the adequacy of our provision for income taxes, we regularly assess the potential settlement outcomes resulting from income tax examinations. However, the final outcome of tax examinations, including the total amount payable or the timing of any such payments upon resolution of these issues, cannot be estimated with certainty. In addition, we cannot be certain that such amount will not be materially different from the amount that is reflected in our historical income tax provisions and accruals for other taxes. Should the IRS or other tax authorities assess additional taxes, penalties or interest as a result of a current or a future examination, we may be required to record charges to operations in future periods that could have a material impact on our results of operations, financial position or cash flows in the applicable period or periods.

Forecasts of our annual effective tax rate are complex and subject to uncertainty because our income tax position for each year combines the effects of estimating our annual income or loss, the mix of profits and losses earned by us and our subsidiaries in tax jurisdictions with a broad range of income tax rates, as well as benefits from available deferred tax assets, the impact of various accounting rules, our interpretations of changes in tax laws and results of tax audits.

Forecasts of our annual effective tax rate do not include the anticipation of future tax law changes. In addition, we account for certain tax benefits from stock-based compensation in the period the stock compensation is settled, which may cause increased variability in our quarterly effective tax rates. If there were a material difference between forecasted and actual tax rates, it could have a material impact on our results of operations.

Tax laws, regulations, and compliance practices are evolving and may have a material adverse effect on our results of operations, cash flows and financial position.

The Tax Act was enacted in December 2017, and significantly affected U.S. tax law by changing how the U.S. imposes income tax on multinational corporations. The U.S. Department of Treasury has broad authority to issue regulations and interpretative guidance that may significantly impact how we will apply the law and impact our results of operations.

The Tax Act requires complex computations not previously required by U.S. tax law. As such, the application of certain accounting guidance is currently evolving. Further, compliance with the Tax Act and the accounting for certain provisions require accumulation of information not previously required or regularly produced. As a result, we have provided a provisional estimate of the effects of the Tax Act in our financial statements. As additional interpretative guidance is issued by the applicable authorities, we will continue our analysis on the application of the Tax Act and will finalize our accounting for the effects of the Tax Act during the fourth quarter of fiscal 2018. The revisions to our current estimates could materially affect our results of operations, cash flow and financial position. For further discussion regarding our income taxes, please refer to Note 6 in the notes to condensed consolidated financial statements.

Tax laws, regulations, and administrative practices in various jurisdictions are evolving and may be subject to significant changes due to economic, political, and other conditions. There are many transactions that occur during the ordinary course of business for which the ultimate tax determination is uncertain, and significant judgment is required in evaluating and estimating our provision and accruals for these taxes. Governments are increasingly focused on ways to increase tax revenues, particularly from multinational corporations, which may lead to an increase in audit activity and harsher positions taken by tax authorities. We are currently subject to tax audits in various jurisdictions and these jurisdictions may assess additional tax liabilities against us.

The Organisation for Economic Co-operation and Development (“OECD”), an international association of 34 countries, including the United States, released the final reports from its Base Erosion and Profit Shifting (“BEPS”) Action Plans, which aim to standardize and modernize global tax policies. The BEPS Action Plans propose revisions to numerous tax rules, including country-by-country reporting, permanent establishment, hybrid entities and instruments, transfer pricing, and tax treaties. The BEPS Action Plans have been or are being enacted by countries where we have operations. The European Commission (“EC”) has conducted investigations in multiple countries focusing on whether local country tax rulings provide preferential tax treatment that violates European Union state aid rules and concluded that certain countries, including Ireland, have provided illegal state aid in certain cases. The EC and OECD have also been evaluating new rules on the taxation of the digital economy companies. In addition, Taiwan, Italy, the United Kingdom, India and Hungary have recently introduced new rulings or proposals to tax digital transactions. These developments in tax laws and regulations, and compliance with these rules, could have a material adverse effect on our operating results, financial position and cash flows.

Our stock price has been subject to fluctuations and may continue to be subject to fluctuations.

The market price of our common stock has experienced fluctuations and may fluctuate or decline in the future, and as a result you could lose the value of your investment. The market price of our common stock may be affected by a number of factors, including:

- quarterly or annual operating or financial results or forecasts that fail to meet or are inconsistent with earlier projections or the expectations of our securities analysts or investors;
- changes in our forecasted bookings, revenue, earnings or operating cash flow estimates;
- an increase in our debt or other liabilities;
- market conditions in the IC, electronics systems and semiconductor industries;
- announcements of a restructuring plan;
- changes in management;
- repurchases of shares of our common stock or changes to plans to repurchase shares of our common stock;
- a gain or loss of a significant customer or market segment share;
- litigation; and
- announcements of new products or acquisitions of new technologies by us, our competitors or our customers.

In addition, equity markets in general, and the equities of technology companies in particular, have experienced and may experience in the future, extreme price and volume fluctuations due to, among other factors, the actions of market participants or other actions outside of our control. Such price and volume fluctuations may adversely affect the market price of our common stock for reasons unrelated to our business or operating results.

Our future revenue is dependent in part upon our installed customer base continuing to license or buy products and purchase services.

Our installed customer base has traditionally generated additional new license, service and maintenance revenues. In future periods, customers may not necessarily license or buy additional products or contract for additional services or maintenance. Our customers, many of which are large semiconductor and systems companies, often have significant bargaining power in negotiations with us. Customer consolidation can reduce the total level of purchases of our software, hardware, IP and services, and in some cases, increase customers' bargaining power in negotiations with their suppliers, including us.

We could suffer serious harm to our business because of the infringement of our intellectual property rights by third parties or because of our infringement of the intellectual property rights of third parties.

There are numerous patents relating to our business and ecosystem. New patents are being issued at a rapid rate and are owned by EDA companies as well as entities and individuals outside the EDA industry, including parties whose income is primarily derived from infringement-related licensing and litigation. It is not always practicable to determine in advance whether a product or any of its components infringes the patent rights of others. As a result, from time to time, we may be compelled to respond to or prosecute intellectual property infringement claims to protect our rights or defend a customer's rights.

Intellectual property infringement claims, including contractual defense reimbursement obligations related to third-party claims against our customers, regardless of merit, could consume valuable management time, result in costly litigation or cause product shipment delays, all of which could seriously harm our business, operating results or financial condition. The risk of infringement and related indemnification claims associated with design IP products that are incorporated into a customer product broadly used by consumers may be higher than the risk associated with our software products. In settling these claims, we may be required to enter into royalty or licensing agreements with the third parties claiming infringement. These royalty or licensing agreements, if available, may not have terms favorable to us. Being compelled to enter into a license agreement with unfavorable terms could seriously harm our business, operating results or financial condition. Any potential intellectual property litigation could compel us to do one or more of the following:

- pay damages (including the potential for treble damages), license fees or royalties (including royalties for past periods) to the party claiming infringement;
- stop licensing products or providing services that use the challenged intellectual property;
- obtain a license from the owner of the infringed intellectual property to sell or use the relevant technology, which license may not be available on reasonable terms, or at all; or
- redesign the challenged technology, which could be time consuming and costly, or impossible.

If we were compelled to take any of these actions, our business or operating results may suffer.

If our security measures are breached, and an unauthorized party obtains access to customer data, financial data or assets or our proprietary business information, our information systems may be perceived as being unsecure, which could harm our business and reputation.

Our products and services involve the storage and transmission of our proprietary information and that of our customers. We have offices throughout the world, including key research and development facilities outside of the United States. Our operations are dependent upon the connectivity of our operations throughout the world. Despite our security measures, our information technology and infrastructure may be vulnerable to cyber attacks by unauthorized third parties (which may include nation-states and individuals sponsored by them) or breaches due to employee error, malfeasance or other disruptions, which could result in unauthorized disclosure of sensitive information and could significantly interfere with our business operations. Third parties may attempt to gain unauthorized access through a variety of methods (such as the use of viruses, malware, ransomware, phishing, denial of service attacks and other cyber attacks) and corrupt the processes of the products and services that we provide. We may also be a target of malicious attacks to gain access to our network or data centers or those of our customers or end users; steal proprietary information related to our business, products, services or infrastructure; steal financial data or assets or interrupt our systems and services or those of our customers or others. Breaches of our security measures could expose us to a risk of loss or misuse of this information, loss of financial assets, litigation and potential liability. Because techniques used to obtain unauthorized access or to sabotage information systems change frequently and generally are not recognized

until launched against a target, we may be unable to anticipate these techniques or to implement adequate preventive measures. In addition, if we select a vendor that uses cyber storage of information as part of their service or product offerings, despite our attempts to validate the security of such services, our proprietary information may be misappropriated by third parties. In the event of an actual or perceived breach of our security, or the security of one of our vendors, the market perception of the effectiveness of our security measures could be harmed, legal or regulatory actions could be initiated against us and we could suffer damage to our reputation or our business, or lose existing customers and our ability to obtain new customers, or suffer harm to our financial condition.

Risks associated with our international operations could adversely impact our financial condition.

A significant amount of our revenue is derived from our international operations, and we have offices throughout the world, including key research and development facilities outside of the United States. Our international operations may be subject to a number of risks, including:

- shifts in political, trade or other policies resulting from the results of certain elections or votes, such as changes in policies pursued by the United States, China or the Republic of Korea, or changes associated with the United Kingdom's withdrawal from the European Union;
- the adoption or expansion of government trade restrictions, including tariffs, export or import regulations, sanctions or other trade barriers;
- limitations on repatriation of earnings;
- limitations on the conversion of foreign currencies;
- reduced protection of intellectual property rights in some countries;
- performance of national economies;
- longer collection periods for receivables and greater difficulty in collecting accounts receivable;
- difficulties in managing foreign operations;
- political and economic instability;
- unexpected changes in regulatory requirements;
- inability to continue to offer competitive compensation in certain growing regions;
- differing employment practices and labor issues;
- United States' and other governments' licensing requirements for exports, which may lengthen the sales cycle or restrict or prohibit the sale or licensing of certain products; and
- variations in costs or expenses associated with our international operations, including as a result of changes in foreign tax laws or devaluation of the U.S. dollar relative to other foreign currencies.

Some of our international research and development and other facilities are in parts of the world where there may be a greater risk of business interruption as a result of political instability, terrorist acts or military conflicts than businesses located domestically. Furthermore, this potential harm is exacerbated because damage to or disruptions at our international research and development facilities could have a more significant adverse effect on our ability to develop new or improve existing products than other businesses that may only have sales offices or other less critical operations abroad. We are not insured for losses or interruptions caused by acts of war. Furthermore, our operations are dependent upon the connectivity of our operations throughout the world. Activities that interfere with our international connectivity or operations, such as cyber hacking, the introduction of a virus into our computer systems, natural disasters, civil unrest or terrorism, could significantly interfere with our business operations.

In addition, internal controls, policies and procedures and employee training and compliance programs that we have implemented to deter prohibited practices may not prevent our employees, contractors or agents from violating or circumventing our policies and the laws and regulations applicable to our worldwide operations.

We depend upon our management team and key employees, and our failure to attract, train, motivate and retain management and key employees may make us less competitive and therefore harm our results of operations.

Our business depends upon the continued services, efforts and abilities of our senior management and other key employees. Competition for highly skilled executive officers and employees can be intense, particularly in geographic areas recognized as high technology centers such as the Silicon Valley area, where our principal offices are located, and in other locations where we maintain facilities. In addition, competition for qualified personnel, including software engineers, in the EDA, commercial electronics engineering services and IP industries has intensified. Further, increased uncertainty regarding social, political and immigration policies in the United States and abroad may make it difficult to recruit employees with adequate experience. We may also experience increased compensation costs that are not offset by either improved productivity or higher sales. We may not be successful in recruiting new personnel and in retaining and motivating existing personnel. From time to time, there may be changes in our management team resulting from the hiring and departure of executive officers, and as a result, we may experience disruption to our business that may harm our operating results and our relationships with our employees, customers and suppliers may be adversely affected.

To attract, retain and motivate individuals with the requisite expertise, we may be required to grant large numbers of stock options or other stock-based incentive awards, which may be dilutive to existing stockholders and increase compensation expense, and pay significant base salaries and cash bonuses, which could harm our operating results. The high cost of training new employees, not fully utilizing these employees, or losing trained employees to competing employers could also reduce our operating margins and harm our business or operating results.

In addition, applicable rules and regulations require stockholder approval for new equity compensation plans and significant amendments to existing equity compensation plans (including increases in shares available for issuance under such plans), and prohibit publicly-traded companies from giving a proxy to vote on equity compensation plans unless the beneficial owner of the shares has given voting instructions. These rules and regulations could make it more difficult for us to grant equity compensation to employees in the future. To the extent that these regulations make it more difficult or expensive to grant equity compensation to employees, we may incur increased compensation costs or find it difficult to attract, retain and motivate employees, which could materially and adversely affect our business.

We rely on our proprietary technology, as well as software and other intellectual property rights licensed to us by third parties, and we cannot assure you that the precautions taken to protect our rights will be adequate or that we will continue to be able to adequately secure such intellectual property rights from third parties.

Our success depends, in part, upon our proprietary technology. We generally rely on patents, copyrights, trademarks, trade secrets, licenses and restrictive agreements to establish and protect our proprietary rights in technology and products. Despite the precautions we may take to protect our intellectual property, third parties have tried in the past, and may try in the future, to challenge, invalidate or circumvent these safeguards. Our patents and other intellectual property rights may not provide us with sufficient competitive advantages. Patents may not be issued on any of our pending applications and our issued patents may not be sufficiently broad to protect our technology. Furthermore, the laws of foreign countries may not protect our proprietary rights in those countries to the same extent as applicable law protects these rights in the United States. The protection of our intellectual property may require the expenditure of significant financial and managerial resources. Moreover, the steps we take to protect our intellectual property may not adequately protect our rights, or deter or prevent third parties from infringing or misappropriating our proprietary rights.

Many of our products include software or other intellectual property licensed from third parties. We may have to seek new or renew existing licenses for such software and other intellectual property in the future. Our engineering services business holds licenses to certain software and other intellectual property owned by third parties, including that of our competitors. Our failure to obtain software, other intellectual property licenses or other intellectual property rights that are necessary or helpful for our business on favorable terms, or our need to engage in litigation over these licenses or rights, could seriously harm our business, operating results or financial condition.

We have substantial cash requirements in the United States, but a significant portion of our cash is held and generated outside of the United States, and if our cash available in the United States and the cash available under our revolving credit facility are insufficient to meet our operating expenses and debt repayment obligations in the United States, then we may be required to raise cash in ways that could negatively affect our financial condition, results of operations and the market price of our common stock.

We have significant operations outside the United States. As of September 29, 2018, approximately 75% of our cash, cash equivalents and short-term investments balance was held by subsidiaries outside the United States, with the remainder of the balance held by us or our subsidiaries in the United States. We believe that the combination of our U.S. cash, cash equivalents, future U.S. operating cash flows, cash available under our revolving credit facility and other cash that may be accessible to us on attractive terms are sufficient to meet our ongoing U.S. operating expenses and debt repayment obligations. Although the Tax Act may have reduced the tax impact of repatriation of foreign earnings, there are still administrative processes associated with repatriation of foreign earnings that could affect the timing of returning cash to the U.S. from non-U.S. jurisdictions. Accordingly, if our U.S. cash were insufficient to meet our future funding obligations in the United States, we could be required to seek funding sources on less attractive terms, which could negatively impact our results of operations, financial position and the market price of our common stock.

Litigation could adversely affect our financial condition or operations.

We currently are, and in the future may be, involved in various disputes and litigation that arise in the ordinary course of business. These include disputes and lawsuits related to intellectual property, including customer indemnification, mergers and acquisitions, licensing, contracts, distribution arrangements and employee relations matters. For information regarding the litigation matters in which we are currently engaged, please refer to the discussion under Item 1. “Legal Proceedings” and Note 13 in the notes to condensed consolidated financial statements. We cannot provide any assurances that the final outcome of these lawsuits or any other proceedings that may arise in the future

will not have a material adverse effect on our business, operating results, financial condition or cash flows. Litigation can be time consuming and expensive and could divert management's time and attention from our business, which could have a material adverse effect on our revenues and operating results.

Errors or defects in our products and services could expose us to liability and harm our business.

Our customers use our products and services in designing and developing products that involve a high degree of technological complexity, each of which has its own specifications. Because of the complexity of the systems and products with which we work, some of our products and designs can be adequately tested only when put to full use in the marketplace. As a result, our customers or their end users may discover errors or defects in our software or the systems we design, or the products or systems incorporating our design and intellectual property may not operate as expected. Errors or defects could result in:

- loss of customers;
- loss of market share;
- damage to our reputation;
- failure to attract new customers or achieve market acceptance;
- diversion of development resources to resolve the problem;
- loss of or delay in revenue or payments;
- increased service costs; and
- liability for damages.

Our operating results and revenue could be adversely affected by customer payment delays, customer bankruptcies and defaults or modifications of licenses.

Occasionally, our customers file for bankruptcy or request to modify license terms. If our customers experience adversity in their business, they may delay or default on their payment obligations to us, file for bankruptcy or modify or cancel plans to license our products. For instance, if our customers are not successful in generating sufficient cash or are precluded from securing financing, they may not be able to pay, or may delay payment of, accounts receivable that are owed to us, although these obligations are generally not cancelable. Our customers' inability to fulfill payment obligations, in turn, may adversely affect our revenue and cash flow. Additionally, our customers have, in the past, sought, and may, in the future, seek, to renegotiate pre-existing contractual commitments. Payment defaults by our customers or significant reductions in existing contractual commitments could have a material adverse effect on our financial condition and operating results.

The long sales cycle of our products and services may cause our operating results to fluctuate unexpectedly.

Generally, we have a long sales cycle that can extend up to six months or longer. The complexity and expense associated with our products and services generally require a lengthy customer education, evaluation and approval process. Consequently, we may incur substantial expenses and devote significant management effort and expense to develop potential relationships that do not result in agreements or revenue and may prevent us from pursuing other opportunities.

In addition, sales of our products and services have been and may in the future be delayed if customers delay approval or commencement of projects because of:

- the timing of customers' competitive evaluation processes; or
- customers' budgetary constraints and budget cycles.

Long sales cycles for hardware products subject us to a number of significant risks over which we have limited control, including insufficient, excess or obsolete inventory, variations in inventory valuation and fluctuations in quarterly operating results.

Our reported financial results may be adversely affected by changes in United States generally accepted accounting principles, and we may incur significant costs to adjust our accounting systems and processes to comply with significant changes.

United States generally accepted accounting principles ("U.S. GAAP") are subject to interpretation by the FASB, the SEC and various bodies formed to promulgate and interpret appropriate accounting principles. We are also subject to evolving rules and regulations of the countries in which we do business. Changes to accounting standards may result in different accounting principles under U.S. GAAP that could have a significant effect on our reported financial results for us in areas including, but not limited to, principles for recognizing revenue and accounting for leases. For information regarding new accounting standards, please refer to Part I, Item 2, "Management's Discussion and Analysis of Financial Condition and Results of Operations" under the heading "New Accounting Standards" and Note 1 in the notes to condensed consolidated financial statements.

In addition, we have in the past and may in the future need to significantly change our customer contracts, accounting systems and processes when we adopt future or proposed changes in accounting principles noted above. The cost and effect of these changes may negatively impact our results of operations during the periods of transition.

Our restructuring plans may not result in the benefits we have anticipated, possibly having a negative effect on our future operating results.

In recent fiscal years, we have initiated restructuring plans in an effort to reallocate or decrease costs by reducing our workforce and by consolidating facilities. We incur substantial costs to implement restructuring plans, and our restructuring activities may subject us to litigation risks and expenses. Our past restructuring plans do not provide any assurance that additional restructuring plans will not be required or implemented in the future. In addition, our restructuring plans may have other consequences, such as attrition beyond our planned reduction in workforce, a negative effect on employee morale and productivity or our ability to attract highly skilled employees. Our competitors may also use our restructuring plans to seek to gain a competitive advantage over us. As a result, our restructuring plans may affect our revenue and other operating results in the future.

We depend on sole suppliers for certain hardware components and contract manufacturers for production of our emulation and prototyping hardware products, making us vulnerable to supply disruption and price fluctuation.

We depend on sole suppliers for certain hardware components and contract manufacturers for production of our emulation and prototyping hardware products. Our reliance on sole suppliers and contract manufacturers could result in product delivery problems and delays and reduced control over product pricing and quality. Though we prefer to have multiple sources to procure certain key components, in some cases it is not practical or feasible to do so. We may suffer a disruption in the supply of certain hardware components if we are unable to purchase sufficient components on a timely basis or at all for any reason. Any supply or manufacturing disruption, including delay in delivery of components by our suppliers or products by our manufacturers, or the bankruptcy or shutdown of our suppliers or manufacturers, could delay our production process and prevent us from delivering completed hardware products to customers or from supplying new evaluation units to customers, which could have a negative impact on our revenue and operating results.

If we become subject to unfair hiring claims, we could be prevented from hiring needed employees, incur liability for damages and incur substantial costs in defending ourselves.

When companies in our industry lose employees to competitors, they frequently claim that these competitors have engaged in unfair hiring practices or that the employment of these persons would involve the disclosure or use of trade secrets. These claims could prevent us from hiring employees or cause us to incur liability for damages. We could also incur substantial costs in defending ourselves or our employees against these claims, regardless of their merits. Defending ourselves from these claims could also divert the attention of our management away from our operations.

Anti-takeover defenses in our certificate of incorporation and bylaws and certain provisions under Delaware law could prevent an acquisition of our company or limit the price that investors might be willing to pay for our common stock.

Our certificate of incorporation and bylaws and certain provisions of the Delaware General Corporation Law that apply to us could make it difficult for another company to acquire control of our company. For example:

- Our certificate of incorporation allows our Board of Directors to issue, at any time and without stockholder approval, preferred stock with such terms as it may determine. No shares of preferred stock are currently outstanding. However, the rights of holders of any of our preferred stock that may be issued in the future may be superior to the rights of holders of our common stock.
- Section 203 of the Delaware General Corporation Law generally prohibits a Delaware corporation from engaging in any business combination with a person owning 15% or more of its voting stock, or who is affiliated with the corporation and owned 15% or more of its voting stock at any time within three years prior to the proposed business combination, for a period of three years from the date the person became a 15% owner, unless specified conditions are met.

All or any one of these factors could limit the price that certain investors would be willing to pay for shares of our common stock and could allow our Board of Directors to resist, delay or prevent an acquisition of our company, even if a proposed transaction were favored by a majority of our independent stockholders.

The investment of our cash is subject to risks that may cause losses and affect the liquidity of these investments.

Our investments include various money market funds and may include other investments as well. Weakened financial markets have at times adversely impacted the general credit, liquidity, market prices and interest rates for these and other types of investments. Additionally, changes in monetary policy by the Federal Open Market Committee or other relevant regulators and concerns about the rising U.S. government debt level may cause a decrease in the purchasing

power of the U.S. dollar and adversely affect our investment portfolio. The financial market and monetary risks associated with our investment portfolio may have a material adverse effect on our financial condition, liquidity, results of operations or cash flows.

We are subject to evolving corporate governance and public disclosure regulations that impact compliance costs and risks of noncompliance.

We are subject to changing rules and regulations promulgated by a number of governmental and self-regulatory organizations, including the SEC, Nasdaq, and the FASB. These rules and regulations continue to evolve in scope and complexity, and many new requirements have been created in response to laws enacted by the U.S. and foreign governments, making compliance more difficult and uncertain. The increase in costs to comply with such evolving rules and regulations, as well as any risk of noncompliance, could adversely impact us.

Conflict minerals regulations may cause us to continue to incur additional expenses and may adversely impact our ability to conduct our business.

In August 2012, the SEC adopted new rules establishing disclosure and reporting requirements regarding the use of certain minerals referred to as “conflict minerals” in products. These rules require us to determine, disclose and report whether or not such minerals in our products originate from the Democratic Republic of the Congo or adjoining countries. We have incurred, and expect to continue to incur, costs to comply with these rules, including costs associated with conducting due diligence on our supply chain and fulfilling our reporting requirements, and we may incur costs related to changes to our products, processes or sources of supply. In addition, these rules could affect the availability of certain minerals used in the manufacture of our emulation and prototyping hardware products and IP boards (the “Covered Products”), and thus impact our ability to source, at competitive prices, certain materials that are used in the Covered Products. Finally, our customers may prefer to purchase products from vendors who claim that all minerals in their products are conflict-free, and our revenues may be harmed or we may face reputational challenges if we are unable to verify that our Covered Products are conflict-free.

Our business is subject to the risk of earthquakes and other natural disasters.

Our corporate headquarters, including certain of our research and development operations and certain of our distribution facilities, is located in the Silicon Valley area of Northern California, a region known to experience seismic activity. If significant seismic activity were to occur, our operations may be interrupted, which could adversely impact our business and results of operations.

Our other offices in the United States and in other countries around the world may be adversely impacted by natural disasters. If a natural disaster occurs at or near any of our offices, our operations may be interrupted, which could adversely impact our business and results of operations. If a natural disaster impacts a significant number of our customers, our business and results of operations could be adversely impacted.

Risks Related to Our Securities and Indebtedness

Our debt obligations expose us to risks that could adversely affect our business, operating results or financial condition, and could prevent us from fulfilling our obligations under such indebtedness.

As of September 29, 2018, we had total outstanding indebtedness of $345.1 million. We also had the ability to borrow an additional $350.0 million under our revolving credit facility, with the right to request increased capacity up to an additional $250.0 million upon the receipt of lender commitments, for total maximum borrowings of $600.0 million under our revolving credit facility. Subject to the limits contained in the credit agreement governing our revolving credit facility and the indenture that governs the 4.375% Senior Notes due 2024, we may be able to incur substantial additional debt from time to time to finance working capital, capital expenditures, investments or acquisitions, share repurchases or for other purposes. If we do so, the risks related to our high level of debt could intensify. Specifically, our high level of debt could have important consequences, including the following:

- making it more difficult for us to satisfy our obligations to service our debt as described above;
- limiting our ability to obtain additional financing to fund future working capital, capital expenditures, acquisitions or other general corporate requirements;
- requiring a substantial portion of our cash flows to be dedicated to debt service payments instead of other purposes, thereby reducing the amount of cash flows available for working capital, capital expenditures, acquisitions and other general corporate purposes;
- utilizing large portions of our U.S. cash to service our debt obligations because those payments are made in the United States, which may require us to repatriate cash from outside the United States;
- increasing our vulnerability to general adverse economic and industry conditions;
- exposing us to the risk of increased interest rates as certain of our borrowings, including borrowings under

our revolving credit facility, are at variable rates of interest;

- limiting our flexibility in planning for and reacting to changes in the industry in which we compete;
- placing us at a disadvantage compared to other, less leveraged competitors and competitors that have greater access to capital resources;

- limiting our interest deductions for US income tax purposes; and
- increasing our cost of borrowing.

At the option of the holders of our outstanding notes, we may, under certain circumstances, be required to repurchase such notes.

Under the terms of our 2024 Notes, we may be required to repurchase for cash such notes prior to their maturity in connection with the occurrence of certain significant corporate events. Specifically, we are required to offer to repurchase such notes upon a "change of control triggering event" (as defined in the indenture related to such notes), such as a change of control accompanied by certain downgrades in the credit ratings of such notes. The repayment obligations under such notes may have the effect of discouraging, delaying or preventing a takeover of our company. If we were required to pay the 2024 Notes prior to their scheduled maturity, it could have a significant negative impact on our cash and liquidity and could impact our ability to invest financial resources in other strategic initiatives.

The terms of the agreement governing our revolving credit facility and the indenture governing our 2024 Notes restrict our current and future operations, particularly our ability to respond to changes or to take certain actions.

The agreement governing our revolving credit facility contains a number of restrictive covenants that impose significant operating and financial restrictions on us and may limit our ability to engage in acts that may be in our long-term best interest, including restrictions on our ability to:

- pay dividends or make other distributions or repurchase or redeem capital stock;
- prepay, redeem or repurchase certain debt;
- issue certain preferred stock or similar equity securities;
- make certain investments;
- incur liens;
- incur additional indebtedness and guarantee indebtedness;
- enter into sale and leaseback transactions;
- enter into transactions with affiliates;
- alter the businesses we conduct;
- enter into agreements restricting our subsidiaries' ability to pay dividends; and
- consolidate, merge or sell all or substantially all of our assets.

In addition, the restrictive covenants in the agreement governing our revolving credit facility require us to maintain specified financial ratios and satisfy other financial condition tests. Our ability to meet those financial ratios and tests can be affected by events beyond our control, and we may be unable to meet them.

A breach of the covenants or restrictions under the agreement governing our revolving credit facility could result in an event of default under the applicable indebtedness. Such a default may allow the creditors to accelerate the related debt and may result in the acceleration of any other debt to which a cross-acceleration or cross-default provision applies. In addition, an event of default under the credit agreement governing our revolving credit facility would permit the lenders under our revolving credit facility to terminate all commitments to extend further credit under that facility. In the event our lenders or note holders accelerate the repayment of our borrowings, we and our subsidiaries may not have sufficient assets to repay that indebtedness. As a result of these restrictions, we may be:

- limited in how we conduct our business;
- unable to raise additional debt or equity financing to operate during general economic or business downturns; or
- unable to compete effectively or to take advantage of new business opportunities.

The indenture governing our 2024 Notes also contains certain restrictive covenants that impose operating and financial restrictions on us and may limit our ability to engage in acts that may be in our long-term best interest, including restrictions on our ability to incur liens and to enter into sale and leaseback transactions.

These restrictions may affect our ability to grow in accordance with our strategy. In addition, our financial results, our substantial indebtedness and our credit ratings could adversely affect the availability and terms of our financing.

We may not be able to generate sufficient cash to service all of our indebtedness and may be forced to take other actions to satisfy our obligations under our indebtedness, which may not be successful.

Our ability to make scheduled payments on or refinance our debt obligations depends on our financial condition and operating performance, which are subject to prevailing economic and competitive conditions and to certain financial, business, legislative, regulatory and other factors beyond our control. We may be unable to maintain a level of cash flows from operating activities sufficient to permit us to pay the principal, premium, if any, and interest on our indebtedness.

If our cash flows and capital resources are insufficient to fund our debt service obligations, we could face substantial liquidity problems and could be forced to reduce or delay investments and capital expenditures or to dispose of material assets or operations, seek additional debt or equity capital or restructure or refinance our indebtedness. We may not be able to effect any such alternative measures, if necessary, on commercially reasonable terms or at all and, even if successful, those alternative actions may not allow us to meet our scheduled debt service obligations. The agreement governing our revolving credit facility restricts our ability to dispose of assets and use the proceeds from those dispositions and may also restrict our ability to raise debt or equity capital to be used to repay other indebtedness when it becomes due. We may not be able to consummate those dispositions or to obtain proceeds in an amount sufficient to meet any debt service obligations then due.

In addition, we conduct a substantial portion of our operations through our subsidiaries, none of which are currently guarantors of our indebtedness. Accordingly, repayment of our indebtedness is dependent on the generation of cash flow by our subsidiaries and their ability to make such cash available to us, by dividend, debt repayment or otherwise. Unless they become guarantors of our indebtedness, our subsidiaries do not have any obligation to pay amounts due on our indebtedness or to make funds available for that purpose. Our subsidiaries may not be able to, or may not be permitted to, make distributions to enable us to make payments in respect of our indebtedness. Each subsidiary is a distinct legal entity, and, under certain circumstances, legal and contractual restrictions may limit our ability to obtain cash from our subsidiaries. While the agreement governing our revolving credit facility limits the ability of our subsidiaries to incur consensual restrictions on their ability to pay dividends or make other intercompany payments to us, these limitations are subject to qualifications and exceptions. In the event that we do not receive distributions from our subsidiaries, we may be unable to make required principal and interest payments on our indebtedness.

Our inability to generate sufficient cash flows to satisfy our debt obligations, or to refinance our indebtedness on commercially reasonable terms or at all, would materially and adversely affect our financial position and results of operations and our ability to satisfy our debt obligations.

If we cannot make scheduled payments on our debt, we will be in default and holders of our debt could declare all outstanding principal and interest to be due and payable, the lenders under our revolving credit facility could terminate their commitments to loan money and we could be forced into bankruptcy or liquidation. In addition, a material default on our indebtedness could suspend our eligibility to register securities using certain registration statement forms under SEC guidelines that permit incorporation by reference of substantial information regarding us, potentially hindering our ability to raise capital through the issuance of our securities and increasing our costs of registration.

Despite our current level of indebtedness, we and our subsidiaries may incur substantially more debt. This could further exacerbate the risks to our financial condition described above.

We and our subsidiaries may incur significant additional indebtedness in the future. Although the agreement governing our revolving credit facility contains restrictions on the incurrence of additional indebtedness, these restrictions are subject to a number of qualifications and exceptions, and the additional indebtedness incurred in compliance with these restrictions could be substantial. If we incur any additional indebtedness that ranks equally with the 2024 Notes, then subject to any collateral arrangements we may enter into, the holders of that debt will be entitled to share ratably in any proceeds distributed in connection with any insolvency, liquidation, reorganization, dissolution or other winding up of our company.

Our variable rate indebtedness subjects us to interest rate risk, which could cause our debt service obligations to increase significantly.

Borrowings under our revolving credit facility are at variable rates of interest and expose us to interest rate risk. If interest rates were to increase, our debt service obligations on our variable rate indebtedness would increase even though the amount borrowed remained the same, and our net income and cash flows, including cash available for

servicing our indebtedness, would correspondingly decrease. Assuming all loans were fully drawn and we were to fully exercise our right to increase borrowing capacity under our revolving credit facility, each quarter point change in interest rates would result in a $1.5 million change in annual interest expense on our indebtedness under our revolving credit facility. In the future, we may enter into interest rate swaps that involve the exchange of floating for fixed rate interest payments in order to reduce interest rate volatility. However, we may not maintain interest rate swaps with respect to all of our variable rate indebtedness, and any swaps we enter into may not fully mitigate our interest rate risk.

Various factors could increase our future borrowing costs or reduce our access to capital, including a lowering or withdrawal of the ratings assigned to our 2024 Notes by rating agencies.

We may in the future seek additional financing for a variety of reasons, and our future borrowing costs and access to capital could be affected by factors including the condition of the debt and equity markets, the condition of the economy generally, prevailing interest rates, our level of indebtedness and our business and financial condition. In addition, the 2024 Notes currently have an investment grade rating, and any rating assigned could be lowered or withdrawn entirely by a rating agency if, in that rating agency's judgment, future circumstances relating to the basis of the rating, such as adverse changes, so warrant. Consequently, real or anticipated changes in our credit ratings will generally affect the market value of the 2024 Notes. Any future lowering of the ratings of the 2024 Notes likely would make it more difficult or more expensive for us to obtain additional debt financing.

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

In January 2017, our Board of Directors authorized the repurchase of shares of our common stock with a value of up to $525.0 million in the aggregate. The actual timing and amount of repurchases are subject to business and market conditions, corporate and regulatory requirements, acquisition opportunities and other factors. As of September 29, 2018, $275.0 million remained available under this authorization.

The following table presents repurchases made under our current authorization and shares surrendered by employees to satisfy income tax withholding obligations during the three months ended September 29, 2018:

| Period | Total Number of Shares Purchased [1] | Average Price Paid Per Share [2] | Total Number of Shares Purchased as Part of Publicly Announced Plan or Program | Maximum Dollar Value of Shares that May Yet Be Purchased Under Publicly Announced Plan or Program [1] |
|---|---|---|---|---|
| | | | | (In millions) |
| July 1, 2018 – August 4, 2018 | 424,569 | $ 44.97 | 400,951 | $ 307 |
| August 5, 2018 – September 1, 2018 | 825,460 | $ 45.56 | 359,362 | $ 291 |
| September 2, 2018 – September 29, 2018 | 395,511 | $ 45.99 | 338,001 | $ 275 |
| Total | 1,645,540 | $ 45.51 | 1,098,314 | |

(1) Shares purchased that were not part of our publicly announced repurchase programs represent employee surrender of shares of restricted stock to satisfy employee income tax withholding obligations due upon vesting, and do not reduce the dollar value that may yet be purchased under our publicly announced repurchase programs.

(2) The weighted average price paid per share of common stock does not include the cost of commissions.

Item 3. Defaults Upon Senior Securities

None.

Item 4. Mine Safety Disclosures

Not applicable.

Item 5. Other Information

None.

Item 6. Exhibits

(a) The following exhibits are filed herewith:

| Exhibit Number | Exhibit Title | Incorporated by Reference | | | | Provided Herewith |
|---|---|---|---|---|---|---|
| | | Form | File No. | Exhibit No. | Filing Date | |
| 10.01 | The Registrant's Omnibus Equity Incentive Plan, as amended and restated. | S-8 | 333-226292 | 99.01 | 7/23/2018 | |
| 10.02 | The Registrant's Amended and Restated Employee Stock Purchase Plan. | S-8 | 333-226293 | 99.01 | 7/23/2018 | |
| 10.03 | The Registrant's nusemi inc 2015 Equity Incentive Plan. | S-8 | 333-226294 | 99.01 | 7/23/2018 | |
| 31.01 | Certification of the Registrant's Chief Executive Officer, Lip-Bu Tan, pursuant to Rule 13a-14 of the Securities Exchange Act of 1934. | | | | | X |
| 31.02 | Certification of the Registrant's Chief Financial Officer, John M. Wall, pursuant to Rule 13a-14 of the Securities Exchange Act of 1934. | | | | | X |
| 32.01 | Certification of the Registrant's Chief Executive Officer, Lip-Bu Tan, pursuant to 18 U.S.C. Section 1350, as adopted pursuant to Section 906 of the Sarbanes-Oxley Act of 2002. | | | | | X |
| 32.02 | Certification of the Registrant's Chief Financial Officer, John M. Wall, pursuant to 18 U.S.C. Section 1350, as adopted pursuant to Section 906 of the Sarbanes-Oxley Act of 2002. | | | | | X |
| 101.INS | XBRL Instance Document. | | | | | X |
| 101.SCH | XBRL Taxonomy Extension Schema Document. | | | | | X |
| 101.CAL | XBRL Taxonomy Extension Calculation Linkbase Document. | | | | | X |
| 101.DEF | XBRL Definition Linkbase Document. | | | | | X |
| 101.LAB | XBRL Taxonomy Extension Label Linkbase Document. | | | | | X |
| 101.PRE | XBRL Taxonomy Extension Presentation Linkbase Document. | | | | | X |

SIGNATURES

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

CADENCE DESIGN SYSTEMS, INC.
(Registrant)

DATE: October 22, 2018 By: /s/ Lip-Bu Tan
Lip-Bu Tan
Chief Executive Officer and Director

DATE: October 22, 2018 By: /s/ John M. Wall
John M. Wall
Senior Vice President and Chief Financial Officer