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

FORM 10-Q

(Mark One)

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

For the quarterly period ended June 27, 2020

OR

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

For the transition period from to
Commission file number 000-15867

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

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

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

Title of each class	Trading Symbol(s)	Name of each exchange on which registered
Common Stock, $0.01 par value per share	**CDNS**	**Nasdaq Global Select Market**

Indicate by check mark whether the registrant: (1) has filed all reports required to be filed by Section 13 or 15(d) of the Securities Exchange Act of 1934 during the preceding 12 months (or for such shorter period that the registrant was required to file such reports), and (2) has been subject to such filing requirements for the past 90 days. Yes ☒ No ☐

Indicate by check mark whether the registrant has submitted electronically every Interactive Data File required to be submitted pursuant to Rule 405 of Regulation S-T during the preceding 12 months (or for such shorter period that the registrant was required to submit such files). Yes ☒ 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	☒	Accelerated Filer	☐	Smaller Reporting Company	☐
Non-accelerated Filer	☐			Emerging Growth company	☐

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

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

On June 27, 2020, approximately 278,794,000 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	
	June 27, 2020	December 28, 2019
ASSETS		
Current assets:		
Cash and cash equivalents	$ 1,189,186	$ 705,210
Receivables, net	312,758	304,546
Inventories	43,924	55,802
Prepaid expenses and other	93,915	103,785
Total current assets	1,639,783	1,169,343
Property, plant and equipment, net	282,738	275,855
Goodwill	778,857	661,856
Acquired intangibles, net	242,543	172,375
Deferred taxes	704,882	732,367
Other assets	350,694	345,429
Total assets	$ 3,999,497	$ 3,357,225
LIABILITIES AND STOCKHOLDERS' EQUITY		
Current liabilities:		
Revolving credit facility	$ 350,000	$ —
Accounts payable and accrued liabilities	306,948	316,908
Current portion of deferred revenue	494,939	355,483
Total current liabilities	1,151,887	672,391
Long-term liabilities:		
Long-term portion of deferred revenue	87,437	73,400
Long-term debt	346,394	346,019
Other long-term liabilities	157,148	162,521
Total long-term liabilities	590,979	581,940
Commitments and contingencies (Note 12)		
Stockholders' equity:		
Common stock and capital in excess of par value	2,143,016	2,046,237
Treasury stock, at cost	(1,856,333)	(1,668,105)
Retained earnings	2,014,965	1,761,688
Accumulated other comprehensive loss	(45,017)	(36,926)
Total stockholders' equity	2,256,631	2,102,894
Total liabilities and stockholders' equity	$ 3,999,497	$ 3,357,225

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		Six Months Ended	
	June 27, 2020	June 29, 2019	June 27, 2020	June 29, 2019
Revenue:				
Product and maintenance	$ 601,356	$ 548,028	$ 1,183,055	$ 1,091,546
Services	37,062	32,391	73,320	65,615
Total revenue	638,418	580,419	1,256,375	1,157,161
Costs and expenses:				
Cost of product and maintenance	55,669	43,388	111,115	93,910
Cost of services	19,546	18,081	38,563	38,144
Marketing and sales	120,476	116,208	246,220	233,038
Research and development	250,821	231,814	492,489	460,024
General and administrative	35,641	34,407	69,233	64,509
Amortization of acquired intangibles	4,590	3,159	8,796	6,467
Restructuring and other credits	(275)	(313)	(1,342)	(1,002)
Total costs and expenses	486,468	446,744	965,074	895,090
Income from operations	151,950	133,675	291,301	262,071
Interest expense	(5,914)	(4,976)	(10,551)	(10,367)
Other income (expense), net	4,630	(110)	96	5,131
Income before provision for income taxes	150,666	128,589	280,846	256,835
Provision for income taxes	19,378	21,354	25,570	29,045
Net income	$ 131,288	$ 107,235	$ 255,276	$ 227,790
Net income per share – basic	$ 0.48	$ 0.39	$ 0.93	$ 0.83
Net income per share – diluted	$ 0.47	$ 0.38	$ 0.91	$ 0.81
Weighted average common shares outstanding – basic	273,432	273,159	273,488	273,155
Weighted average common shares outstanding – diluted	279,080	281,054	279,207	280,877

See notes to condensed consolidated financial statements.

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

	Three Months Ended		Six Months Ended	
	June 27, 2020	June 29, 2019	June 27, 2020	June 29, 2019
Net income	$ 131,288	$ 107,235	$ 255,276	$ 227,790
Other comprehensive income (loss), net of tax effects:				
Foreign currency translation adjustments	1,108	(1,815)	(8,510)	(592)
Changes in defined benefit plan liabilities	450	(107)	419	(2,625)
Total other comprehensive income (loss), net of tax effects	1,558	(1,922)	(8,091)	(3,217)
Comprehensive income	$ 132,846	$ 105,313	$ 247,185	$ 224,573

See notes to condensed consolidated financial statements.

CADENCE DESIGN SYSTEMS, INC.
CONDENSED CONSOLIDATED STATEMENTS OF STOCKHOLDERS' EQUITY
(In thousands)
(Unaudited)

	Three Months Ended June 27, 2020					
	Common Stock					
	Shares	Par Value and Capital in Excess of Par	Treasury Stock	Retained Earnings	Accumulated Other Comprehensive Loss	Total
Balance, March 28, 2020	279,187	$ 2,099,425	$ (1,778,533)	$ 1,883,677	$ (46,575)	$ 2,157,994
Net income	—	—	—	131,288	—	$ 131,288
Other comprehensive income, net of taxes	—	—	—	—	1,558	$ 1,558
Purchase of treasury stock	(920)	—	(75,014)	—	—	$ (75,014)
Issuance of common stock and reissuance of treasury stock under equity incentive plans, net of forfeitures	673	(119)	10,146	—	—	$ 10,027
Stock received for payment of employee taxes on vesting of restricted stock	(146)	(3,197)	(12,932)	—	—	$ (16,129)
Stock-based compensation expense	—	46,907	—	—	—	$ 46,907
Balance, June 27, 2020	278,794	$ 2,143,016	$ (1,856,333)	$ 2,014,965	$ (45,017)	$ 2,256,631

	Three Months Ended June 29, 2019					
	Common Stock					
	Shares	Par Value and Capital in Excess of Par	Treasury Stock	Retained Earnings	Accumulated Other Comprehensive Loss	Total
Balance, March 30, 2019	281,030	$ 1,944,895	$ (1,446,247)	$ 893,264	$ (26,075)	$ 1,365,837
Net income	—	—	—	107,235	—	$ 107,235
Other comprehensive loss, net of taxes	—	—	—	—	(1,922)	$ (1,922)
Purchase of treasury stock	(1,125)	—	(75,006)	—	—	$ (75,006)
Issuance of common stock and reissuance of treasury stock under equity incentive plans, net of forfeitures	410	(2,283)	5,303	—	—	$ 3,020
Stock received for payment of employee taxes on vesting of restricted stock	(162)	(2,405)	(10,471)	—	—	$ (12,876)
Stock-based compensation expense	—	44,257	—	—	—	$ 44,257
Balance, June 29, 2019	280,153	$ 1,984,464	$ (1,526,421)	$ 1,000,499	$ (27,997)	$ 1,430,545

	Six Months Ended June 27, 2020										
	Common Stock										
	Shares		Par Value and Capital in Excess of Par		Treasury Stock		Retained Earnings		Accumulated Other Comprehensive Loss		Total
Balance, December 28, 2019	279,855	$	2,046,237	$	(1,668,105)	$	1,761,688	$	(36,926)	$	2,102,894
Cumulative effect adjustment (Note 1)	—		—		—		(1,999)		—	$	(1,999)
Net income	—		—		—		255,276		—	$	255,276
Other comprehensive loss, net of taxes	—		—		—		—		(8,091)	$	(8,091)
Purchase of treasury stock	(2,408)		—		(175,036)		—		—	$	(175,036)
Issuance of common stock and reissuance of treasury stock under equity incentive plans, net of forfeitures	1,957		10,758		33,097		—		—	$	43,855
Stock received for payment of employee taxes on vesting of restricted stock	(610)		(7,368)		(46,289)		—		—	$	(53,657)
Stock-based compensation expense	—		93,389		—		—		—	$	93,389
Balance, June 27, 2020	278,794	$	2,143,016	$	(1,856,333)	$	2,014,965	$	(45,017)	$	2,256,631

	Six Months Ended June 29, 2019										
	Common Stock										
	Shares		Par Value and Capital in Excess of Par		Treasury Stock		Retained Earnings		Accumulated Other Comprehensive Loss		Total
Balance, December 29, 2018	280,015	$	1,936,124	$	(1,395,652)	$	772,709	$	(24,780)	$	1,288,401
Net income	—		—		—		227,790		—	$	227,790
Other comprehensive loss, net of taxes	—		—		—		—		(3,217)	$	(3,217)
Purchase of treasury stock	(2,654)		—		(156,120)		—		—	$	(156,120)
Issuance of common stock and reissuance of treasury stock under equity incentive plans, net of forfeitures	3,485		(32,029)		64,908		—		—	$	32,879
Stock received for payment of employee taxes on vesting of restricted stock	(693)		(6,141)		(39,557)		—		—	$	(45,698)
Stock-based compensation expense	—		86,510		—		—		—	$	86,510
Balance, June 29, 2019	280,153	$	1,984,464	$	(1,526,421)	$	1,000,499	$	(27,997)	$	1,430,545

See notes to condensed consolidated financial statements.

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

	Six Months Ended	
	June 27, 2020	June 29, 2019
Cash and cash equivalents at beginning of period	$ 705,210	$ 533,298
Cash flows from operating activities:		
Net income	255,276	227,790
Adjustments to reconcile net income to net cash provided by operating activities:		
Depreciation and amortization	69,902	61,197
Amortization of debt discount and fees	512	497
Stock-based compensation	93,389	86,510
Loss on investments, net	4,036	259
Deferred income taxes	(1,609)	(8,159)
Provisions for losses (recoveries) on receivables	922	(386)
ROU asset amortization and change in operating lease liabilities	1,502	2,504
Other non-cash items	296	160
Changes in operating assets and liabilities, net of effect of acquired businesses:		
Receivables	(2,497)	63,876
Inventories	11,020	(25,689)
Prepaid expenses and other	9,910	33,055
Other assets	(17,687)	2,547
Accounts payable and accrued liabilities	(11,141)	(34,670)
Deferred revenue	148,508	19,707
Other long-term liabilities	504	2,576
Net cash provided by operating activities	562,843	431,774
Cash flows from investing activities:		
Purchases of non-marketable investments	—	(33,717)
Proceeds from the sale of non-marketable investments	—	2,952
Purchases of property, plant and equipment	(43,535)	(30,562)
Cash paid in business combinations, net of cash acquired	(195,118)	(338)
Net cash used for investing activities	(238,653)	(61,665)
Cash flows from financing activities:		
Proceeds from revolving credit facility	350,000	150,000
Payment on revolving credit facility	—	(250,000)
Proceeds from issuance of common stock	43,667	32,855
Stock received for payment of employee taxes on vesting of restricted stock	(53,657)	(45,698)
Payments for repurchases of common stock	(175,036)	(156,120)
Net cash provided by (used for) financing activities	164,974	(268,963)
Effect of exchange rate changes on cash and cash equivalents	(5,188)	(1,029)
Increase in cash and cash equivalents	483,976	100,117
Cash and cash equivalents at end of period	$ 1,189,186	$ 633,415
Supplemental cash flow information:		
Cash paid for interest	$ 10,076	$ 10,052
Cash paid for taxes, net	20,897	17,708

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 28, 2019.

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.

Due to the COVID-19 pandemic, there has been uncertainty and disruption in the global economy and financial markets. Cadence is not aware of any specific event or circumstance that would require an update to its estimates or judgments or a revision of the carrying value of its assets or liabilities as of July 20, 2020, the date of issuance of this Quarterly Report on Form 10-Q. These estimates may change, as new events occur and additional information is obtained. Actual results could differ materially from these estimates under different assumptions or conditions.

Recently Adopted Accounting Standards

Credit Losses

In June 2016, the FASB issued ASU 2016-13, “Measurement of Credit Losses on Financial Instruments,” which required the establishment of an allowance for estimated credit losses on financial assets, including trade and other receivables, at each reporting date. Cadence adopted the new standard on December 29, 2019, the first day of fiscal 2020, and recorded a cumulative-effect adjustment to decrease retained earnings in the amount of $2.0 million for expected credit losses on financial assets at the adoption date. The adoption of this standard required Cadence to modify its existing process for establishing credit losses on trade receivables, including receivables derived from leasing arrangements for its emulation and prototyping hardware.

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. Cadence adopted the new standard on December 29, 2019, the first day of fiscal 2020. The new standard did not have an impact on Cadence’s condensed consolidated financial statements and related disclosures.

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. Cadence adopted the new standard on December 29, 2019, the first day of fiscal 2020. The new standard did not have a material impact on Cadence’s condensed consolidated financial statements and related disclosures.

Implementation Costs Incurred in a Cloud Computing Arrangement

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 aligns the treatment of implementation costs incurred by customers in cloud computing arrangements that are service contracts with the treatment of similar costs incurred to develop or obtain internal-use software. Under the new standard, implementation costs are deferred and presented in the same financial statement caption on the condensed consolidated balance sheet as a prepayment of related arrangement fees. The deferred costs are recognized over the term of the arrangement in the same financial statement caption in the condensed consolidated income statement as the related fees of the arrangement. Cadence adopted the new standard on December 29, 2019, the first day of fiscal 2020. The new standard did not have a material impact on Cadence’s condensed consolidated financial statements and related disclosures.

New Accounting Standards Not Yet Adopted

Accounting for Income Taxes

In December 2019, the FASB issued ASU 2019-12, “Simplifying the Accounting for Income Taxes,” which simplifies the accounting for income taxes, eliminates certain exceptions within ASC 740, Income Taxes, and clarifies certain aspects of the current guidance to promote consistency among reporting entities. The new standard is effective for fiscal years beginning after December 15, 2021. Most amendments within the standard are required to be applied on a prospective basis, while certain amendments must be applied on a retrospective or modified retrospective basis. Cadence is currently evaluating the impacts of the provisions of this standard on its financial condition, results of operations and cash flows.

NOTE 2. DEBT

Cadence’s outstanding debt as of June 27, 2020 and December 28, 2019 was as follows:

	June 27, 2020			December 28, 2019		
	(In thousands)					
	Principal	Unamortized Discount	Carrying Value	Principal	Unamortized Discount	Carrying Value
Revolving Credit Facility	$ 350,000	$ —	$ 350,000	$ —	$ —	$ —
2024 Notes	350,000	(3,606)	346,394	350,000	(3,981)	346,019
Total outstanding debt	$ 700,000	$ (3,606)	$ 696,394	$ 350,000	$ (3,981)	$ 346,019

Revolving Credit Facility

In January 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. 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 subject to 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 1.250% and 1.875% per annum or at the base rate plus a margin between 0.250% and 0.875% per annum. As of June 27, 2020, the interest rate on Cadence’s revolving credit facility was 1.53%. Interest is payable quarterly. 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 June 27, 2020, Cadence was in compliance with all financial covenants associated with the revolving credit facility.

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. The fair value of the 2024 Notes was approximately $391.5 million as of June 27, 2020.

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.

NOTE 3. RECEIVABLES, NET

Cadence's current and long-term receivables balances as of June 27, 2020 and December 28, 2019 were as follows:

	As of	
	June 27, 2020	December 28, 2019
	(In thousands)	
Accounts receivable	$ 205,415	$ 179,250
Unbilled accounts receivable	110,455	126,165
Long-term receivables	1,687	3,082
Total receivables	317,557	308,497
Less allowance for doubtful accounts	(3,112)	(869)
Total receivables, net	$ 314,445	$ 307,628

Cadence's customers are primarily concentrated within the semiconductor and electronics systems industries. As of June 27, 2020 and December 28, 2019, no customer accounted for 10% of Cadence's total receivables.

NOTE 4. REVENUE

Cadence combines its products into five categories 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 categories and services for the three and six months ended June 27, 2020 and June 29, 2019:

	Three Months Ended		Six Months Ended	
	June 27, 2020	June 29, 2019	June 27, 2020	June 29, 2019
Custom IC Design and Simulation	24 %	26 %	25 %	26 %
Digital IC Design and Signoff	28 %	30 %	28 %	30 %
Functional Verification, including Emulation and Prototyping Hardware*	24 %	20 %	23 %	22 %
IP	14 %	15 %	14 %	13 %
System Interconnect and Analysis	10 %	9 %	10 %	9 %
Total	100 %	100 %	100 %	100 %

* Includes immaterial amount of revenue accounted for under leasing arrangements.

Revenue by product category 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 categories based upon the expected usage of products.

Significant Judgments

Cadence's contracts with customers often include promises to transfer to a customer multiple software and/or IP licenses and services, including professional services, technical support services, and rights to unspecified updates. 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. 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.

The accounting for contracts with multiple performance obligations requires the contract's transaction price to be allocated to each distinct performance obligation based on relative standalone selling price ("SSP"). Judgment is required to determine the SSP for each distinct performance obligation because Cadence rarely licenses or sells products on a standalone basis. In instances where the SSP is not directly observable because Cadence does not sell the license, product or service separately, Cadence determines the SSP using information that maximizes the use of observable inputs and may include market conditions. 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 combined performance obligations that include software licenses, updates, technical support and maintenance that are separate performance obligations with the same term. 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 some 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 sheets. For certain software, hardware and IP agreements with payment plans, Cadence records an unbilled receivable related to revenue recognized upon transfer of control because it has an unconditional right to invoice and receive payment in the future related to those transferred products or services. Cadence records a contract asset when revenue is recognized prior to invoicing and Cadence does not have the unconditional right to invoice or retains performance risk with respect to that performance obligation. Cadence records 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.

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 the balance sheet date 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 June 27, 2020 and December 28, 2019 were as follows:

	As of	
	June 27, 2020	December 28, 2019
	(In thousands)	
Contract assets	$ 10,240	$ 10,209
Deferred revenue	582,376	428,883

Cadence recognized revenue of $88.1 million and $241.6 million during the three and six months ended June 27, 2020, respectively, and $88.1 million and $246.0 million during the three and six months ended June 29, 2019, respectively, that was included in the deferred revenue balance at the beginning of each fiscal year. All other activity in deferred revenue is due to the timing of invoices in relation to the timing of revenue as described above.

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.

Some customers enter into a non-cancellable IP Access Agreement ("IPAA") whereby the customer commits to a fixed dollar amount over a specified period of time that can be used to purchase from a list of IP products or services. These arrangements do not meet the definition of a revenue contract until the customer executes a separate selection form to identify the products and services that they are purchasing. Each separate selection form under the IPAA is treated as an individual contract and accounted for based on the respective performance obligations.

Remaining Performance Obligations

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. Cadence has elected to exclude the potential future royalty receipts from the remaining performance obligations. Contracted but unsatisfied performance obligations were approximately $3.7 billion as of June 27, 2020, which includes $176.5 million of non-cancellable IPAA commitments from customers where actual product selection and quantities of specific products or services are to be determined by customers at a later date. As of June 27, 2020, Cadence expected to recognize approximately 55% of the revenue included in the contracted but unsatisfied performance obligations, excluding non-cancellable IPAA commitments, over the next 12 months and the remainder thereafter.

Cadence recognized revenue of $11.3 million and $20.8 million during the three and six months ended June 27, 2020, and $8.2 million and $16.7 million during the three and six months ended June 29, 2019, 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.

NOTE 5. ACQUISITIONS

On January 15, 2020, Cadence acquired all of the outstanding equity of AWR Corporation ("AWR"). On February 6, 2020, Cadence also acquired all of the outstanding equity of Integrand Software, Inc. ("Integrand"). These acquisitions enhance Cadence's technology portfolio to address growing RF/microwave design activity, driven by expanding use of 5G communications. The aggregate cash consideration for these acquisitions was approximately $195 million, after taking into account cash acquired of $1.5 million. The total purchase consideration was allocated to the assets acquired and liabilities assumed based on their respective estimated fair values on the acquisition dates. With its acquisition of AWR and Integrand, Cadence recorded $101.3 million of definite-lived intangible assets, $119.4 million of goodwill and $25.5 million of net liabilities, consisting primarily of deferred tax liabilities, assumed deferred revenue and trade accounts receivable. The weighted-average amortization period for definite-lived intangible assets acquired is approximately 8.9 years. The recorded goodwill is primarily related to the acquired assembled workforce and expected synergies from combining operations of the acquired companies with Cadence. None of the goodwill related to the acquisitions of AWR and Integrand will be deductible for tax purposes. Cadence will also make payments to certain employees, subject to continued employment and other performance-based conditions, through the first quarter of fiscal 2023.

During the three and six months ended June 27, 2020, and the three and six months ended June 29, 2019, transaction costs associated with acquisitions were not material and were expensed as incurred.

NOTE 6. GOODWILL AND ACQUIRED INTANGIBLES

Goodwill

The changes in the carrying amount of goodwill during the six months ended June 27, 2020 were as follows:

	Gross Carrying Amount	
	(In thousands)	
Balance as of December 28, 2019	$	661,856
Goodwill resulting from acquisitions		119,357
Effect of foreign currency translation		(2,356)
Balance as of June 27, 2020	$	778,857

Acquired Intangibles, Net

Acquired intangibles as of June 27, 2020 were as follows, excluding intangibles that were fully amortized as of December 28, 2019:

	Gross Carrying Amount		Accumulated Amortization		Acquired Intangibles, Net	
			(In thousands)			
Existing technology	$	369,738	$	(207,374)	$	162,364
Agreements and relationships		179,969		(104,159)		75,810
Tradenames, trademarks and patents		10,590		(6,221)		4,369
Total acquired intangibles	$	560,297	$	(317,754)	$	242,543

During the six months ended June 27, 2020, Cadence completed the projects previously included in in-process technology and transferred $19.5 million to existing technology.

Acquired intangibles as of December 28, 2019 were as follows, excluding intangibles that were fully amortized as of December 29, 2018:

	Gross Carrying Amount	Accumulated Amortization	Acquired Intangibles, Net
	(In thousands)		
Existing technology	$ 363,142	$ (245,902)	$ 117,240
Agreements and relationships	146,395	(112,565)	33,830
Tradenames, trademarks and patents	7,600	(5,795)	1,805
Total acquired intangibles with definite lives	517,137	(364,262)	152,875
In-process technology	19,500	—	19,500
Total acquired intangibles	$ 536,637	$ (364,262)	$ 172,375

Amortization expense from existing technology and maintenance agreements is included in cost of product and maintenance. Amortization of acquired intangibles for the three and six months ended June 27, 2020 and June 29, 2019 was as follows:

	Three Months Ended		Six Months Ended	
	June 27, 2020	June 29, 2019	June 27, 2020	June 29, 2019
	(In thousands)			
Cost of product and maintenance	$ 11,484	$ 11,299	$ 22,344	$ 21,153
Amortization of acquired intangibles	4,590	3,159	8,796	6,467
Total amortization of acquired intangibles	$ 16,074	$ 14,458	$ 31,140	$ 27,620

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

	(In thousands)
2020 - remaining period	$ 32,963
2021	61,487
2022	43,181
2023	27,651
2024	26,188
Thereafter	51,073
Total estimated amortization expense	$ 242,543

NOTE 7. STOCK-BASED COMPENSATION

Stock-based compensation expense is reflected in Cadence's condensed consolidated income statements for the three and six months ended June 27, 2020 and June 29, 2019 as follows:

	Three Months Ended		Six Months Ended	
	June 27, 2020	June 29, 2019	June 27, 2020	June 29, 2019
	(In thousands)			
Cost of product and maintenance	$ 683	$ 652	$ 1,374	$ 1,333
Cost of services	869	829	1,749	1,695
Marketing and sales	10,116	9,509	20,127	18,615
Research and development	29,690	27,659	59,036	54,557
General and administrative	5,549	5,608	11,103	10,310
Total stock-based compensation expense	$ 46,907	$ 44,257	$ 93,389	$ 86,510

Cadence had total unrecognized compensation expense related to stock option and restricted stock grants of $255.7 million as of June 27, 2020, which will be recognized over the remaining vesting period. The remaining weighted-average vesting period of unvested awards is 2.0 years.

NOTE 8. STOCK REPURCHASE PROGRAM

In February 2019, Cadence's Board of Directors authorized the repurchase of $500 million of Cadence common stock. The actual timing and amount of repurchases are subject to business and market conditions, corporate and regulatory requirements, stock price, acquisition opportunities and other factors. As of June 27, 2020, approximately $194 million remained available to repurchase shares of Cadence common stock.

The shares repurchased under Cadence's repurchase authorizations and the total cost of repurchased shares, including commissions, during the three and six months ended June 27, 2020 and June 29, 2019 were as follows:

	Three Months Ended		Six Months Ended	
	June 27, 2020	June 29, 2019	June 27, 2020	June 29, 2019
	(In thousands)			
Shares repurchased	920	1,125	2,408	2,654
Total cost of repurchased shares	$ 75,014	$ 75,006	$ 175,036	$ 156,120

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 and charges related to abandoned assets. During the six months ended June 27, 2020, Cadence revised certain estimates made in connection with its prior restructuring plans and recorded credits of approximately $1.3 million.

The following table presents activity relating to Cadence's restructuring plans during the six months ended June 27, 2020:

	Severance and Benefits	Excess Facilities	Total
	(In thousands)		
Balance, December 28, 2019	$ 9,229	$ 409	$ 9,638
Restructuring and other credits	(1,280)	(62)	(1,342)
Cash payments	(6,882)	(113)	(6,995)
Effect of foreign currency translation	(80)	(3)	(83)
Balance, June 27, 2020	$ 987	$ 231	$ 1,218

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

	As of June 27, 2020
	(In thousands)
Accounts payable and accrued liabilities	$ 1,159
Other long-term liabilities	59
Total restructuring liabilities	$ 1,218

All liabilities for severance and related benefits under Cadence's restructuring plans are included in accounts payable and accrued liabilities on Cadence's condensed consolidated balance sheet as of June 27, 2020. Restructuring liabilities included in other long-term liabilities represent liabilities from vacated facilities, and Cadence expects to make cash payments to settle these liabilities through fiscal 2022.

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 six months ended June 27, 2020 and June 29, 2019 are as follows:

	Three Months Ended		Six Months Ended	
	June 27, 2020	June 29, 2019	June 27, 2020	June 29, 2019
	(In thousands, except per share amounts)			
Net income	$ 131,288	$ 107,235	$ 255,276	$ 227,790
Weighted average common shares used to calculate basic net income per share	273,432	273,159	273,488	273,155
Stock-based awards	5,648	7,895	5,719	7,722
Weighted average common shares used to calculate diluted net income per share	279,080	281,054	279,207	280,877
Net income per share - basic	$ 0.48	$ 0.39	$ 0.93	$ 0.83
Net income per share - diluted	$ 0.47	$ 0.38	$ 0.91	$ 0.81

The following table presents shares of Cadence's common stock outstanding for the three and six months ended June 27, 2020 and June 29, 2019 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		Six Months Ended	
	June 27, 2020	June 29, 2019	June 27, 2020	June 29, 2019
	(In thousands)			
Long-term performance-based stock awards	40	1,386	713	807
Options to purchase shares of common stock	506	596	376	419
Non-vested shares of restricted stock	4	29	102	76
Total potential common shares excluded	550	2,011	1,191	1,302

NOTE 11. 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 six months ended June 27, 2020.

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 June 27, 2020 and December 28, 2019:

	Fair Value Measurements as of June 27, 2020			
	Total	Level 1	Level 2	Level 3
	(In thousands)			
Assets				
Cash equivalents:				
Money market funds	$ 709,561	$ 709,561	$ —	$ —
Marketable equity securities	4,164	4,164	—	—
Securities held in Non-Qualified Deferred Compensation (“NQDC”) trust	32,312	32,312	—	—
Foreign currency exchange contracts	4,694	—	4,694	—
Total Assets	$ 750,731	$ 746,037	$ 4,694	$ —

As of June 27, 2020, Cadence did not have any financial liabilities requiring a recurring fair value measurement.

	Fair Value Measurements as of December 28, 2019			
	Total	Level 1	Level 2	Level 3
	(In thousands)			
Assets				
Cash equivalents:				
Money market funds	$ 445,942	$ 445,942	$ —	$ —
Marketable equity securities	4,600	4,600	—	—
Securities held in NQDC trust	34,096	34,096	—	—
Foreign currency exchange contracts	3,557	—	3,557	—
Total Assets	$ 488,195	$ 484,638	$ 3,557	$ —

As of December 28, 2019, Cadence did not have any financial liabilities requiring a recurring fair value measurement.

Level 1 Measurements

Cadence’s cash equivalents held in money market funds, marketable equity securities and the trading securities held in Cadence’s NQDC trust are measured at fair value using level 1 inputs.

Level 2 Measurements

The valuation techniques used to determine the fair value of Cadence’s foreign currency forward exchange contracts and 2024 Notes are classified within Level 2 of the fair value hierarchy. For additional information relating to Cadence’s debt arrangements, see Note 2 in the notes to condensed consolidated financial statements.

Level 3 Measurements

Cadence acquired intangible assets of $101.3 million during the first quarter of fiscal 2020 with its acquisition of AWR and Integrand. The fair value of the definite-lived intangible assets acquired was determined using variations of the income approach and level 3 inputs. Key assumptions include the level and timing of expected future cash flows, the level of customer demand and industry outlook for Electronic Design Automation (“EDA”) solutions, discount rates and the economy in general. The fair value of these intangible assets was affected most significantly by the projected income associated with the identified intangible assets and the anticipated timing of the projected income, but was also impacted by the discount rate used to adjust the outcomes to their present values. Cadence used discount rates ranging from 9.0% to 12.5% to value the definite-lived intangible assets acquired during the first quarter of fiscal 2020. The weighted-average discount rate used to value intangible assets was 10.3%.

Cadence also assumed obligations related to deferred revenue of $6.9 million during the first quarter of fiscal 2020 with its acquisition of AWR. The fair value of these obligations was estimated using the cost build-up approach. The cost build-up approach determines fair value using estimates of the costs required to fulfill the contracted obligations plus an assumed profit. Cadence assumed a 25% profit margin when valuing these liabilities, which were then adjusted to present value using a discount rate of 4.75%. The resulting fair value using this approach approximates the amount that AWR would be required to pay a third party to assume the obligation. The fair value of the deferred revenue obligations assumed was affected most significantly by the estimated costs required to support the obligation, but was also affected by the assumed profit and the discount rate.

Cadence believes that its estimates and assumptions related to the fair value of its acquired intangible assets and deferred revenue obligations are reasonable, but significant judgment is involved.

NOTE 12. COMMITMENTS AND 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 best 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 sales of its hardware products, generally for a 90-day period. Cadence did not incur any significant costs related to warranty obligations during the three and six months ended June 27, 2020 and June 29, 2019.

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 six months ended June 27, 2020 and June 29, 2019.

NOTE 13. 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.

Accumulated other comprehensive loss was comprised of the following as of June 27, 2020 and December 28, 2019:

	As of	
	June 27, 2020	December 28, 2019
	(In thousands)	
Foreign currency translation loss	$ (38,013)	$ (29,503)
Changes in defined benefit plan liabilities	(7,004)	(7,423)
Total accumulated other comprehensive loss	$ (45,017)	$ (36,926)

For the three and six months ended June 27, 2020 and June 29, 2019 there were no significant amounts reclassified from accumulated other comprehensive loss to net income.

NOTE 14. 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 six months ended June 27, 2020 and June 29, 2019:

	Three Months Ended		Six Months Ended	
	June 27, 2020	June 29, 2019	June 27, 2020	June 29, 2019
	(In thousands)			
Americas:				
United States	$ 267,000	$ 234,490	$ 525,489	$ 477,738
Other Americas	10,120	12,025	18,957	20,431
Total Americas	277,120	246,515	544,446	498,169
Asia:				
China	77,232	68,379	161,031	127,356
Other Asia	121,276	109,425	230,875	220,772
Total Asia	198,508	177,804	391,906	348,128
Europe, Middle East and Africa	116,540	113,829	232,259	217,291
Japan	46,250	42,271	87,764	93,573
Total	$ 638,418	$ 580,419	$ 1,256,375	$ 1,157,161

The following table presents a summary of long-lived assets by geography as of June 27, 2020 and December 28, 2019:

	As of	
	June 27, 2020	December 28, 2019
	(In thousands)	
Americas:		
United States	$ 230,688	$ 220,023
Other Americas	686	728
Total Americas	231,374	220,751
Asia:		
China	14,274	15,729
Other Asia	26,030	27,890
Total Asia	40,304	43,619
Europe, Middle East and Africa	10,224	10,474
Japan	836	1,011
Total	$ 282,738	$ 275,855

NOTE 15. SUBSEQUENT EVENT

On June 29, 2020, the State of California enacted legislation that, for a three-year period beginning in fiscal 2020, will limit Cadence's utilization of California research and development tax credits and will suspend the use of California net operating loss deductions. Cadence will account for the effects of the California tax law change during the third quarter of fiscal 2020, the period of enactment. Cadence is continuing to analyze the California legislation, but currently expects to recognize a discrete tax benefit of approximately $19 million during the third quarter of fiscal 2020 due to the release of valuation allowance on its California research and development tax credit deferred tax assets as a result of certain tax elections in its 2019 California tax filings. Cadence expects this tax benefit to be partially offset by an increase in its fiscal 2020 California taxes of approximately $7 million.

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 28, 2019. 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, statements regarding the anticipated impact on our business of the COVID-19 pandemic and related public health measures, and other statements using words such as "anticipates," "believes," "could," "estimates," "expects," "forecasts," "intends," "may," "plans," "projects," "should," "targets," "will" and "would," and words of 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.

Business Overview

We enable our customers to develop electronic products. Our products and services are designed to give our customers a competitive edge in their development of electronic devices and systems, systems-on-chip ("SoCs"), integrated circuits ("ICs") 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 Intelligent System Design™, is to provide the technologies necessary for our electronic system and semiconductor customers to develop electronic products across a variety of vertical markets including consumer, hyperscale computing, mobile, communications, automotive, aerospace and defense, industrial and healthcare. Our products and services enable our customers to develop complex and innovative electronic products, so demand for our technology 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.

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

- Custom IC Design and Simulation;
- Digital IC Design and Signoff;
- Functional Verification;
- IP; and
- System Interconnect and Analysis.

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 28, 2019.

During the first quarter of fiscal 2020, we completed acquisitions of AWR and Integrand. The aggregate cash consideration for these acquisitions of approximately $195 million was allocated to the assets acquired and liabilities assumed based on their respective estimated fair values on the acquisition dates. These acquisitions enhance our technology portfolio to address growing RF/microwave design activity, driven by expanding use of 5G communications. We expect these acquisitions will increase expenses, including amortization of acquired intangible assets, more than revenue during fiscal 2020.

Management uses certain 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."

COVID-19 Impact

In March 2020, the World Health Organization declared the outbreak of COVID-19 a pandemic, which continues to spread throughout the U.S. and the world and has resulted in authorities implementing numerous measures to contain the virus, including travel bans and restrictions, quarantines, shelter-in-place orders, and business limitations and shutdowns. We are unable to accurately predict the full impact that COVID-19 will have on our results of operations, financial condition, liquidity and cash flows due to numerous uncertainties, including the duration and severity of the pandemic and containment measures. Our compliance with these containment measures has impacted our day-to-day operations and could disrupt our business and operations, as well as that of our key customers, suppliers (including contract manufacturers) and other counterparties, for an indefinite period of time. To support the health and well-being of our employees, customers, partners and communities, a vast majority of our employees are still working remotely as of July 20, 2020. In addition, many of our customers are working remotely, which may delay the timing of some orders and deliveries due to their and our compliance with frequently changing government-mandated or recommended shelter-in-place orders in jurisdictions in which we, our customers and our suppliers operate.

During the second quarter of 2020, we were unable to install some of our hardware products due to our inability to access certain customer sites. However, we were able to install hardware products for our other customers in an amount that was greater than we originally anticipated at the beginning of the second quarter of 2020. We were also able to regain access to our IP laboratories to complete and deliver IP products. Our customers are continuing to place orders for our hardware and IP offerings, and we are delivering these products earlier than we originally anticipated.

We have also received numerous COVID-19 pandemic-related requests from our customers to delay their payments to us, while we continue to provide services to these customers. Because of the significant uncertainty regarding the amount that we can collect from customers that are requesting delays to their payment commitments, we have reduced the revenue for the applicable contracts to an amount that we now expect to collect from these customers.

While the disruptions caused by COVID-19 did not have a material adverse impact on our financial results for the first half of fiscal 2020, the disruptions to our operations may result in inefficiencies, delays and additional costs in our product development, sales, marketing, and customer service efforts that we cannot fully mitigate through remote or other alternative work arrangements. For example, we may continue to be unable to install our hardware at certain customer sites, and access by our employees to our laboratory facilities that are necessary for the development of certain IP products has been and may continue to be disrupted due to the shelter-in-place orders. Also, a decrease in orders in a given period could negatively affect our revenues in future periods, particularly if experienced on a sustained basis, because a substantial proportion of our software licenses yield revenue recognized over time. We may also be unable to collect receivables from those customers significantly impacted by COVID-19. We will continue to evaluate the nature and extent of the impact of COVID-19 to our business.

In addition, during the first quarter of fiscal 2020, we borrowed $350.0 million under our revolving credit facility as a precautionary measure to provide additional liquidity in light of global economic uncertainty and financial market conditions caused by the COVID-19 pandemic. We expect that current cash and cash equivalent balances and cash flows that are generated from operations will be sufficient to meet our domestic and international working capital needs and other capital and liquidity requirements for at least the next 12 months.

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. At least quarterly, we evaluate our assumptions, judgments and estimates, and make changes as deemed necessary.

Due to the COVID-19 pandemic, there has been uncertainty and disruption in the global economy and financial markets. We are not aware of any specific event or circumstance that would require updates to our estimates or judgments or require us to revise the carrying value of our assets or liabilities as of July 20, 2020, the date of issuance of this Quarterly Report on Form 10-Q. These estimates may change as new events occur and additional information is obtained. Actual results could differ materially from these estimates under different assumptions or conditions.

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 28, 2019.

New Accounting Standards Not Yet Adopted

For additional information about the adoption of new accounting standards, see Note 1 in the notes to condensed consolidated financial statements.

Results of Operations

Financial results for the three and six months ended June 27, 2020, as compared to the three and six months ended June 29, 2019, reflect the following:

- increased product and maintenance revenue, resulting from growth in IP, hardware and software;
- increased selling costs, including additional investment in technical sales support in response to our customers' increasing technological requirements; and
- continued investment in research and development activities focused on creating and enhancing our products.

Our fiscal years are 52- or 53-week periods ending on the Saturday closest to December 31. Fiscal 2019 was a 52-week fiscal year. Fiscal 2020 will be a 53-week fiscal year, with an additional week in our fourth quarter of 2020.

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.

In any fiscal year, we expect that between 85% and 90% of our annual revenue will be characterized as recurring revenue. Revenue characterized as recurring includes revenue recognized over time from our software arrangements, services, royalties, maintenance on IP licenses and hardware, and operating leases of hardware and revenue recognized at varying points in time over the term of our IP Access Agreements.

The remainder of our revenue is characterized as up-front revenue. Up-front revenue is primarily generated by our sales of emulation and prototyping hardware and individual IP licenses. The percentage of our recurring and up-front revenue may be impacted by delivery of hardware and IP products to our customers in any single fiscal period.

Revenue by Period

The following table shows our revenue for the three months ended June 27, 2020 and June 29, 2019 and the change in revenue between periods:

	Three Months Ended		Change	
	June 27, 2020	June 29, 2019	Amount	Percentage
	(In millions, except percentages)			
Product and maintenance	$ 601.3	$ 548.0	$ 53.3	10 %
Services	37.1	32.4	4.7	14 %
	$ 638.4	$ 580.4	$ 58.0	10 %

The following table shows our revenue for the six months ended June 27, 2020 and June 29, 2019 and the change in revenue between periods:

	Six Months Ended		Change	
	June 27, 2020	June 29, 2019	Amount	Percentage
	(In millions, except percentages)			
Product and maintenance	$ 1,183.1	$ 1,091.6	$ 91.5	8 %
Services	73.3	65.6	7.7	12 %
Total revenue	$ 1,256.4	$ 1,157.2	$ 99.2	9 %

Product and maintenance revenue increased during the three and six months ended June 27, 2020, as compared to the three and six months ended June 29, 2019, primarily because of increased investments by our customers in new, complex designs for their products that include the design of electronic systems for AI, 5G networks, aerospace and defense, automotive, cloud data center and other market segments. 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 six months ended June 27, 2020 or June 29, 2019.

Revenue by Product Category

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				
	June 27, 2020	March 28, 2020	December 28, 2019	September 28, 2019	June 29, 2019
Custom IC Design and Simulation	24 %	25 %	25 %	26 %	26 %
Digital IC Design and Signoff	28 %	29 %	29 %	30 %	31 %
Functional Verification, including Emulation and Prototyping Hardware	24 %	23 %	24 %	20 %	22 %
IP	14 %	14 %	13 %	15 %	11 %
System Interconnect and Analysis	10 %	9 %	9 %	9 %	10 %
Total	100 %	100 %	100 %	100 %	100 %

Revenue by product category fluctuates from period to period based on demand for our products and services, our available resources and our ability 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 categories 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	
	June 27, 2020	June 29, 2019	Amount	Percentage
	(In millions, except percentages)			
United States	$ 267.0	$ 234.5	$ 32.5	14 %
Other Americas	10.1	12.0	(1.9)	(16) %
China	77.2	68.4	8.8	13 %
Other Asia	121.3	109.4	11.9	11 %
Europe, Middle East and Africa	116.5	113.8	2.7	2 %
Japan	46.3	42.3	4.0	9 %
Total revenue	$ 638.4	$ 580.4	$ 58.0	10 %

	Six Months Ended		Change	
	June 27, 2020	June 29, 2019	Amount	Percentage
	(In millions, except percentages)			
United States	$ 525.5	$ 477.7	$ 47.8	10 %
Other Americas	19.0	20.4	(1.4)	(7) %
China	161.0	127.4	33.6	26 %
Other Asia	230.9	220.8	10.1	5 %
Europe, Middle East and Africa	232.2	217.3	14.9	7 %
Japan	87.8	93.6	(5.8)	(6) %
Total revenue	$ 1,256.4	$ 1,157.2	$ 99.2	9 %

Revenue in the United States increased during the three and six months ended June 27, 2020, as compared to the three and six months ended June 29, 2019, primarily due to an increase in revenue for software and IP offerings.

Revenue in China increased during the three and six months ended June 27, 2020, as compared to the three and six months ended June 29, 2019, primarily due to an increase in revenue for IP and hardware offerings. Beginning in the second quarter of fiscal 2019, we were not able to deliver maintenance or support for certain customers in China due to the U.S. Department of Commerce's designation of certain customers to the "Entity List." We expect these restrictions will continue to impact revenue from certain customers in China during fiscal 2020.

For the primary factors contributing to the change in revenue for other geographies during the three and six months ended June 27, 2020, as compared to the three and six months ended June 29, 2019, see the general description under "Revenue by Period" and "Revenue by Product Category" above.

Revenue by Geography as a Percent of Total Revenue

	Three Months Ended		Six Months Ended	
	June 27, 2020	June 29, 2019	June 27, 2020	June 29, 2019
United States	42 %	40 %	42 %	41 %
Other Americas	2 %	2 %	2 %	2 %
China	12 %	12 %	13 %	11 %
Other Asia	19 %	19 %	18 %	19 %
Europe, Middle East and Africa	18 %	20 %	18 %	19 %
Japan	7 %	7 %	7 %	8 %
Total	100 %	100 %	100 %	100 %

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	
	June 27, 2020	June 29, 2019	Amount	Percentage
	(In millions, except percentages)			
Cost of product and maintenance	$ 55.7	$ 43.4	$ 12.3	28 %
Cost of services	19.5	18.1	1.4	8 %

	Six Months Ended		Change	
	June 27, 2020	June 29, 2019	Amount	Percentage
	(In millions, except percentages)			
Cost of product and maintenance	$ 111.1	$ 93.9	$ 17.2	18 %
Cost of services	38.6	38.1	0.5	1 %

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 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	
	June 27, 2020	June 29, 2019	Amount	Percentage
	(In millions, except percentages)			
Product and maintenance-related costs	$ 44.2	$ 32.1	$ 12.1	38 %
Amortization of acquired intangibles	11.5	11.3	0.2	2 %
Total cost of product and maintenance	$ 55.7	$ 43.4	$ 12.3	28 %

	Six Months Ended		Change	
	June 27, 2020	June 29, 2019	Amount	Percentage
	(In millions, except percentages)			
Product and maintenance-related costs	$ 88.8	$ 72.7	$ 16.1	22 %
Amortization of acquired intangibles	22.3	21.2	1.1	5 %
Total cost of product and maintenance	$ 111.1	$ 93.9	$ 17.2	18 %

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' IP or technology, and sell our products that include such acquired or licensed IP or technology.

The changes in product and maintenance-related costs for the three and six months ended June 27, 2020, as compared to the three and six months ended June 29, 2019, were due to the following:

	Change	
	Three Months Ended	Six Months Ended
	(In millions)	
Emulation and prototyping hardware costs	$ 12.0	$ 15.6
Other items	0.1	$ 0.5
Total change in product and maintenance-related costs	$ 12.1	$ 16.1

Costs of emulation and prototyping increased during the three and six months ended June 27, 2020, as compared to the three and six months ended June 29, 2019, primarily due to our ability to deliver hardware products to certain customers and increased reserves for inventory.

Cost of Services

Cost of services primarily includes employee salary, benefits and other employee-related costs to perform work on revenue-generating projects and costs to maintain the infrastructure necessary to manage a services organization. Cost of services may fluctuate from period to period based on our utilization of design services engineers on revenue-generating projects rather than 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, foreign exchange rate movements, stock-based compensation, restructuring activities and the impact of our variable compensation programs that are driven by operating results.

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 six months ended June 27, 2020 and June 29, 2019 were as follows:

	Three Months Ended		Change	
	June 27, 2020	June 29, 2019	Amount	Percentage
	(In millions, except percentages)			
Marketing and sales	$ 120.5	$ 116.2	$ 4.3	4 %
Research and development	250.8	231.8	19.0	8 %
General and administrative	35.6	34.4	1.2	3 %
Total operating expenses	$ 406.9	$ 382.4	$ 24.5	6 %

	Six Months Ended		Change	
	June 27, 2020	June 29, 2019	Amount	Percentage
	(In millions, except percentages)			
Marketing and sales	$ 246.2	$ 233.1	$ 13.1	6 %
Research and development	492.5	460.0	32.5	7 %
General and administrative	69.2	64.5	4.7	7 %
Total operating expenses	$ 807.9	$ 757.6	$ 50.3	7 %

Our operating expenses, as a percentage of total revenue, for the three and six months ended June 27, 2020 and June 29, 2019 were as follows:

	Three Months Ended		Six Months Ended	
	June 27, 2020	June 29, 2019	June 27, 2020	June 29, 2019
Marketing and sales	19 %	20 %	20 %	20 %
Research and development	39 %	40 %	39 %	40 %
General and administrative	6 %	6 %	6 %	6 %
Total operating expenses	64 %	66 %	65 %	66 %

Marketing and Sales

The increase in marketing and sales expense for the three and six months ended June 27, 2020, as compared to the three and six months ended June 29, 2019, was due to the following:

	Change	
	Three Months Ended	Six Months Ended
	(In millions)	
Salary, benefits and other employee-related costs	$ 8.4	$ 15.6
Home office-related expenses	2.0	2.0
Stock-based compensation	0.6	1.5
Marketing programs	(2.2)	(1.8)
Travel and sales meetings	(5.0)	(5.3)
Other items	0.5	1.1
Total change in marketing and sales expense	$ 4.3	$ 13.1

Salary, benefits and other employee-related costs included in marketing and sales expense increased during the three and six months ended June 27, 2020, as compared to the three and six months ended June 29, 2019, primarily due to additional hiring and acquisitions. We expect marketing and sales expense to increase during the remainder of fiscal 2020, as compared to fiscal 2019, due to additional headcount from hiring and acquisitions.

Research and Development

The increase in research and development expense for the three and six months ended June 27, 2020, as compared to the three and six months ended June 29, 2019, was due to the following:

	Change	
	Three Months Ended	Six Months Ended
	(In millions)	
Salary, benefits and other employee-related costs	$ 16.5	$ 29.1
Home office-related expenses	5.3	5.3
Stock-based compensation	2.0	4.5
Product development costs	3.3	3.0
Facilities and other infrastructure costs	(4.9)	(4.3)
Travel	(4.1)	(4.7)
Other items	0.9	(0.4)
Total change in research and development expense	$ 19.0	$ 32.5

Costs included in research and development expense increased during the three and six months ended June 27, 2020, as compared to the three and six months ended June 29, 2019, primarily due to additional hiring and acquisitions. We expect research and development expense to increase during the remainder of fiscal 2020, as compared to fiscal 2019, due to additional headcount from hiring and acquisitions.

General and Administrative

The increase in general and administrative expense for the three and six months ended June 27, 2020, as compared to the three and six months ended June 29, 2019, was due to the following:

	Change	
	Three Months Ended	Six Months Ended
	(In millions)	
Professional services	1.4	4.2
Bad debt	1.2	1.3
Salary, benefits and other employee-related costs	1.5	0.9
University endowment	(3.0)	(3.0)
Other items	0.1	1.3
Total change in general and administrative expense	$ 1.2	4.7

Costs of professional services included in general and administrative expense increased during the three and six months ended June 27, 2020, as compared to the three and six months ended June 29, 2019, primarily due to consulting fees related to an internal realignment of our international operating structure, acquisition and integration-related costs.

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. Additional actions, including further restructuring of our operations, may be required in the future.

During the six months ended June 27, 2020, we revised certain estimates made in connection with prior restructuring plans and recorded credits of approximately $1.3 million. For additional information about our restructuring plans, see Note 9 in the notes to condensed consolidated financial statements.

Interest Expense

	Three Months Ended		Six Months Ended	
	June 27, 2020	June 29, 2019	June 27, 2020	June 29, 2019
	(In millions)			
Contractual interest expense:				
2024 Notes	3.8	3.8	7.6	7.6
Revolving credit facility	1.9	1.0	2.5	2.2
Amortization of debt discount:				
2024 Notes	0.2	0.2	0.4	0.4
Other	—	—	0.1	0.2
Total interest expense	$ 5.9	$ 5.0	$ 10.6	$ 10.4

We expect interest expense to increase during the remainder of fiscal 2020, as compared to fiscal 2019. 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 six months ended June 27, 2020 and June 29, 2019:

	Three Months Ended		Six Months Ended	
	June 27, 2020	June 29, 2019	June 27, 2020	June 29, 2019
	(In millions, except percentages)			
Provision for income taxes	$ 19.4	$ 21.4	$ 25.6	$ 29.0
Effective tax rate	12.9 %	16.6 %	9.1 %	11.3 %

The Coronavirus Aid, Relief, and Economic Security Act (the "CARES Act") was enacted by the United States on March 27, 2020 which did not have a material impact on our provision for income taxes for the three and six months ended June 27, 2020.

Our provision for income taxes for the three and six months ended June 27, 2020 was primarily attributable to federal, state and foreign income taxes on our anticipated fiscal 2020 income, partially offset by tax benefits of $11.3 million and $29.7 million, respectively, related to stock-based compensation that vested or was exercised during the period.

Our provision for income taxes for the three and six months ended June 29, 2019 was primarily attributable to federal, state and foreign income taxes on our then-anticipated fiscal 2019 income, partially offset by tax benefits of $5.8 million and $20.2 million for the three and six months ended June 29, 2019, respectively, related to stock-based compensation that vested or was exercised during each period.

On June 29, 2020, the State of California enacted legislation that, for a three-year period beginning in fiscal 2020, will limit our utilization of California research and development tax credits and will suspend the use of California net operating loss deductions. We will account for the effects of the California tax law change during the third quarter of fiscal 2020, the period of enactment. We are continuing to analyze the California legislation, but currently expect to recognize a discrete tax benefit of approximately $19 million during the third quarter of fiscal 2020 due to the release of valuation allowance on our California research and development tax credit deferred tax assets as a result of certain tax elections in our 2019 California tax filings. We expect this tax benefit to be partially offset by an increase in our fiscal 2020 California taxes of approximately $7 million.

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 2020 effective tax rate will be approximately 6%. We expect that our quarterly effective tax rates will vary from our fiscal 2020 effective tax rate as a result of recognizing the income tax effects of stock-based awards in the quarterly periods that the awards vest or are settled and other items that we cannot anticipate. For additional discussion about how our effective tax rate could be affected by various risks, see Part II, Item 1A, "Risk Factors."

Liquidity and Capital Resources

	As of		
	June 27, 2020	December 28, 2019	Change
	(In millions)		
Cash and cash equivalents	$ 1,189.2	$ 705.2	$ 484.0
Net working capital	487.9	497.0	(9.1)

Cash and Cash Equivalents

As of June 27, 2020, our principal sources of liquidity consisted of $1,189.2 million of cash and cash equivalents as compared to $705.2 million as of December 28, 2019.

During the first quarter of fiscal 2020, we borrowed $350.0 million under our revolving credit facility as a precautionary measure to provide additional liquidity in light of the recent global economic uncertainty and financial market conditions caused by the COVID-19 pandemic. This borrowing represents the full amount available under our revolving credit facility; however, we are entitled to request increased capacity up to an additional $250.0 million subject to the receipt of lender commitments. As of June 27, 2020, the interest rate on our revolving credit facility was 1.53%. In addition to borrowings under our revolving credit facility, our primary sources of cash and cash equivalents during the six months ended June 27, 2020 were cash generated from operations and proceeds from the issuance of common stock resulting from stock purchases under our employee stock purchase plan and stock options exercised during the period.

Our primary uses of cash and cash equivalents during the six months ended June 27, 2020 were payments related to employee salaries and benefits, operating expenses, cash paid in business combinations, repurchases of our common stock, payment of taxes on vesting of restricted stock held by employees, and purchases of property, plant and equipment.

Approximately 43% of our cash and cash equivalents were held by our foreign subsidiaries as of June 27, 2020. Our cash and cash equivalents held by our foreign subsidiaries may vary from period to period due to the timing of collections and repatriation of foreign earnings. We expect that current cash and cash equivalent balances and cash flows that are generated from operations will be sufficient to meet our domestic and international working capital needs and other capital and liquidity requirements 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 June 27, 2020, as compared to December 28, 2019, is primarily due to the timing of cash receipts from customers and disbursements made to vendors.

Cash Flows from Operating Activities

	Six Months Ended		
	June 27, 2020	June 29, 2019	Change
		(In millions)	
Cash provided by operating activities	$ 562.8	$ 431.8	$ 131.0

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 six months ended June 27, 2020, as compared to the six months ended June 29, 2019, was primarily due to the timing of cash receipts from customers and disbursements made to vendors.

Cash Flows from Investing Activities

	Six Months Ended		
	June 27, 2020	June 29, 2019	Change
		(In millions)	
Cash used for investing activities	$ (238.7)	$ (61.7)	$ (177.0)

Cash used for investing activities increased during the six months ended June 27, 2020, as compared to the six months ended June 29, 2019, primarily due to payments for business combinations and an increase in purchases of property, plant and equipment. We expect to continue our investing activities, including purchasing property, plant and equipment, purchasing intangible assets, business combinations, purchasing software licenses, and making strategic investments.

Cash Flows from Financing Activities

	Six Months Ended		
	June 27, 2020	June 29, 2019	Change
		(In millions)	
Cash provided by (used for) financing activities	$ 165.0	$ (269.0)	$ 434.0

Cash flows from financing activities increased during the six months ended June 27, 2020, as compared to the six months ended June 29, 2019, primarily due to increased net borrowings under our revolving credit facility, partially offset by increases in repurchases of common stock.

Other Factors Affecting Liquidity and Capital Resources

Stock Repurchase Program

In February 2019, our Board of Directors authorized the repurchase of $500 million of our common stock. The actual timing and amount of future repurchases are subject to business and market conditions, corporate and regulatory requirements, stock price, acquisition opportunities and other factors. As of June 27, 2020, approximately $194 million remained available under this authorization. See Part II, Item 2, “Unregistered Sales of Equity Securities and Use of Proceeds” for additional information on share repurchases.

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 subject to 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 June 27, 2020, there were $350.0 million borrowings outstanding under our revolving credit facility, and we were in compliance with all financial covenants associated with the 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 (the “2024 Notes”). 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. As of June 27, 2020, we were in compliance with all covenants associated with the 2024 Notes.

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 June 27, 2020. The information is provided in U.S. 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 U.S. 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 August 2020.

	Notional Principal	Weighted Average Contract Rate
	(In millions)	
Forward Contracts:		
European Union euro	$ 109.1	0.91
British pound	99.9	0.81
Israeli shekel	65.9	3.49
Japanese yen	36.8	107.24
Swedish krona	30.3	9.55
Chinese renminbi	15.9	7.14
Indian rupee	14.8	76.23
Taiwan dollar	10.4	29.53
Canadian dollar	7.4	1.4
Other	8.6	N/A
Total	$ 399.1	
Estimated fair value	$ 4.7	

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 U.S. interest rates. In this regard, changes in U.S. 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 June 27, 2020.

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 June 27, 2020, there were $350.0 million borrowings outstanding 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 of strategic importance to us.

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 (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 June 27, 2020.

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 June 27, 2020, 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 June 27, 2020 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 best 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

The ongoing COVID-19 pandemic could continue to adversely affect our business, results of operations and financial condition.

In March 2020, the World Health Organization declared the outbreak of COVID-19 a pandemic, which continues to spread throughout the U.S. and the world and has resulted in authorities implementing numerous measures to contain the virus, including travel bans and restrictions, quarantines, shelter-in-place orders, and business limitations and shutdowns. While we are unable to accurately predict the full impact that COVID-19 will have on our results of operations, financial condition, liquidity and cash flows due to numerous uncertainties, including the duration and severity of the pandemic and containment measures, our compliance with these measures has impacted our day-to-day operations and could disrupt our business and operations, as well as that of our key customers, suppliers (including contract manufacturers) and other counterparties, for an indefinite period of time. To support the health and well-being of our employees, customers, partners and communities, a vast majority of our employees are still working remotely as of July 20, 2020.

In addition, many of our customers are working remotely, which may delay the timing of some orders and deliveries due to their and our compliance with frequently changing government-mandated or recommended shelter-in-place orders in jurisdictions in which we, our customers and our suppliers operate. For example, during the second quarter of 2020, we were unable to install some of our hardware products due to our inability to access certain customers' sites.

The disruptions to our operations caused by COVID-19 may result in inefficiencies, delays and additional costs in our product development, sales, marketing, and customer service efforts that we cannot fully mitigate through remote or other alternative work arrangements. For example, we may continue to be unable to install our hardware at certain customer sites, and access by our employees to our laboratory facilities that are necessary for the development of certain IP products has been and may continue to be disrupted due to the shelter-in-place orders.

More generally, the pandemic raises the possibility of an extended global economic downturn and has caused volatility in financial markets, which could affect demand for our products and services and impact our results and financial condition even after the pandemic is contained and the shelter-in-place orders are lifted. For example, we may be unable to collect receivables from those customers significantly impacted by COVID-19 and, in fact, have received numerous requests from our customers to delay their payments to us, while we continue to provide services to these customers. Also, a decrease in orders in a given period could negatively affect our revenues in future periods, particularly if experienced on a sustained basis, because a substantial proportion of our software licenses yield revenue recognized over time. The pandemic may also have the effect of heightening many of the other risks described in this "Risk Factors" section, including risks associated with our customers and supply chain. We will continue to evaluate the nature and extent of the impact of COVID-19 to our business.

In addition, during the first quarter of fiscal 2020, we borrowed $350.0 million under our revolving credit facility as a precautionary measure to provide additional liquidity in light of the global economic uncertainty and financial market conditions caused by the COVID-19 pandemic. Although we expect that current cash and cash equivalent balances and cash flows that are generated from operations will be sufficient to meet our domestic and international working capital needs and other capital and liquidity requirements for at least the next 12 months, if our access to capital is restricted or our borrowing costs increase, our operations and financial condition could be adversely impacted.

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 mix of products and services sold in a given period and 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. Also, our cash flows from operating activities have and will continue to fluctuate due to a number of factors, including the timing of our billings, collections, disbursements and tax payments.

A substantial portion of the product revenue related to our hardware business and 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 (including due to disruptions caused by COVID-19) 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 new and existing hardware or IP products in those projects and the availability of our new and existing 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, delivery or installation 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 software licenses yield revenue recognized over time, which may make it difficult for us to rapidly increase our revenue in future fiscal periods, and means that a decrease in orders in a given period could negatively affect our revenues in future periods more than over the near term.

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.

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. Spending on our products and services has grown in recent years, but the current outlook for the semiconductor and electronics industries is uncertain and may result in a decrease in spending on our products and services.

Uncertainty about future political and economic conditions, adverse changes to international trade relationships between countries in which we do business or future decline in corporate or 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 and services. 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, including demand for our products and services, are subject to considerable uncertainty that could impact our stock price. If economic conditions or international trade relationships between countries in which we do business 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 supplies of hardware components and products are subject to problems or delays, our future revenues and financial results could be adversely affected.

In fiscal 2019 and the second quarter of fiscal 2020, the Bureau of Industry and Security ("BIS") of the U.S. Department of Commerce placed certain entities who are our customers on the "Entity List," limiting our ability to deliver products and services to these entities. When certain customers are on the Entity List or are subject to new or expanded trade restrictions, such as the expansion of the scope of military end-users and military end-use by BIS in April 2020, and in the absence of a license from the BIS, it will have a negative effect on our ability to sell products and provide services to these customers. In addition, new or expanded trade restrictions, such as the expansion of the military end-user and military end-use rule, will increase our costs or expenses. Entity List restrictions and other trade restrictions will also encourage customers to seek substitute products from our competitors that are not subject to these restrictions or to develop their own solutions, thereby decreasing our long-term competitiveness. In addition, although customers are not prohibited from paying (and we are not restricted from collecting) for products we previously delivered to them, the credit risks associated with outstanding receivables from customers on the Entity List and other trade restrictions could increase as a result of these limitations.

We cannot predict whether or when any changes will be made that eliminate or decrease these limitations on our ability to sell products and provide services to these Entity List customers or other customers impacted by other trade restrictions. We are unable to predict the duration of the export restrictions imposed with respect to any particular customer or the long-term effects on our business or our customers' business. Additionally, other companies may be added to the Entity List and/or be subject to new or expanded trade restrictions. In addition, there may be indirect impacts to our business which we cannot reasonably quantify, including that our business may also be impacted by other trade restrictions that may be imposed by the U.S., China, or other countries. Restrictions on our ability to sell and ship our products to customers on the Entity List have had, and may continue to have, an adverse effect on our business, results of operations or financial condition.

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. If this trend continues, it could make us more 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 operating results and 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 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 ("DSPs") 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;
- adoption of cloud computing technologies with accompanying new business models for an increasing number of software categories; and
- integration and optimization of solutions for system design with core EDA technologies.

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 customers' 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 transition by our customers 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.

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 face other challenging financial or operating conditions, including due to macroeconomic conditions or catastrophic events such as the COVID-19 pandemic. If our customers experience adversity in their business, they may delay or default on their payment commitments to us, request to modify contract terms, 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 cancellable. Our customers' inability to fulfill payment commitments, in turn, may adversely affect our revenue, operating expenses 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.

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 significant 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 Intelligent System Design strategy requires the development or acquisition of products, expertise, and marketing and operations infrastructure 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 strategy is meant to increase our business among electronic systems companies, which are now designing their own ICs and other electronic subsystems. Our strategy is also meant to increase our business among semiconductor companies, which are increasing their contribution to the end products into which their ICs and other electronic subsystems are incorporated. Part of this strategy involves addressing the needs of new categories of electronic systems, including hyperscale computing and infrastructure, edge computing, machine learning, 5G networks, augmented reality, virtual reality, IoT, aerospace and defense, and autonomous vehicle subsystems, where increased investment is expected by our customers. Each of these categories requires technologies, expertise, and marketing and operations infrastructure that are application-specific. If we are unable to develop or acquire these application-specific capabilities, it could impede our ability to expand our business in these categories and ultimately affect our future growth.

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, and may include increases in employee headcount. 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 products and design flows, our revenue and operating results may be adversely affected.

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

The industries in which we do business, including software, hardware, IP and services for enabling the design of electronic products, are highly competitive and require us to 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, which could seriously harm our business, operating results or financial condition. 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 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;
- new entrants, including larger electronic systems companies, in our business;
- the combination of our competitors or collaboration among many companies to deliver more comprehensive offerings than they could individually;
- 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; and
- actions by regulators to limit the contractual terms that either we or our customers can apply to product and service offerings.

We compete most frequently with Synopsys, Inc., Mentor Graphics Corporation, a division of Siemens AG, and ANSYS, Inc., 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, technical software companies, electronics design and consulting companies, and other IP companies. These include Altium Limited, CEVA, Inc., Keysight Technologies, Inc. and Zuken Ltd.

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, or a delay in realizing, 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, technologies and businesses effectively;
- difficulties in integrating employees of an acquired company or business and the failure to retain key employees;
- 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 an 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 an 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.

We make and expect to make strategic investments and may not realize the expected benefits of these investments.

We have made and expect to make strategic investments in which we have a minority equity interest and do not have operational control. These strategic investments may also involve collaboration agreements that further and complement our strategy and marketing efforts. We may not be able to realize the expected benefits of these investments, and the related collaborations may be difficult to manage without sole decision-making authority and the economic or business interests in these collaborations may become inconsistent with our interests. These challenges could have an adverse effect on our business, operating results or financial condition.

The accounting applied to strategic investments depends on a number of factors, including, but not limited to, our percentage of ownership and the level of our influence over the entity. Losses experienced by these strategic investment entities or associated impairment charges could adversely impact our operating results and the value of our investment. In addition, if these entities fail and cease operations, we may lose the value of our investment and shared profits.

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 58% during the six months ended June 27, 2020 and 59% during the six months ended June 29, 2019. 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 U.S. and foreign 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 as applied to our business and corporate structure in the United States, Ireland, Hungary, Germany, 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 Internal Revenue Service ("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 vests or 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 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 United States 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. As additional interpretative guidance is issued by the applicable authorities, we may need to revise our provision (benefit) for income taxes in future periods. These revisions could materially affect our results of operations, cash flow and financial position.

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 including the fiscal impacts caused by the COVID-19 pandemic. 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 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 to provide greater taxing rights to jurisdictions where customers or users are located and to address additional base erosion and profits shifting issues. In addition, many countries have recently introduced new laws 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 stockholders could lose the value of their 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, expenses or operating cash flow estimates;
- an increase in our debt or other liabilities;
- market conditions in the electronics systems and semiconductor industries;
- announcements of a restructuring plan;
- changes in leadership;
- 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, investigations or other regulatory actions;
- announcements of a merger, acquisition or other corporate transaction; 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, including general market volatility caused by the COVID-19 pandemic. 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, services 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, as well as any associated efforts to enforce such rights, including through intellectual property litigation.

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, reputation or operating results might 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, and our business and reputation could be harmed.

Our products and services involve storage, including cloud-based 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 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 in an attempt to gain access to our network, including our Cadence Cloud portfolio, which includes both our managed and customer-managed environments, 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, business interruption, 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 cloud storage of information as part of their service or product offerings or are selected as a vendor for our Cadence Cloud portfolio, 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 or other governmental dynamics 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 and 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 and heightened exposure to intellectual property theft 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;
- 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; and
- public health emergencies, such as the recent COVID-19 pandemic and the subsequent public health measures, including restrictions on travel between jurisdictions in which we and our customers and suppliers operate.

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, public health emergencies, 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 training, retaining and motivating existing personnel. Our ability to do so also depends on how well we maintain a strong workplace culture that is attractive to employees, and hiring and training of new employees may be adversely impacted by global economic uncertainty and office closures caused by COVID-19. 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). 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 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, and we may encounter difficulties in our attempts to protect our intellectual property in foreign jurisdictions, including as a result of impacts from changes in international trade relationships. 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 is 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 June 27, 2020, approximately 43% of our cash and cash equivalents 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. While we believe that the combination of our current U.S. cash and cash equivalents (including the $350.0 million we borrowed under our revolving credit facility in the first quarter of fiscal 2020), future U.S. operating cash flows 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, we cannot accurately predict the full impact that COVID-19 may have on our cash flows, including our ability to borrow additional amounts under our revolving credit facility. In addition, 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 12 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, reputation, 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.

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 Financial Accounting Standards Board ("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 or interpretations thereof may result in different accounting principles under U.S. GAAP that could have a significant effect on our reported financial results.

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. The cost and effect of these changes may negatively impact our results of operations during the periods of transition.

Our restructuring plans incur substantial costs and 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 reputational risks and litigation risks and expenses. Our past restructuring plans do not provide any assurance that we will realize anticipated cost savings and other benefits or 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 a single supplier or a limited number of 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 a single supplier or a limited number of suppliers for certain hardware components and contract manufacturers for production of our emulation and prototyping hardware products. Our reliance on single or a limited number of 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 designate and issue, at any time and without stockholder approval up to 400,000 shares of preferred stock in one or more series. All 400,000 shares of preferred stock are currently designated as Series A Preferred, but because no such shares are outstanding or reserved for issuance, our Board of Directors may reduce the number of shares of preferred stock designated as Series A Preferred to zero. Subject to the Delaware General Corporation Law, our Board of Directors may, as to any shares of preferred stock the terms of which have not then been designated, fix the rights, preferences, privileges and restrictions on these shares, fix the number of shares and designation of any series, and increase or decrease the number of shares of any series if not below the number of outstanding shares plus the number of shares reserved for issuance. Our Board of Directors has the power to issue shares of Series A Preferred with dividend, voting and liquidation rights superior to our common stock at a rate of 1,000-to-1 without further vote or action by the common stockholders.
- 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 marketable 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 expectations and 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, as well as evolving investor expectations around corporate governance, executive compensation and environmental and social practices and disclosures. 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 expectations, rules and regulations, as well as any risk of noncompliance, could adversely impact us.

Our business is subject to the risk of earthquakes and other catastrophic events.

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 offices in the United States and in other countries around the world may be adversely impacted by natural disasters, including fires, earthquakes, flooding and other climate change-related risks, or actions by utility providers, as well as other catastrophic events such as an actual or threatened public health emergency. If a catastrophic event occurs at or near any of our offices, or utility providers or public health officials take certain actions (e.g., shut off power to our facilities or impose travel restrictions), our operations may be interrupted, which could adversely impact our business and results of operations. If a catastrophic event impacts a significant number of our customers, resulting in decreased demand for their and our products, or our ability to provide services and maintenance to our customers, our business and results of operations could be adversely impacted.

<u>Risks Related to Our Securities and Indebtedness</u>

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 June 27, 2020, we had total outstanding indebtedness of $696.4 million, including the $350.0 million we borrowed under our revolving credit facility in the first quarter of fiscal 2020. We also have the right to request increased capacity up to an additional $250.0 million under our revolving credit facility subject to the receipt of lender commitments. Subject to the limits contained in the credit agreement governing our revolving credit facility, the indenture that governs the 2024 Notes and our other debt instruments, 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, particularly as the COVID-19 pandemic has impacted financial markets;
- 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 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 U.S. 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.

Our revolving credit facility utilizes LIBOR or various alternative methods to calculate the amount of accrued interest on any borrowings. Regulators in certain jurisdictions including the United Kingdom and the United States have announced the desire to phase out the use of LIBOR by the end of 2021. The transition from LIBOR to a new replacement benchmark is uncertain at this time and the consequences of such developments cannot be entirely predicted, but could result in an increase in the cost of our borrowings under our existing credit facility and any future borrowings.

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 credit 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 credit rating, and any credit rating assigned could be lowered or withdrawn entirely by a credit rating agency if, in that credit rating agency's judgment, future circumstances relating to the basis of the credit 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 credit 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 February 2019, our Board of Directors authorized the repurchase of $500 million of our common stock. The actual timing and amount of repurchases are subject to business and market conditions, corporate and regulatory requirements, stock price, acquisition opportunities and other factors. As of June 27, 2020, $194 million remained available to repurchase shares of our common stock under the February 2019 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 June 27, 2020:

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	Approximate Dollar Value of Shares that May Yet Be Purchased Under Publicly Announced Plan or Program (1) (In millions)
March 29, 2020 – May 2, 2020	380,920	$ 73.38	368,782	$ 242
May 3, 2020 – May 30, 2020	303,335	$ 82.48	283,197	$ 218
May 31, 2020 – June 27, 2020	381,402	$ 91.87	267,779	$ 194
Total	1,065,657	$ 82.59	919,758	

(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

Exhibit Number		Exhibit Title	Incorporated by Reference: Form	File No.	Exhibit No.	Filing Date	Provided Herewith
10.1	*	The Registrant's Omnibus Equity Incentive Plan, as amended and restated.	DEF 14A	000-15867	Appendix A	3/20/2020	
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	*	Inline XBRL Instance Document – the instance document does not appear in the Interactive Data File because its XBRL tags are embedded within the Inline XBRL document.					
101.SCH	*	Inline XBRL Taxonomy Extension Schema Document.					X
101.CAL	*	Inline XBRL Taxonomy Extension Calculation Linkbase Document.					X
101.DEF	*	Inline XBRL Definition Linkbase Document.					X
101.LAB	*	Inline XBRL Taxonomy Extension Label Linkbase Document.					X
101.PRE	*	Inline XBRL Taxonomy Extension Presentation Linkbase Document.					X
104		Cover Page Interactive Data File - The cover page from the Registrant's Quarterly Report on Form 10-Q for the quarter ended June 27, 2020 is formatted in iXBRL.					X

* Filed herewith.
† Furnished herewith.

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:	July 20, 2020	By:	/s/ Lip-Bu Tan
			Lip-Bu Tan
			Chief Executive Officer and Director
DATE:	July 20, 2020	By:	/s/ John M. Wall
			John M. Wall
			Senior Vice President and Chief Financial Officer