

MICROSTRATEGY Inc
Form 10-K
February 20, 2019

UNITED STATES

SECURITIES AND EXCHANGE COMMISSION

Washington, D.C. 20549

FORM 10-K

ANNUAL REPORT PURSUANT TO SECTION 13 OR 15(d) OF THE SECURITIES EXCHANGE ACT OF 1934
For the fiscal year ended December 31, 2018

OR

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

For the transition period from _____ to _____

Commission File Number 000-24435

MICROSTRATEGY INCORPORATED

(Exact Name of Registrant as Specified in Its Charter)

Delaware 1850 Towers Crescent Plaza, Tysons Corner, VA 22182 51-0323571
(State of Incorporation) (Address of Principal Executive Offices) (Zip Code) (I.R.S. Employer

Identification No.)

Registrant's Telephone Number, Including Area Code: (703) 848-8600

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

Title of each class	Name of each exchange on which registered
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Class A common stock, par value \$0.001 per share	The Nasdaq Global Select Market
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Securities registered pursuant to Section 12(g) of the Act: Not applicable

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Indicate by check mark if the registrant is a well-known seasoned issuer, as defined in Rule 405 of the Securities Act. Yes ☐ No ☐

Indicate by check mark if the registrant is not required to file reports pursuant to Section 13 or Section 15(d) of the Act. Yes ☐ No ☐

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

Indicate by check mark whether the registrant has submitted electronically every Interactive Data File required to be submitted pursuant to Rule 405 of Regulation S-T (§232.405 of this chapter) during the preceding 12 months (or for such shorter period that the registrant was required to submit such files). Yes ☐ No ☐

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

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

Large accelerated filer ☐ Accelerated filer ☐
Non-accelerated filer ☐ Smaller reporting company ☐
Emerging growth company ☐

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

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

The aggregate market value of the voting and non-voting common equity held by non-affiliates of the registrant (based on the last reported sale price of the registrant's class A common stock on June 29, 2018 on the Nasdaq Global Select Market) was approximately \$1,207.6 million.

The number of shares of the registrant's class A common stock and class B common stock outstanding on February 11, 2019 was 8,241,769 and 2,035,184, respectively.

Documents incorporated by reference: Portions of the definitive proxy statement for the 2019 Annual Meeting of Stockholders of the Registrant to be filed subsequently with the SEC are incorporated by reference into Part III of this Annual Report on Form 10-K to the extent indicated herein.

MICROSTRATEGY INCORPORATED

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PART IV

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The trademarks and registered trademarks of MicroStrategy Incorporated and its subsidiaries referred to herein include, but are not limited to, MicroStrategy, Intelligent Enterprise, MicroStrategy 2019, HyperIntelligence, HyperCard, Enterprise Semantic Graph, MicroStrategy Library, Dossier, MicroStrategy Badge, MicroStrategy Communicator, MicroStrategy Analytics Platform, MicroStrategy Cloud, MicroStrategy Services, MicroStrategy Consulting, MicroStrategy Education, Global Delivery Center, Zero-Click Intelligence, MicroStrategy 10, and MicroStrategy 9. Third-party product and company names mentioned herein may be the trademarks of their respective owners.

CERTAIN DEFINITIONS

All references in this Annual Report on Form 10-K (“Annual Report”) to “MicroStrategy,” the “Company,” “we,” “us,” and “o

refer to MicroStrategy Incorporated and its consolidated subsidiaries (unless the context otherwise indicates).

FORWARD-LOOKING INFORMATION

This Annual Report contains forward-looking statements within the meaning of Section 21E of the Securities Exchange Act of 1934, as amended (the “Exchange Act”). For this purpose, any statements contained herein that are not statements of historical fact, including without limitation, certain statements under “Item 1. Business,” “Item 1A. Risk Factors,” and “Item 7. Management’s Discussion and Analysis of Financial Condition and Results of Operations” and located elsewhere herein regarding industry prospects and our results of operations or financial position, may be deemed to be forward-looking statements. Without limiting the foregoing, the words “believes,” “anticipates,” “plans,” “expects,” and similar expressions are intended to identify forward-looking statements. The important factors discussed under “Item 1A. Risk Factors,” among others, could cause actual results to differ materially from those indicated by forward-looking statements made herein and presented elsewhere by management from time to time. Such forward-looking statements represent management’s current expectations and are inherently uncertain. Investors are warned that actual results may differ from management’s expectations.

PART I

Item 1. Business

Overview

MicroStrategy® is a leading worldwide provider of enterprise analytics and mobility software. Our goal is to provide enterprise customers with a world-class software platform and expert services to enable each of our customers to become a more Intelligent Enterprise™. MicroStrategy was incorporated as a Delaware corporation on November 17, 1989. Today, with operations in 29 countries worldwide, MicroStrategy is one of the largest independent, publicly-traded analytics companies as measured by annual revenue.

MicroStrategy 2019™

MicroStrategy 2019, our latest platform release, features HyperIntelligence™, transformational mobility, and federated analytics. MicroStrategy 2019 delivers modern analytics on an enterprise platform that can be deployed on-premises or on multiple private and public cloud platforms. It is designed to make every enterprise a more Intelligent Enterprise by delivering:

HyperIntelligence. This new category of analytics is designed to transform the way people interact with information and find answers by seamlessly delivering intelligence to more groups of users through zero-click experiences. With the HyperCard™ application, users with Google Chrome can simply hover over a highlighted word on websites and other browser-based applications to instantly bring up relevant, contextual insights on key terms, including employee, customer, and organization names. With HyperIntelligence, users can also leverage APIs to design and deploy artificial intelligence (“AI”) applications that deliver zero-click experiences by integrating with modern third-party technologies and devices, including voice assistants like Alexa or Siri, image recognition software, and GPS applications.

Transformational mobility. This category of analytical applications is targeted at the increasingly mobile workforce tasked with making decisions and taking action within minutes. MicroStrategy 2019 delivers more ways for organizations to quickly deploy mobile productivity apps for a variety of business functions and roles on any standard device. Users can build apps using one of three powerful strategies: (i) mobile dossiers – to quickly build interactive books of analytics that render beautifully on smartphones and tablets; (ii) no code drag-and-drop – for branded custom apps that mobilize systems, processes, and applications; and (iii) customized development – with software development kits (“SDKs”) for iOS and Android that let developers extend MicroStrategy content into their apps using XCode or JavaScript.

Federated analytics. This mainstream category of analytics is targeted at analysts and data scientists, who enable long-term decision making. Whether through dossiers, dashboards, or predictive models, or reporting for project performance, financial statements, or billing, MicroStrategy 2019 is designed to empower users with trusted analytics. The platform also supports users who access data using their favorite third-party tools or interact with apps or websites that have been enriched with HyperIntelligence. Analysts who use Excel, Power BI, Qlik, or Tableau and data scientists who leverage RStudio or Jupyter Notebook can now boost their productivity by using the MicroStrategy 2019 platform for trusted, scalable, federated analytics.

MicroStrategy 2019 is an open, API-driven platform powered by our proprietary Enterprise Semantic Graph™, an enriched index that builds on the metadata-based (data about data), centralized architecture that is a core differentiator of our technology. The Enterprise Semantic Graph supplements metadata content and the foundational business

glossary with real-time usage information and system and location telemetry, enabling a new generation of AI-driven applications powered by contextual recommendations and personalized insights.

The broad range of features available with MicroStrategy 2019 are designed to benefit various users across the organization, including:

Business users

- The MicroStrategy Library™, a personalized portal for analytics on web and mobile apps with smart recommendations for content and insights and bookmarking options that let users save frequently-used, personalized views.
- Interactive collaboration capabilities for users to communicate with each other, with real-time tagging and notifications, using a familiar chat interface within the MicroStrategy application.

Analysts

- Dossier™, designed to compile data from across the organization and deliver interactive books of near real-time analytics.
 - Natural Language Querying (“NLQ”) to build visualizations that allow users to find insights by typing a plain language question, similar to a Google search, into MicroStrategy.
- Over 200 connectors to popular enterprise resources to leverage existing investments, including databases, enterprise directories, cloud applications, physical access control systems, and custom connectors.
- New connectors for Power BI, Qlik, and Tableau.

Developers

- A broad and robust set of Representational State Transfer (“REST”) APIs to build custom apps; customize, rebrand, and embed Dossier and MicroStrategy Library functionality with greater flexibility; and extend the functionality of the MicroStrategy platform to other devices and third-party applications.
- Flexibility to build custom data connectors, white-labelled applications, custom widgets, and visualizations, with a comprehensive set of REST APIs, including our Data Connector API, Mobile API for iOS and Android, and Visualization SDK.

Data scientists

- Out-of-the-box advanced analytics and predictive capabilities with over 400 statistical functions to quickly create machine learning applications.
- New integrations for R and Python via open-source packages to consume intelligent cubes, create R and Python algorithms, and publish results back into MicroStrategy without leaving users’ data science tools.

Architects and administrators

- MicroStrategy Workstation, a unified product designed to make building and maintaining scalable enterprise content, managing users and groups, assigning security roles, creating data models, and completing other tasks faster and easier.
- Digital identity and telemetry solutions available with MicroStrategy Badge™ and MicroStrategy Communicator™ that facilitate seamless, user-friendly authentication while generating identity and location intelligence.
- Real-time usage monitoring applications with the MicroStrategy Analytics Platform™ application that facilitate tracking the health and utilization of the system and adoption rates, helping to ensure consistent operation of the organization’s mission-critical applications.

Deployment. MicroStrategy 2019 is available through on-premises or cloud deployment on desktop, web, or mobile devices. With MicroStrategy's updated provisioning console, the MicroStrategy Cloud™ console, customers can deploy our platform through Amazon Web Services ("AWS") or Microsoft Azure, enabling users to get quick access to the powerful services and applications offered by these leading cloud platforms.

MicroStrategy Services™

Through MicroStrategy Consulting™, MicroStrategy Education™, and MicroStrategy Technical Support, MicroStrategy Services advises, assists, and supports our customers in successfully leveraging the MicroStrategy platform to help them realize the vision of the Intelligent Enterprise.

MicroStrategy Consulting

MicroStrategy Consulting provides our customers with assessment, advisory, architecture, and deployment expertise to guide our customers in defining, developing, and delivering core business analytics solutions for their enterprises across key industries. Our consultants work with the backing of the MicroStrategy product engineering, technical support, and account teams. MicroStrategy Consulting operates in North America, South America, Europe, the Middle East, Africa, and the Asia Pacific region, with our Global Delivery Center™ located in Warsaw, Poland.

MicroStrategy Education

MicroStrategy Education provides free and paid learning options to help our customers maximize the utility, adoption, and performance of their MicroStrategy deployments. Our Jump Start offering is a free, five-day training program designed to help every MicroStrategy customer hit the ground running. Our paid offerings include a catalog of over 40 multi-level classes tailored for numerous user roles and project-based certification programs to help customers build up teams of trusted MicroStrategy experts to staff their intelligence centers. MicroStrategy Education is available worldwide in multiple languages and includes classroom-based, instructor-led courses, recorded courses, self-paced e-learning modules, customer on-site training, and our Enterprise E-Courseware options for large organizations.

MicroStrategy Technical Support

MicroStrategy Technical Support is focused on improving the overall customer experience through proactive technical product support for customers and business partners across MicroStrategy's software products and includes Customer Support Group, a team of Technical Support engineers responsible for providing first-level technical support to customers, business partners, and prospects; Premium Support, a team of Premium Support engineers that provides dedicated technical support to our elite customers and business partners; and Customer Success Management, which manages our support renewal business and our process for renewing software maintenance contracts with customers.

Business Strategy

Sales and Services

MicroStrategy sells through our dedicated enterprise sales force and channel partners to increase market coverage in both domestic and international markets. We provide financial incentives for our channel partners to market and distribute our products and services. We also offer a comprehensive set of educational programs that enhance and certify our partners' understanding of our software. In addition, we offer a wide range of services that provide support in the discovery, planning, development, and deployment stages of a MicroStrategy product or service.

Dedicated sales force. We market our software and services chiefly through our direct sales force. We have sales offices in locations throughout the world and use distributors in several countries where we do not have sales offices.

Channel partners. We have established strategic alliances with third-party vendors to help ensure the success of our customers' enterprise intelligence initiatives. Our channel partners are system integrators, consulting firms, resellers, solution providers, managed service providers, original equipment manufacturers ("OEMs"), and technology companies. These firms utilize MicroStrategy platforms for a variety of commercial purposes, and our agreements with them generally provide non-exclusive rights to market our products and services and allow access to our marketing materials, product training, and direct sales force for field-level assistance.

We make significant commitments to our channel partners, including investments in joint development, technical training, certifications, pre-sales and sales enablement, and marketing programs. Through our joint efforts, we believe customers are able to minimize their risk and maximize the return on their business intelligence projects. Our channel partners allow us to leverage sales and service resources and marketing and industry-specific expertise to expand our user base and increase our market coverage.

Marketing

Our marketing programs target the following principal constituencies:

- Our historical base of enterprise-wide operational and technology executives and departmental buyers across large global enterprises;
- Corporate and departmental technology buyers in mid-sized enterprises;
- Government technology buyers and the vendors to the government community;
- Independent software vendors that want to embed our technology tools in their solutions; and
- System integrators that have technology relationships with large enterprises, governments, and information-intensive businesses.

We continually seek to increase our brand awareness by focusing our messaging on the possibilities for value creation, the benefits of using our platform, and competitive differentiators. The channels we use to communicate with these constituencies include digital and social media, user conferences, advertising, direct email, free and evaluation software, industry events, media coverage, mobile application downloads, channel partners, and word-of-mouth and peer references.

Customers

Our customers include leading companies from a wide range of industries, including retail, consulting, technology, manufacturing, finance, banking, insurance, healthcare, education, and telecommunications, as well as the public sector.

Competition

The analytics market is highly competitive and subject to rapidly-changing technology paradigms. Within the analytics space, we compete with many different types of vendors, including large software vendors, such as IBM, Microsoft, Oracle, and SAP, that provide one or more products that directly compete with our products. We also compete with other analytics software providers, such as Qlik, Tableau Software, and the SAS Institute. Our future success depends on the effectiveness with which we can differentiate our offerings and compete with these vendors and other potential competitors across analytics implementation projects of varying sizes.

Our ability to compete successfully in our markets depends on a number of factors, both within and outside of our control. Some of these factors include product deployment options; analytical, mobility, data discovery, and visualization capabilities; performance and scalability; the quality and reliability of our customer service and support; licensing model; and brand recognition. Failure to compete successfully in any one of these or other areas may reduce

the demand for our products, as well as materially adversely affect our revenue from both existing and prospective customers.

Key Differentiators

- A single, comprehensive enterprise analytics and mobility platform uniquely featuring HyperIntelligence, transformational mobility, and federated analytics.
- Our proprietary Enterprise Semantic Graph.
- Over 200 connectors to popular drivers and gateways to enterprise assets.
- A comprehensive set of REST APIs that makes it easy to embed the platform in packaged and custom applications, workflows, and devices.
- Our centralized MicroStrategy Cloud console, which enables deployment of MicroStrategy 2019 within AWS or Microsoft Azure in under 30 minutes and allows administrators to easily manage, monitor, and schedule routine tasks for the full enterprise platform.
- Comprehensive platform administration, security, and architecture, including role-based access to both row and column data.
- Designed to scale with large datasets and deliver rapid response times.
- A single platform with a full suite of capabilities, including enterprise-class reporting, automated distribution, advanced analytics, and integrated mobile application development.
- Integrated digital identity solutions designed to deliver seamless, user-friendly authentication and real-time telemetry applications for location intelligence.

Employees

As of December 31, 2018, we had a total of 2,528 employees, of whom 1,237 were based in the United States and 1,291 were based internationally. Of our 2,528 employees, 707 were engaged in sales and marketing, 716 in research and development, 757 in subscription services, product support, consulting, and education, and 348 in finance, administration, and corporate operations. None of our employees in the United States is represented by a labor union; however, in certain foreign subsidiaries, some employees are members of trade or local unions. In France, our employees are represented by a works council as required by local law. We have not experienced any work stoppages and consider our relations with our employees to be good.

The following table summarizes employee headcount as of the dates indicated:

	December 31, 2018	December 31, 2017	December 31, 2016
Subscription services	56	53	48
Product support	202	172	171
Consulting	452	441	453
Education	47	41	39
Sales and marketing	707	652	587
Research and development	716	559	512
General and administrative	348	298	323
Total headcount	2,528	2,216	2,133

Available Information

Our website is located at www.microstrategy.com. We make available free of charge, on or through the Investor Relations section of our website (<http://ir.microstrategy.com>), our annual reports on Form 10-K, quarterly reports on Form 10-Q, current reports on Form 8-K, and all amendments to those reports, as soon as reasonably practicable after

electronically filing such reports with the Securities and Exchange Commission (“SEC”). Information found on our website is not part of this Annual Report or any other report filed with the SEC. The SEC maintains an Internet site that contains reports, proxy and information statements, and other information regarding issuers, including us, that file electronically with the SEC at www.sec.gov.

Item 1A. Risk Factors

You should carefully consider the risks described below before making an investment decision. The risks and uncertainties described below are not the only ones we face. Additional risks and uncertainties not presently known to us or that we currently deem immaterial may also impair our business operations.

If any of the following risks occurs, our business, financial condition, or results of operations could be materially adversely affected. In such case, the market price of our class A common stock could decline, and you may lose all or part of your investment.

We adopted Accounting Standards Update No. 2014-09, Revenue from Contracts with Customers (Topic 606) and its subsequent amendments (“ASU 2014-09”) effective January 1, 2018 and adjusted our prior period consolidated financial statements to reflect full retrospective adoption. See Note 3, Recent Accounting Standards, to the consolidated financial statements included in this Annual Report for a summary of the significant changes in accounting principles and the impact to the Company’s previously reported consolidated financial statements. Where applicable, prior period information in this “Item 1A. Risk Factors” has also been adjusted to reflect the full retrospective adoption of ASU 2014-09.

Our quarterly operating results, revenues, and expenses may fluctuate significantly, which could have an adverse effect on the market price of our stock

For many reasons, including those described below, our operating results, revenues, and expenses have varied in the past and may vary significantly in the future from quarter to quarter. These fluctuations could have an adverse effect on the market price of our class A common stock.

Fluctuations in Quarterly Operating Results. Our quarterly operating results may fluctuate, in part, as a result of:

- the size, timing, volume, and execution of significant orders and shipments;
- the mix of products and services ordered by customers, including product licenses and subscription offerings, which can affect the extent to which revenue is recognized immediately or over future quarterly periods;
- the timing of the release or delivery of new or enhanced offerings, which may affect the period in which we can recognize revenue;
- the timing of announcements of new offerings by us or our competitors;
- changes in our pricing policies or those of our competitors;
- market acceptance of new and enhanced versions of our products and services;
- the length of our sales cycles;
- seasonal or other buying patterns of our customers;
- changes in our operating expenses;
- planned major maintenance activities (“PMMA”) related to our corporate aircraft;
- the timing of research and development projects and the capitalization of software development costs;
- personnel changes;
- our use of channel partners;
- utilization of our consulting and education services, which can be affected by delays or deferrals of customer implementation of our software products;
- changes in foreign currency exchange rates;

our profitability and expectations for future profitability and their effect on our deferred tax assets and net income for the period in which any adjustment to our net deferred tax asset valuation allowance may be made; increases or decreases in our liability for unrecognized tax benefits; and changes in customer decision making processes or customer budgets.

Limited Ability to Adjust Expenses. We base our operating expense budgets on expected revenue trends and strategic objectives. Many of our expenses, such as office leases and certain personnel costs, are relatively fixed. We may be unable to adjust spending quickly enough to offset any unexpected revenue shortfall. Accordingly, any shortfall in revenue may cause significant variation in operating results in any quarter. For example, if our revenues in the future are not sufficient to offset our operating expenses, or we are unable to adjust our operating expenses in a timely manner in response to any shortfall in anticipated revenue, we may incur operating losses.

Based on the above factors, we believe that quarter-to-quarter comparisons of our operating results are not a good indication of our future performance. It is possible that in one or more future quarters, our operating results may be below the expectations of public market analysts and investors. In that event, the market price of our class A common stock may fall.

The market price of our class A common stock has been and may continue to be volatile

The market price of our class A common stock historically has been volatile and may continue to be volatile. The market price of our class A common stock may fluctuate widely in response to various factors, some of which are beyond our control. These factors include, but are not limited to:

- quarterly variations in our results of operations or those of our competitors;
- announcements about our earnings that are not in line with analyst expectations, the likelihood of which may be enhanced because it is our policy not to give guidance relating to our anticipated financial performance in future periods;
- announcements by us or our competitors of acquisitions, dispositions, new offerings, significant contracts, commercial relationships, or capital commitments;
- the emergence of new sales channels in which we are unable to compete effectively;
- our ability to develop, market, and deliver new and enhanced offerings on a timely basis;
- commencement of, or our involvement in, litigation;
 - any major change in our Board of Directors, management, or governing documents;
- changes in government regulations or in the status of our regulatory approvals;
- recommendations by securities analysts or changes in earnings estimates and our ability to meet those estimates;
- investor perception of our Company;
- announcements by our competitors of their earnings that are not in line with analyst expectations;
- the volume of shares of our class A common stock available for public sale;
- sales or purchases of stock by us or by our stockholders, and issuances of awards under our stock incentive plan;
- short sales, hedging, and other derivative transactions involving shares of our class A common stock; and
- general economic conditions and slow or negative growth of related markets.

In addition, the stock market in general, and the market for technology companies in particular, have experienced extreme price and volume fluctuations that have often been unrelated or disproportionate to the operating performance of companies in those markets. These broad market and industry factors may seriously harm the market price of our class A common stock, regardless of our actual operating performance.

We may not be able to sustain or increase profitability in the future

We generated net income for each of the fiscal years ended December 31, 2018, 2017, and 2016; however, we may not be able to sustain or increase profitability on a quarterly or annual basis in the future. If our revenues are not sufficient to offset our operating expenses, or we are unable to adjust our operating expenses in a timely manner in response to any shortfall in anticipated revenue, our profitability may decrease, we may cease to be profitable, or we may incur operating losses. As a result, our business, results of operations, and financial condition may be materially adversely affected.

As of December 31, 2018, we had \$17.3 million of deferred tax assets, net of a \$1.5 million valuation allowance. If we are unable to sustain profitability in the future, we may be required to increase the valuation allowance against these deferred tax assets, which could result in a charge that would materially adversely affect net income in the period in which the charge is incurred.

Economic uncertainty and increased competition for our customers, particularly in the retail industry, could materially adversely affect our business and results of operations

The U.S. and other significant markets have experienced cyclical downturns and worldwide economic conditions remain uncertain. Economic uncertainty and associated macroeconomic conditions make it extremely difficult for our customers and us to accurately forecast and plan future business activities, and could cause our customers to slow spending on our products and services, which could delay and lengthen sales cycles. Furthermore, during uncertain economic times, our customers may face issues gaining timely access to sufficient credit, which could result in an impairment of their ability to make timely payments to us. If that were to occur, we may be required to increase our allowance for doubtful accounts and our results would be negatively impacted.

Furthermore, we have a significant number of customers in the retail industry, which has experienced intense competition and structural changes. A significant downturn or the intensification of competition in this industry may cause organizations to reduce their capital expenditures in general or specifically reduce their spending on information technology ("IT"). In addition, customers in this industry may delay or cancel IT projects or seek to lower their costs by renegotiating vendor contracts. Customers with excess IT resources may choose to develop in-house software solutions rather than obtain those solutions from us. Consumers have increasingly migrated toward large e-commerce platforms and other online applications. As a result, the retail industry has experienced consolidation and other ownership changes. In the future, retailers may further consolidate, undergo restructurings or reorganizations, or realign their affiliations, any of which could decrease the number of competitors within the retail industry, reducing the number of potential customers for our offerings. Moreover, our competitors may respond to challenging market conditions by lowering prices and attempting to lure away our customers.

We cannot predict the timing, strength, or duration of any economic slowdown or any subsequent recovery generally, or competitive and structural changes in the retail industry. If the conditions in the general economy and the markets in which we operate worsen from present levels, our business, financial condition, and results of operations could be materially adversely affected.

We may have exposure to greater than anticipated tax liabilities

We are subject to income taxes and non-income taxes in a variety of domestic and foreign jurisdictions. Our future income taxes could be materially adversely affected by earnings that are lower than anticipated in jurisdictions where we have lower statutory rates, earnings that are higher than anticipated in jurisdictions where we have higher statutory rates, changes in the valuation of our deferred tax assets and liabilities, changes in the amount of unrecognized tax benefits, or changes in tax laws, regulations, accounting principles, or interpretations thereof.

Further changes in the tax laws of foreign jurisdictions could arise, including as a result of the project undertaken by the Organisation for Economic Co-operation and Development (“OECD”) to combat base erosion and profit shifting (“BEPS”). The OECD, which represents a coalition of member countries, has issued recommendations that, in some cases, make substantial changes to numerous long-standing tax positions and principles. These changes, many of which have been adopted or are under active consideration by OECD members and/or other countries, could increase tax uncertainty and may adversely affect our provision for income taxes.

In the United States, legislation bringing about broad changes in the existing corporate tax system was enacted in December 2017. Over time, this legislation may result in material impacts to our results of operations and may affect customer behavior and our ability to forecast our effective tax rate. Many aspects of the legislation are unclear at this time and remain subject to pending regulatory and accounting guidance. As a result, we have not yet been able to determine the full impact of the legislation on our business, operating results, and financial condition. As additional regulatory guidance is issued by the Internal Revenue Service, as accounting treatment is clarified, and as we perform additional analysis on the application of the law, our tax obligations and effective tax rate could be materially affected.

Our determination of our tax liability is subject to review by applicable domestic and foreign tax authorities. Any adverse outcome of such reviews could have an adverse effect on our operating results and financial condition. The determination of our worldwide provision for income taxes and other tax liabilities requires significant judgment and, in the ordinary course of business, there are many transactions and calculations where the ultimate tax determination is uncertain. Moreover, as a multinational business, we have subsidiaries that engage in many intercompany transactions in a variety of tax jurisdictions where the ultimate tax determination is uncertain.

We also have contingent tax liabilities that, in management’s judgment, are not probable of assertion. If such unasserted contingent liabilities were to be asserted, or become probable of assertion, we may be required to record significant expenses and liabilities in the period in which these liabilities are asserted or become probable of assertion.

As a result of these and other factors, the ultimate amount of tax obligations owed may differ from the amounts recorded in our financial statements and any such difference may materially affect our financial results in future periods in which we change our estimates of our tax obligations or in which the ultimate tax outcome is determined.

If the market for analytics products fails to grow as we expect or if businesses fail to adopt our offerings, our business, operating results, and financial condition could be materially adversely affected

Nearly all of our revenues to date have come from sales of analytics products and related technical support, consulting, and education services. We expect these sales to account for a large portion of our revenues for the foreseeable future. Although demand for analytics products has grown in recent years, the market for analytics offerings continues to evolve. Resistance from consumer and privacy groups to commercial collection, use, and sharing of data on spending patterns and other personal behavior (including individuals’ online or offline activities, mobile data, sensor data, social data, web log data, Internet of Things data, and other personal data) has grown in recent years and our customers, potential customers or the public in general may perceive that use of our analytics products could violate individual privacy rights. In addition, increasing government restrictions on the collection, use, and transfer of personal data could impair the further growth of the market for analytics products. We cannot be sure that this market will continue to grow or, even if it does grow, that businesses will adopt our solutions.

We have spent, and intend to keep spending, considerable resources to educate potential customers about analytics offerings in general and our offerings in particular. However, we cannot be sure that these expenditures will help any of our offerings achieve any additional market acceptance. If the market fails to grow or grows more slowly than we currently expect or businesses fail to adopt our offerings, our business, operating results, and financial condition could be materially adversely affected.

Our products face intense competition, which may lead to lower prices for our products and services, reduced gross margins, loss of market share, and reduced revenue

The analytics market is highly competitive and subject to rapidly changing technology paradigms. Within the analytics space, we compete with many different types of vendors, including large software vendors, such as IBM, Microsoft, Oracle, and SAP, that provide one or more products that directly compete with our products. We also compete with other analytics software providers, such as Qlik, Tableau Software, and the SAS Institute. Our future success depends on the effectiveness with which we can differentiate our offerings and compete with these vendors and other potential competitors across analytics implementation projects of varying sizes. Our ability to compete successfully in our markets depends on a number of factors, both within and outside of our control. Some of these factors include product deployment options; analytical, mobility, data discovery, and visualization capabilities; performance and scalability; the quality and reliability of our customer service and support; licensing model; and brand recognition. Failure to compete successfully in any one of these or other areas may reduce the demand for our products, as well as materially adversely affect our revenue from both existing and prospective customers.

Some of our competitors have longer operating histories and significantly greater financial, technical, and marketing resources than we do. As a result, they may be able to respond more quickly to new or emerging technologies and changes in customer requirements or devote greater resources to the development, promotion, sale, and marketing of their offerings than we can, such as offering certain analytics products free of charge when bundled with other software offerings. In addition, many of our competitors have strong relationships with current and potential customers, extensive industry and specialized business knowledge, as well as corresponding proprietary technologies that they can leverage, such as multidimensional databases and enterprise resource planning repositories. As a result, they may be able to prevent us from penetrating new accounts or expanding within existing accounts.

Increased competition may lead to price cuts, reduced gross margins, and loss of market share. We may not be able to compete successfully against current and future competitors, and the failure to meet the competitive pressures we face may have a material adverse effect on our business, operating results, and financial condition.

Current and future competitors may also make strategic acquisitions or establish cooperative relationships among themselves or with others. By doing so, these competitors may increase their ability to meet the needs of our potential customers by their expanded offerings. Our current or prospective channel partners may establish cooperative relationships with our current or future competitors. These relationships may limit our ability to sell our analytics offerings through specific distribution channels. Accordingly, new competitors or alliances among current and future competitors may emerge and rapidly gain significant market share. These developments could limit our ability to obtain revenues from new customers and to sustain software maintenance revenues from our installed customer base. In addition, basic office productivity software suites, such as Microsoft Office, could evolve to offer advanced analysis and reporting capabilities that may reduce the demand for our analytics offerings.

We depend on revenue from a single suite of products and related services as well as revenue from our installed customer base

Our platform and related services account for a substantial portion of our revenue. Because of this revenue concentration, our business could be harmed by a decline in demand for, or in the adoption or prices of, these products and related services as a result of, among other factors, any change in our pricing or packaging model, increased competition, maturation in the markets for these products, or other risks described in this Annual Report.

We also depend on our installed customer base for a substantial portion of our revenue. We have contracts with our license customers for ongoing support and maintenance, as well as contracts for cloud-based subscription services that provide recurring revenues to us. In addition, our installed customer base has historically generated additional new

license and services revenues for us. If our existing customers cancel or fail to renew their service contracts or fail to purchase additional products or services, our revenue could decrease and our operating results could be materially adversely affected.

If we are unable to develop and release product enhancements and new offerings to respond to rapid technological change in a timely and cost-effective manner, our business, operating results, and financial condition could be materially adversely affected

The market for our offerings is characterized by rapid technological change, frequent new product introductions and enhancements, changing customer demands, and evolving industry standards. The introduction of offerings embodying new technologies can quickly make existing offerings obsolete and unmarketable. We believe that our future success depends largely on our ability to:

- continue to support a number of popular operating systems and databases;
- maintain and improve our current offerings;
- rapidly develop new offerings and product enhancements that achieve market acceptance;
- maintain technological competitiveness; and
- meet an expanding range of customer requirements.

Analytics applications are inherently complex, and it can take a long time and require significant research and development expenditures to develop and test new offerings and product enhancements. In addition, customers may delay their purchasing decisions because they anticipate that new or enhanced versions of our offerings will soon become available. We cannot be sure that we will succeed in developing, marketing, and delivering, on a timely and cost-effective basis, new or enhanced offerings that respond to technological change or new customer requirements, nor can we be sure that any new or enhanced offerings will achieve market acceptance. Moreover, even if we introduce a new offering, we may experience a decline in revenues of our existing offerings that is not fully matched by the new offering's revenue. For example, customers may delay making purchases of a new offering to permit them to make a more thorough evaluation of the offering, or until industry and marketplace reviews become widely available. Some customers may hesitate migrating to a new offering due to concerns regarding the complexity of migration and product infancy issues on performance. In addition, we may lose existing customers who choose a competitor's offering rather than migrate to our new offering. This could result in a temporary or permanent revenue shortfall and materially adversely affect our business.

A substantial customer shift in the deployment of MicroStrategy Analytics from a perpetual software license model to our cloud services model could affect the timing of revenue recognition and materially adversely affect our operating results

We offer our analytics platform in the form of a perpetual software license and a cloud-based subscription. The payment streams and revenue recognition timing for our perpetual software licenses are different from those for our cloud-based subscriptions. For perpetual software licenses, customers typically pay us a lump sum soon after entering into a software license agreement and revenue is typically recognized upon delivery of the software to the customer. For cloud-based subscriptions, customers typically make periodic payments over the subscription period and revenue is typically recognized ratably over the subscription period. As a result, if a substantial number of current or new customers shift to subscribing to our cloud services offerings instead of purchasing perpetual software licenses for MicroStrategy Analytics, the resulting change in payment terms and revenue recognition may materially adversely affect our operating results and cash flows for the reporting periods during which such a shift occurs.

Our investment in new business strategies and initiatives could disrupt the operations of our ongoing business and present risks that we have not adequately anticipated

We have invested, and in the future may invest, in new business strategies and initiatives. For example, in recent years we have introduced a number of innovative technologies designed to enable companies to capitalize on Big Data, mobile applications, cloud-based services, security, Internet of Things, and artificial intelligence trends in the marketplace. These endeavors may involve significant risks and uncertainties, including distraction of management

from other business operations, the dedication of significant research and development, sales and marketing, and other resources to these new initiatives at the expense of our other business operations, generation of insufficient revenue to offset expenses associated with new initiatives, incompatibility of our new technologies with third-party platforms, inadequate return of capital, and other risks that we may not have adequately anticipated. Because new strategies and initiatives are inherently risky, these strategies and initiatives may not be successful and could materially adversely affect our financial condition and operating results.

Business disruptions, including interruptions, delays, or failures of our systems, third-party data center hosting facility or other third-party services, could materially adversely affect our operating results or result in a material weakness in our internal controls that could adversely affect the market price of our stock

A significant portion of our research and development activities or certain other critical business operations are concentrated in facilities in Northern Virginia, China, and Poland. In addition, we serve our customers and manage certain critical internal processes using a third-party data center hosting facility located in the United States and other third-party services, including AWS, Microsoft Azure, and other cloud services. We could experience a disruption or failure of our systems or the third-party hosting facility or other services that we use. Such disruptions or failures could include a natural disaster, fire, cyber-attack, act of terrorism, geopolitical conflict, or other catastrophic event, as well as power outages or telecommunications infrastructure outages, or a decision by one of our third-party service providers to close facilities that we use without adequate notice or to materially change the pricing or terms of their services, or other unanticipated problems with the third-party services that we use, including a failure to meet service standards.

We are a highly automated business and any such disruptions or failures could (i) result in the destruction or disruption of any of our critical business operations, controls or procedures, or IT systems, (ii) severely affect our ability to conduct normal business operations, including delaying completion of sales and provision of services, (iii) result in a material weakness in our internal control over financial reporting, (iv) cause our customers to terminate their subscriptions, (v) result in our issuing credits to customers or paying penalties or fines, (vi) harm our reputation, (vii) adversely affect our attrition rates or our ability to attract new customers, or (viii) cause our offerings to be perceived as not being secure, any of which could materially adversely affect our future operating results.

For example, as described in “Item 9A. Controls and Procedures,” we have concluded that our internal control over financial reporting was not effective as of December 31, 2018 because of certain material weaknesses in our internal controls. We are implementing remedial measures and, while there can be no assurance that our efforts will be successful, we expect to complete the remediation of these material weaknesses prior to the end of fiscal year ended December 31, 2019. If we are unable to remediate these material weaknesses with respect to future periods or are otherwise unable to maintain effective internal control over financial reporting or disclosure controls and procedures, management may need to devote significant resources to improving internal controls, our ability to meet reporting obligations could be adversely affected, and investors’ confidence in our financial statements may be negatively affected, which could have a material adverse effect on our operating results and the market price of our stock.

We use channel partners and if we are unable to maintain successful relationships with them, our business, operating results, and financial condition could be materially adversely affected

In addition to our direct sales force, we use channel partners such as resellers, value-added resellers, system integrators, consulting firms, OEMs, and technology partners to license and support our products. For the year ended December 31, 2018, transactions by channel partners for which we recognized revenues accounted for 21.2% of our total product licenses revenues. Our channel partners may offer customers the products and services of several different companies, including offerings that compete with ours. Because our channel partners generally do not have exclusive relationships with us, we cannot be certain that they will prioritize or devote adequate resources to selling our products. Moreover, divergence in strategy or contract defaults by any of these channel partners may materially adversely affect our ability to develop, market, sell, or support our offerings.

Although we believe that direct sales will continue to account for a majority of our product licenses revenues, we seek to maintain a significant level of sales activities through our channel partners. There can be no assurance that our channel partners will continue to cooperate with us. In addition, actions taken or not taken by such parties may materially adversely affect us. Our ability to achieve revenue growth in the future will depend in part on our ability to

maintain successful relationships with our channel partners. If we are unable to maintain our relationships with these channel partners, our business, operating results, and financial condition could be materially adversely affected.

In addition, we rely on our channel partners to operate in accordance with the terms of their contractual agreements with us. For example, some of our agreements with our channel partners prescribe the terms and conditions pursuant to which they are authorized to resell or distribute our software and offer technical support and related services. If our channel partners do not comply with their contractual obligations to us, our business, operating results, and financial condition may be materially adversely affected. We also rely on our channel partners to operate in accordance with applicable laws and regulatory requirements. If they fail to do so, we may need to incur significant costs in responding to investigations or enforcement actions or paying penalties assessed by the applicable authorities.

Our recognition of deferred revenue and advance payments is subject to future performance obligations and may not be representative of revenues for succeeding periods

Our current and non-current deferred revenue and advance payments totaled \$183.0 million as of December 31, 2018. The timing and ultimate recognition of our deferred revenue and advance payments depend on various factors, including our performance of various service obligations.

Because of the possibility of customer changes or delays in customer development or implementation schedules or budgets, and the need for us to satisfactorily perform product support and other services, deferred revenue and advance payments at any particular date may not be representative of actual revenue for any succeeding period.

Our international operations are complex and expose us to risks that could have a material adverse effect on our business, operating results, and financial condition

We receive a significant portion of our total revenues from international sales and conduct our business activities in various foreign countries, including some emerging markets where we have limited experience, where the challenges of conducting our business can be significantly different from those we have faced in more developed markets, and where business practices may create internal control risks. International revenues accounted for 42.3%, 41.8%, and 39.2% of our total revenues for the years ended December 31, 2018, 2017, and 2016, respectively. Our international operations require significant management attention and financial resources.

There are certain risks inherent in our international business activities, including:

- fluctuations in foreign currency exchange rates;
- new, or changes in, regulatory requirements;
- tariffs, export and import restrictions, restrictions on foreign investments, sanctions, and other trade barriers or protection measures;
- costs of localizing offerings;
- lack of acceptance of localized offerings;
- difficulties in and costs of staffing, managing, and operating our international operations;
- tax issues, including restrictions on repatriating earnings;
- weaker intellectual property protection;
- economic weakness or currency related crises;
- the burden of complying with a wide variety of laws, including those relating to labor matters, antitrust, procurement and contracting, consumer and data protection, privacy, data localization, network security, and encryption;
- generally longer payment cycles and greater difficulty in collecting accounts receivable;
- our ability to adapt to sales practices and customer requirements in different cultures;

corporate espionage; and

political instability and security risks in the countries where we are doing business.

Disruptions to trade, weakening of economic conditions, economic and legal uncertainties, or changes in currency rates may adversely affect our business, financial condition, operating results and cash flows. For example, we may face heightened risks in connection with our international operations as a result of the impending withdrawal of the United Kingdom from the European Union, commonly referred to as “Brexit.” The future effects of Brexit are uncertain and will depend on any agreements the United Kingdom makes to retain access to E.U. markets either during a transitional period or more permanently. Brexit could, among other outcomes, disrupt the free movement of goods, services and people between the United Kingdom and the European Union and significantly disrupt trade between the United Kingdom and the European Union. Brexit could also lead to legal uncertainty and potentially divergent national laws and regulations, including tax laws and regulations, as the United Kingdom determines which E.U. laws to replace or replicate. In addition, the Trump administration has called for substantial changes to U.S. foreign trade policy, including the imposition of greater restrictions on international trade and significant increases in tariffs on goods imported into the United States, and has increased tariffs on certain goods imported into the United States from a number of foreign markets, following which retaliatory tariffs have been imposed on exports of certain U.S. goods to those markets. These tariffs and any further escalation of protectionist trade measures could adversely affect the markets in which we sell our products and services and, in turn, our business, financial condition, operating results and cash flows.

In addition, the Tax Cuts and Jobs Act (the “Tax Act”) brought about, among other items, corporate income tax rate changes, the modification or elimination of certain tax incentives, changes to the existing regime for taxing overseas earnings, and measures to prevent BEPS. The changes to the U.S. taxation of our international income could have a material effect on our future operating results. From time to time, we may undertake various potential intercompany transactions and legal entity restructurings that involve our international subsidiaries. We consider various factors in evaluating these potential transactions and restructurings, including the alignment of our corporate structure with our organizational objectives, the operational and tax efficiency of our corporate structure, and the long-term cash flows and cash needs of our business. Such transactions and restructurings could negatively impact our overall tax rate and result in additional tax liabilities.

Moreover, compliance with foreign and U.S. laws and regulations that are applicable to our international operations is complex and may increase our cost of doing business in international jurisdictions, and our international operations could expose us to fines and penalties if we fail to comply with these regulations. These laws and regulations include anti-bribery laws, such as the U.S. Foreign Corrupt Practices Act, the U.K. Bribery Act, local laws prohibiting corrupt payments to government officials, and local laws relating to procurement, contracting, and antitrust. These laws and regulations also include import and export requirements and economic and trade sanctions administered by the Office of Foreign Assets Control and the U.S. Department of Commerce based on U.S. foreign policy and national security goals against targeted foreign states, organizations, and individuals. Although we have implemented policies and procedures designed to help ensure compliance with these laws, there can be no assurance that our employees, channel partners, and other persons with whom we do business will not take actions in violation of our policies or these laws. Any violations of these laws could subject us to civil or criminal penalties, including substantial fines or prohibitions on our ability to offer our products and services to one or more countries, and could also materially damage our reputation and our brand.

These factors may have a material adverse effect on our future sales and, consequently, on our business, operating results, and financial condition.

We may lose sales, or sales may be delayed, due to the long sales and implementation cycles of certain of our products and services, which could reduce our revenues

To date, our customers have typically invested substantial time, money, and other resources, and involved many people in the decision to license our software products and purchase our related services. As a result, we may wait nine months or more after the first contact with a customer for that customer to place an order while it seeks internal approval for the purchase of our products or services. During this long sales cycle, events may occur that affect the size and/or timing of the order or even cause it to be canceled. For example, our competitors may introduce new offerings, or the customer's own budget and purchasing priorities may change.

Even after an order is placed, the time it takes to deploy our products and complete services engagements can vary widely. Implementing some of our offerings can take several months, depending on the customer's needs, and may begin only with a pilot program. It may be difficult to deploy our products if the customer has complicated deployment requirements, which typically involve integrating databases, hardware, and software from different vendors. If a customer hires a third party to deploy our products, we cannot be sure that our products will be deployed successfully.

Our results in any particular period may depend on the number and volume of large transactions in that period and these transactions may involve lengthier, more complex, and more unpredictable sales cycles than other transactions

As existing and potential customers seek to standardize on a single analytics vendor or require greater vendor capacity to meet their growing analytics needs, our business may experience larger transactions at the enterprise level and larger transactions may account for a greater proportion of our business. The presence or absence of one or more large transactions in a particular period may have a material positive or negative effect on our revenue and operating results for that period. For the years ended December 31, 2018, 2017, and 2016, our top three product licenses transactions with recognized revenue totaled \$7.7 million, \$5.5 million, and \$11.3 million, respectively, or 8.7%, 5.9%, and 9.8% of total product licenses revenues, respectively. These transactions represent significant business and financial decisions for our customers, require considerable effort on the part of customers to assess alternative products, and often require additional levels of management approval. In addition, large transactions are often more complex than smaller transactions. These factors generally lengthen the typical sales cycle and increase the risk that customers may postpone or delay purchasing decisions from one period to a subsequent period or that customers will alter their purchasing requirements. We may also encounter greater competition and pricing pressure in larger transactions, and the sales effort and service delivery scope for larger transactions may require us to use additional resources to execute the transactions. These factors could result in lower than anticipated revenue and earnings for a particular period or lower estimated revenue and earnings in future periods.

We face a variety of risks in doing business with U.S. and foreign federal, state, and local governments and government agencies, including risks related to the procurement process, budget constraints and cycles, termination of contracts, and compliance with government contracting requirements

Our customers include the U.S. government and a number of state and local governments and government agencies. There are a variety of risks in doing business with government entities, including:

Procurement. Contracting with public sector customers is highly competitive and can be time-consuming and expensive, requiring us to incur significant up-front time and expense without any assurance that we will win a contract.

Budgetary Constraints and Cycles. Demand and payment for our products and services are impacted by public sector budgetary cycles and funding availability, with funding reductions or delays adversely impacting public sector demand for our products and services.

Termination of Contracts. Public sector customers often have contractual or other legal rights to terminate current contracts for convenience or due to a default. If a contract is terminated for convenience, which can occur if the customer's needs change, we may only be able to collect fees for products or services delivered prior to termination and settlement expenses. If a contract is terminated due to a default, we may not recover even those amounts, and we may be liable for excess costs incurred by the customer for procuring alternative products or services.

Compliance with Government Contracting Requirements. Government contractors are required to comply with a variety of complex laws, regulations, and contractual provisions relating to the formation, administration, or

performance of government contracts that give public sector customers substantial rights and remedies, many of which are not typically found in commercial contracts. These may include rights with respect to price protection, the accuracy of information provided to the government, contractor compliance with socio-economic policies, and other terms that are particular to government contracts. Federal, state, and local governments and government agencies routinely investigate and audit contractors for compliance with these requirements. If, as a result of an audit or review, it is determined that we have failed to comply with these requirements, we may be subject to civil and criminal penalties and administrative sanctions, including termination of contracts, forfeiture of profits, costs associated with the triggering of price reduction clauses, fines, and suspensions or debarment from future government business, and we may suffer harm to our reputation.

Our customers also include a number of foreign governments and government agencies. Similar procurement, budgetary, contract, and audit risks also apply to our doing business with these entities. In addition, compliance with complex regulations and contracting provisions in a variety of jurisdictions can be expensive and consume significant management resources. In certain jurisdictions, our ability to win business may be constrained by political and other factors unrelated to our competitive position in the market. Each of these difficulties could materially adversely affect our business and results of operations.

We depend on technology licensed to us by third parties, and the loss of this technology could impair our software, delay implementation of our offerings, or force us to pay higher license fees

We license third-party technologies that are incorporated into or utilized by our existing offerings. There can be no assurance that the licenses for such third-party technologies will not be terminated or that we will be able to license third-party software for future offerings. In addition, we may be unable to renegotiate acceptable third-party license terms, or we may be subject to infringement liability if third-party software that we license is found to infringe intellectual property rights of others. Changes in or the loss of third-party licenses could lead to a material increase in our costs or to our software offerings becoming inoperable or their performance being materially reduced. As a result, we may need to incur additional development costs to help ensure continued performance of our offerings, and we may experience a decreased demand for our offerings.

If we are unable to recruit or retain skilled personnel, or if we lose the services of our Chairman of the Board of Directors, President & Chief Executive Officer, our business, operating results, and financial condition could be materially adversely affected

Our future success depends on our continuing ability to attract, train, assimilate, and retain highly skilled personnel. Competition for these employees is intense, and competition may be amplified by evolving restrictions on immigration, travel, or availability of visas for skilled technology workers. We may not be able to retain our current key employees or attract, train, assimilate, and retain other highly skilled personnel in the future. Our future success also depends in large part on the continued service of Michael J. Saylor, our Chairman of the Board of Directors, President & Chief Executive Officer. If we lose the services of Mr. Saylor, or if we are unable to attract, train, assimilate, and retain the highly skilled personnel we need, our business, operating results, and financial condition could be materially adversely affected.

The emergence of new industry standards may materially adversely affect the demand for our existing offerings

The emergence of new industry standards in related fields may materially adversely affect the demand for our existing offerings. This could happen if new web standards and technologies or new standards in the field of operating system support emerge that are incompatible with customer deployments of our software offerings. For example, if we are unable to adapt our software offerings on a timely basis to new standards in database access technology, the ability of our software offerings to access customer databases could be impaired.

The nature of our software offerings makes them particularly susceptible to undetected errors, bugs, or security vulnerabilities, which could cause problems with how the offerings perform and, in turn, reduce demand for our offerings, reduce our revenue, and lead to product liability claims against us

Software as complex as ours may contain undetected errors, bugs, or security vulnerabilities. Although we test our software offerings extensively, we have in the past discovered software errors, bugs, or security vulnerabilities in our offerings after their introduction. Despite testing by us and our current and potential customers, errors, bugs, or security vulnerabilities may be found in new offerings or releases after commercial shipments begin. This could result in lost revenue, damage to our reputation, or delays in market acceptance, which could have a material adverse effect

on our business, operating results, and financial condition. We may also need to expend resources and capital to correct these defects.

Our agreements with customers typically contain provisions designed to limit our exposure to product liability, warranty, and other claims. It is possible, however, that these provisions may not be effective under the laws of certain domestic or international jurisdictions and we may be exposed to product liability, warranty, and other claims. A successful product liability claim against us could have a material adverse effect on our business, operating results, and financial condition.

Changes in laws or regulations relating to privacy or the collection, processing, disclosure, storage, localization, or transmission of personal data, or any actual or perceived failure by us or our third-party service providers to comply with such laws and regulations, contractual obligations, or applicable privacy policies, could materially adversely affect our business.

Aspects of our business, including our cloud services and digital identity offerings, involve collecting, processing, disclosing, storing, and transmitting personal data, which are subject to certain privacy policies, contractual obligations, and U.S. federal, U.S. state, and foreign laws, regulations, and directives relating to privacy and data protection. The amount of customer and employee data that we store through our cloud services offerings, networks, and other systems, including personal data, is increasing. In addition, the types of data subject to protection as personal data in the European Union, the United States, and elsewhere, including Asia and Latin America, have been expanding. In recent years, the collection and use of personal data by companies have come under increased regulatory and public scrutiny, especially in relation to the collection and processing of sensitive data, such as healthcare, biometric, genetic, financial services, and government data, children's data, precise location data, and data regarding a person's race or ethnic origins, political opinions, religious or philosophical beliefs, trade union membership, or sex life or sexual orientation. For example, in the United States, protected health information is subject to HIPAA. HIPAA has been supplemented by the Health Information Technology for Economic and Clinical Health Act with the result of increased civil and criminal penalties for noncompliance. Entities performing certain functions that engage in creating, receiving, maintaining, or transmitting protected health information provided by covered entities and other business associates are directly subject to enforcement under HIPAA. Our access to protected health information through our cloud services offerings triggers obligations to comply with certain privacy rules and data security requirements under HIPAA.

Any systems failure or security breach that results in the release of, or unauthorized access to, personal data, or any failure or perceived failure by us or our third-party service providers to comply with applicable privacy policies, contractual obligations, or any applicable laws or regulations relating to privacy or data protection, could result in proceedings against us by domestic or foreign government entities or others, including private plaintiffs in litigation. Such proceedings could result in the imposition of sanctions, fines, penalties, liabilities, and/or government orders requiring that we change our data practices, any of which could have a material adverse effect on our business, operating results, reputation, and financial condition.

Various U.S. federal, U.S. state, and foreign legislative, regulatory, or other government bodies may enact new or additional laws or regulations, or issue rulings that invalidate prior laws or regulations, concerning privacy, data storage, data protection, and cross-border transfer of data that could materially adversely impact our business. For example, in October 2015, the Court of Justice of the European Union issued a ruling that declared the U.S.-EU Safe Harbor Framework invalid. Following this ruling, U.S. and European authorities agreed to, and in July 2016 the European Commission formally adopted, a new mechanism for lawfully transferring personal data from the European Union to the United States, referred to as the "Privacy Shield." In addition, in April 2016, the European Parliament and the Council of the European Union formally adopted a comprehensive general data protection regulation ("GDPR"), which took effect in May 2018. GDPR governs data practices and privacy, establishes new requirements regarding the handling and security of personal data, requires disclosure of data breaches to individuals, customers, and data protection authorities in certain circumstances, requires companies to honor data subjects' requests relating to their personal data, permits regulators to impose fines of up to 4% of global annual revenue, and establishes a private right

of action. Furthermore, a new ePrivacy Regulation, regulating electronic communications, was proposed in 2017 and is under consideration by the European Commission, the European Parliament, and the European Council.

In addition, we may be subject to a cybersecurity law that went into effect in China in June 2017 that has uncertain but broad application and imposes a number of new privacy and data security obligations, including a data localization requirement for certain types of data.

The state of California has also adopted a new comprehensive privacy law, the California Consumer Protection Act (“CCPA”), that is modeled largely on GDPR and is scheduled to take effect on January 1, 2020. The final scope of the CCPA remains unclear at this time since the California Attorney General is early in the process of initiating rulemaking proceedings pursuant to the CCPA. If the CCPA takes effect in its current form, it will be enforceable primarily by the California Attorney General, with private rights of action for consumers being permissible only in the event of a data breach.

Furthermore, the U.S. Congress is considering comprehensive privacy legislation. At this time, it is unclear whether it will in fact pass such a law and if so, when and what it will require and prohibit. Moreover, it is not clear whether any such legislation would give the Federal Trade Commission (“FTC”) any new authority to impose civil penalties for violations of the Federal Trade Commission Act, or whether the U.S. Congress will grant the FTC rulemaking authority over privacy and information security.

Complying with these and other changing requirements could cause us or our customers to incur substantial costs or pay substantial fines or penalties, require us to change our business practices, require us to take on more onerous obligations in our contracts, or limit our ability to provide certain products and services in certain jurisdictions, any of which could materially adversely affect our business and operating results. In addition, the Privacy Shield, as well as other mechanisms for lawfully transferring personal data from the European Union to the United States and certain other countries, are being challenged in European courts, which could lead to uncertainty about the legality of such transfers, or burdensome or inconsistent legal requirements. The Privacy Shield is also subject to annual review by the European Commission and the U.S. Department of Commerce, which could result in modifications to the Privacy Shield or its enforcement, or even its invalidation. New laws or regulations restricting or limiting the collection or use of mobile data could also reduce demand for certain of our services or require changes to our business practices, which could materially adversely affect our business and operating results.

If we or our third-party service providers experience a security breach and unauthorized parties obtain access to our customers’, prospects’, vendors’, or channel partners’ data, our data, or our cloud services offerings, networks, or other systems, our offerings may be perceived as not being secure, our reputation may be harmed, demand for our offerings may be reduced, our operations may be disrupted, we may incur significant legal and financial liabilities, and our business could be materially adversely affected.

As part of our business, we process, store, and transmit our customers’, prospects’, vendors’, and channel partners’ information and data as well as our own, including in our cloud services offerings, networks, and other systems. There can be no assurance that any security measures that we or our third-party service providers have implemented will be effective against all current or future security threats. For example, security measures may be breached as a result of technological error, computer viruses, or third-party action, including intentional misconduct by computer hackers, physical break-ins, the actions of state actors, industrial espionage, fraudulent inducement of employees, customers, or channel partners to disclose sensitive information such as user names or passwords, and employee, customer, or channel partner error or malfeasance. We have experienced attempts by third parties to identify and exploit product and service vulnerabilities, penetrate or bypass our security measures, and gain unauthorized access to our or our customers’ or service providers’ cloud offerings, networks, and other systems.

A security breach could result in unauthorized access to or disclosure, modification, misuse, loss, or destruction of our customers’, prospects’, vendors’, or channel partners’ data, our data (including our proprietary information, intellectual property, or trade secrets), or our cloud services offerings, networks, or other systems. Because there are many

different security breach techniques and such techniques continue to evolve, we may be unable to anticipate, detect, or mitigate attempted security breaches and implement adequate preventative measures. Third parties may also conduct attacks designed to prevent access to critical data or systems through ransomware or temporarily deny customers access to our cloud services.

Any security breach or successful denial of service attack could result in a loss of customer confidence in the security of our offerings and damage to our brand, reduce the demand for our offerings, disrupt our normal business operations, require us to spend material resources to investigate or correct the breach, require us to notify affected customers or individuals and/or applicable regulators and others, and provide identity theft protection services to individuals under applicable laws, expose us to legal liabilities, including litigation, regulatory enforcement, and indemnity obligations, and materially adversely affect our revenue and operating results. These risks will increase as we continue to grow the number and scale of our cloud-based offerings, and process, store, and transmit increasingly large amounts of our customers', prospects', vendors', channel partners', and our own information and data, which may include proprietary or confidential data or personal or identifying information. Moreover, if a high-profile security breach occurs with respect to an industry peer, our customers and potential customers may lose trust in the security of business intelligence or analytics platforms generally, which could adversely impact our ability to retain existing customers or attract new ones.

Our intellectual property is valuable, and any inability to protect it could reduce the value of our products, services, and brand

We rely on a combination of copyrights, patents, trademarks, trade secrets, confidentiality procedures, and contractual commitments to protect our intellectual property worldwide. Despite our efforts, these measures can only provide limited protection. Unauthorized third parties may try to copy or reverse engineer portions of our products or otherwise obtain and use our intellectual property. Any intellectual property owned by us may be invalidated, circumvented, or challenged. Any of our pending or future intellectual property applications, whether or not currently being challenged, may not be issued with the scope we seek, if at all. Moreover, amendments to and developing jurisprudence regarding U.S. and international law may affect our ability to protect our intellectual property and defend against claims of infringement. In addition, although we generally enter into confidentiality agreements with our employees and contractors, our former employees and contractors may seek employment with our business partners, customers, or competitors, and there can be no assurance that the confidential nature of our intellectual property will be maintained. Furthermore, the laws of some countries do not provide the same level of protection of our intellectual property as do the laws of the United States. If we cannot protect our intellectual property against unauthorized copying or use, we may not remain competitive.

Third parties may claim we infringe their intellectual property rights

We periodically receive notices from third parties claiming we are infringing their intellectual property rights, principally patent and trademark rights. We expect the number of such claims will increase as we continue to expand our offerings and branding, the number of offerings and level of competition in our industry segments grow, the functionality of offerings overlaps, and the volume of issued patents, patent applications, and trademark registrations continues to increase. Responding to any infringement claim, regardless of its validity, could:

- be time-consuming, costly, and/or result in litigation;
- divert management's time and attention from developing our business;
- require us to pay monetary damages or enter into royalty and licensing agreements that we would not normally find acceptable;
- require us to stop selling certain of our offerings;
- require us to redesign certain of our offerings using alternative non-infringing technology or practices, which could require significant effort and expense;
- require us to rename certain of our offerings or entities; or
- require us to satisfy indemnification obligations to our customers and channel partners.

Additionally, while we monitor our use of third-party software, including open source software, we cannot assure you that our processes for controlling such use in our products will be effective. If we inadvertently embed certain types of open source software into one or more of our products, fail to comply with the terms and conditions associated with the use of various open source software, or if third-party software that we license is found to infringe intellectual property rights of others, we could subject ourselves to infringement liability and be required to re-engineer our products, discontinue the sale of our products if re-engineering could not be accomplished on a timely or cost-effective basis, or make available to certain third parties or generally available, in source code form, our proprietary code, any of which could materially adversely affect our business, operating results, and financial condition.

If a successful infringement claim is made against us and we fail to develop or license a substitute technology or brand name, as applicable, our business, results of operations, financial condition, or cash flows could be materially adversely affected.

Because of the rights of our two classes of common stock and because we are controlled by Michael J. Saylor, who beneficially owns the majority of our class B common stock, Mr. Saylor could transfer control of MicroStrategy to a third party without the approval of our Board of Directors or our other stockholders, prevent a third party from acquiring us, or limit your ability to influence corporate matters

We have two classes of common stock: class A common stock and class B common stock. Holders of our class A common stock generally have the same rights as holders of our class B common stock, except that holders of class A common stock have one vote per share while holders of class B common stock have ten votes per share. As of February 11, 2019, holders of our class B common stock owned 2,035,184 shares of class B common stock, or 71.2% of the total voting power. As of February 11, 2019, Mr. Saylor, our Chairman of the Board of Directors, President & Chief Executive Officer, beneficially owned 2,011,668 shares of class B common stock, or 70.4% of the total voting power. Accordingly, Mr. Saylor can control MicroStrategy through his ability to determine the outcome of elections of our directors, amend our certificate of incorporation and by-laws, and take other actions requiring the vote or consent of stockholders, including mergers, going-private transactions, and other extraordinary transactions and their terms.

Our certificate of incorporation allows holders of class B common stock to transfer shares of class B common stock, subject to the approval of stockholders holding a majority of the outstanding class B common stock. Mr. Saylor or a group of stockholders holding a majority of the outstanding class B common stock could, without the approval of our Board of Directors or our other stockholders, transfer voting control of MicroStrategy to a third party. Such a transfer of control could have a material adverse effect on our business, operating results, and financial condition. Mr. Saylor or a group of stockholders holding a majority of the outstanding class B common stock could also prevent a change of control of MicroStrategy, regardless of whether holders of class A common stock might otherwise receive a premium for their shares over the then current market price. In addition, this concentrated control limits stockholders' ability to influence corporate matters and, as a result, we may take actions that our non-controlling stockholders do not view as beneficial or that conflict with their interests. As a result, the market price of our class A common stock could be materially adversely affected.

Our status as a "controlled company" could make our class A common stock less attractive to some investors or otherwise materially adversely affect our stock price

Because we qualify as a "controlled company" under the corporate governance rules for Nasdaq-listed companies, we are not required to have independent directors comprise a majority of our Board of Directors. Additionally, our Board of Directors is not required to have an independent compensation or nominating committee, or to have the independent directors exercise the nominating function. We are also not required to have the compensation of our

executive officers be determined by a compensation committee of independent directors. In addition, we are not required to empower our Compensation Committee with the authority to engage the services of any compensation consultants, legal counsel, or other advisors, or to have the Compensation Committee assess the independence of compensation consultants, legal counsel, and other advisors that it engages.

In light of our status as a controlled company, our Board of Directors has determined not to establish an independent nominating committee or have its independent directors exercise the nominating function and has elected instead to have the Board of Directors be directly responsible for nominating members of the Board. A majority of our Board of Directors is currently comprised of independent directors, and our Board of Directors has established a Compensation Committee comprised entirely of independent directors. The Compensation Committee determines the compensation of our Chief Executive Officer. However, our Board of Directors has authorized our Chief Executive Officer to determine the compensation of executive officers other than himself, rather than having such compensation determined by the Compensation Committee, except that certain performance-based executive officer compensation is determined by the Compensation Committee. Awards under our 2013 Stock Incentive Plan (as amended, the “2013 Equity Plan”) are also approved by the Compensation Committee. Additionally, while our Compensation Committee is empowered with the authority to retain and terminate outside counsel, compensation consultants, and other experts or consultants, it is not required to assess their independence.

Although currently a majority of our Board of Directors is comprised of independent directors and the Compensation Committee is comprised entirely of independent directors, we may elect in the future not to have independent directors constitute a majority of the Board of Directors or the Compensation Committee, have our Chief Executive Officer’s compensation determined by a compensation committee of independent directors, or have a compensation committee of the Board of Directors at all.

Accordingly, should the interests of our controlling stockholder differ from those of other stockholders, the other stockholders may not have the same protections that are afforded to stockholders of companies that are required to follow all of the corporate governance rules for Nasdaq-listed companies. Our status as a controlled company could make our class A common stock less attractive to some investors or otherwise materially adversely affect our stock price.

Item 1B. Unresolved Staff Comments

None.

Item 2. Properties

As of December 31, 2018, we leased approximately 214,000 square feet of office space at a location in Northern Virginia that began serving as our corporate headquarters in October 2010 and was to expire in December 2020. In January 2018, we amended the lease to extend the lease term through December 2030. The amended lease provides for certain tenant allowances and incentives.

In addition, we lease offices in U.S. and foreign locations for our services and support, sales and marketing, research and development, and administrative personnel. As of December 31, 2018, we leased approximately 27,000 square feet of office space in the United States, in addition to our corporate headquarters, and approximately 225,000 square feet of office space in various foreign locations.

Item 3. Legal
Proceedings

We are involved in various legal proceedings arising in the normal course of business. Although the outcomes of these legal proceedings are inherently difficult to predict, we do not expect the resolution of these legal proceedings to have a material adverse effect on our financial position, results of operations, or cash flows.

Item 4. Mine Safety Disclosures
Not applicable.

PART II

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

Our class A common stock is traded on the Nasdaq Global Select Market under the symbol "MSTR." There is no established public trading market for our class B common stock. As of February 11, 2019, there were approximately 1,349 stockholders of record of our class A common stock and three stockholders of record of our class B common stock.

Holders of our class A common stock generally have the same rights as holders of our class B common stock, except that holders of class A common stock have one vote per share while holders of class B common stock have ten votes per share.

We have never declared or paid any cash dividends on either our class A or class B common stock and have no current plans to declare or pay any such dividends.

Information regarding our equity compensation plans and the securities authorized for issuance thereunder is incorporated herein by reference to "Part III. Item 12. Security Ownership of Certain Beneficial Owners and Management and Related Stockholder Matters."

The following table provides information about our repurchases of equity securities that are registered by us pursuant to Section 12 of the Exchange Act during the periods indicated:

	(a)	(b)	(c)	(d)
				Maximum Number (or
			Total Number of	Approximate Dollar
	Total	Average	Shares (or Units)	Value) of Shares (or
	Number of	Price Paid	Purchased as Part of	Units) that May Yet Be
	Shares (or	per Share	Publicly Announced	Purchased Under the
Period	Units) Purchased	(or Unit) (1)	Plans or Programs (1)	Plans or Programs (1)
October 1, 2018 – October 31, 2018	20,000	\$ 122.48	20,000	\$ 452,259,037
November 1, 2018 – November 30, 2018	523,818	\$ 126.32	523,818	\$ 386,090,032
December 1, 2018 – December 31, 2018	336,849	\$ 125.75	336,849	\$ 343,731,225
Total:	880,667	\$ 126.02	880,667	\$ 343,731,225

(1)

On July 28, 2005, we announced that the Board of Directors authorized us to repurchase up to an aggregate of \$300.0 million of our class A common stock from time to time on the open market (the “2005 Share Repurchase Program”). On April 29, 2008, the Board of Directors amended the 2005 Share Repurchase Program to increase the amount of class A common stock that we are authorized to repurchase from \$300.0 million to \$800.0 million and extended the term of the 2005 Share Repurchase Program to April 29, 2013. On April 25, 2013, the Board of Directors extended the term of the 2005 Share Repurchase Program through April 29, 2018. On April 24, 2018, the Board of Directors further extended the term of the 2005 Share Repurchase Program through April 29, 2023, although the program may be suspended or discontinued by us at any time. The timing and amount of any shares repurchased will be determined by management based on its evaluation of market conditions and other factors. The 2005 Share Repurchase Program may be funded using our working capital, as well as proceeds from any other funding arrangements that we may enter into in the future. As of December 31, 2018, pursuant to the 2005 Share Repurchase Program, we had repurchased an aggregate of 4,707,614 shares of our class A common stock at an average price per share of \$96.92 and an aggregate cost of \$456.3 million. As of December 31, 2018, \$343.7 million of our class A common stock remained available for repurchase pursuant to the 2005 Share Repurchase Program. The average price per share and aggregate cost amounts disclosed above include broker commissions.

Performance Graph

The following graph compares the cumulative total stockholder return on our class A common stock from December 31, 2013 (the last trading day before the beginning of our fifth preceding fiscal year) to December 31, 2018 (the last trading day of the fiscal year ended December 31, 2018) with the cumulative total return of (i) the Total Return Index for The Nasdaq Stock Market (U.S. Companies) (the “Nasdaq Composite Index”) and (ii) the Nasdaq Computer Index. The graph assumes the investment of \$100.00 on December 31, 2013 in our class A common stock, the Nasdaq Composite Index, and the Nasdaq Computer Index, and assumes that any dividends are reinvested. Measurement points are December 31, 2013, December 31, 2014, December 31, 2015, December 30, 2016, December 29, 2017, and December 31, 2018.

	12/31/13	12/31/14	12/31/15	12/30/16	12/29/17	12/31/18
MicroStrategy Incorporated	\$ 100.00	\$ 130.71	\$ 144.31	\$ 158.89	\$ 105.68	\$ 102.83
Nasdaq Composite Index	\$ 100.00	\$ 114.75	\$ 122.74	\$ 133.62	\$ 173.22	\$ 168.30
Nasdaq Computer Index	\$ 100.00	\$ 121.69	\$ 131.02	\$ 149.41	\$ 209.74	\$ 204.24

Item 6. Selected Financial Data

The following selected consolidated financial data should be read in conjunction with “Item 7. Management’s Discussion and Analysis of Financial Condition and Results of Operations,” the consolidated financial statements and notes thereto, and other financial information appearing elsewhere in this Annual Report.

As discussed in Note 3, Recent Accounting Standards, to the consolidated financial statements, we adopted ASU 2014-09 and its subsequent amendments effective as of January 1, 2018 and restated certain prior period amounts. In the selected consolidated financial data below, we have restated our Statements of Operations Data for the years ended December 31, 2017 and 2016, and our Balance Sheet Data as of December 31, 2017 and 2016. Data for preceding years are not directly comparable as they have not been restated to reflect the adoption of ASU 2014-09.

	Years Ended December 31,				
	2018	2017	2016	2015	2014
		(as adjusted)	(as adjusted)		
	(in thousands, except per share data)				
Statements of Operations Data					
Total revenues	\$497,638	\$ 503,843	\$ 513,589	\$529,869	\$579,830
Net income	\$22,501	\$ 18,195	\$ 92,239	\$105,931	\$5,035
Earnings per share (1)(2):					
Basic earnings per share	\$1.98	\$ 1.59	\$ 8.07	\$9.33	\$0.45
Diluted earnings per share	\$1.97	\$ 1.58	\$ 8.01	\$9.18	\$0.44

	As of December 31,				
	2018	2017	2016	2015	2014
		(as adjusted)	(as adjusted)		
	(in thousands)				
Balance Sheet Data					
Total assets, excluding held-for-sale	\$855,768	\$ 933,219	\$ 869,716	\$656,894	\$558,797
Long-term liabilities, excluding deferred revenue, advance payments, and held-for-sale	\$61,299	\$ 50,150	\$ 16,741	\$19,960	\$26,208
Total stockholders' equity	\$529,731	\$ 605,726	\$ 566,317	\$455,281	\$324,471

(1) Basic and fully diluted earnings per share for class A and class B common stock are the same.

(2) We have never declared or paid any cash dividends on either class A or class B common stock.

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

Forward-Looking Information

This Annual Report contains forward-looking statements within the meaning of Section 21E of the Exchange Act. For this purpose, any statements contained herein that are not statements of historical fact, including without limitation, certain statements regarding industry prospects and our results of operations or financial position, may be deemed to be forward-looking statements. Without limiting the foregoing, the words “believes,” “anticipates,” “plans,” “expects,” and similar expressions are intended to identify forward-looking statements. The important factors discussed under “Part I. Item 1A. Risk Factors,” among others, could cause actual results to differ materially from those indicated by forward-looking statements made herein and presented elsewhere by management from time to time. Such forward-looking statements represent management's current expectations and are inherently uncertain. Investors are warned that actual results may differ from management's expectations.

Adoption of ASU 2014-09

We adopted ASU 2014-09 and its subsequent amendments effective January 1, 2018 and adjusted our prior period consolidated financial statements to reflect full retrospective adoption. See Note 3, Recent Accounting Standards, to the consolidated financial statements for a summary of the significant changes in accounting principles and the impact to the Company's previously reported consolidated financial statements. Where applicable, prior period information within this “Item 7. Management's Discussion and Analysis of Financial Condition and Results of Operations” has also been adjusted to reflect the full retrospective adoption of ASU 2014-09.

Overview

MicroStrategy is a leading worldwide provider of enterprise analytics and mobility software. We are one of the largest independent, publicly-traded analytics vendors as measured by annual revenue. Our customers include leading companies from a wide range of industries, including retail, consulting, technology, manufacturing, finance, banking, insurance, healthcare, education, and telecommunications, as well as the public sector.

The analytics market is highly competitive. Our success depends on the effectiveness with which we can differentiate our products from those offered by large software vendors that provide products across multiple lines of business, including one or more products that directly compete with our products, and other analytics vendors across large, mid-sized, and small opportunities. We believe a key differentiator of MicroStrategy is our offering of a single, comprehensive enterprise platform that uniquely features HyperIntelligence, transformational mobility, and federated analytics, which can be deployed on-premises or on multiple private and public cloud platforms.

In 2018, we continued to innovate our platform by focusing on making it more usable, powerful, scalable, flexible, and secure. These innovations included:

- extending availability in the cloud by offering MicroStrategy on Microsoft Azure and strengthening MicroStrategy on AWS;
- integrating the MicroStrategy platform with leading AI, machine learning, natural language processing, and other innovative technologies; and
- delivering Zero-Click Intelligence™ with HyperIntelligence applications, enabling more users in the organization to access information rapidly.

The following table sets forth certain operating highlights (in thousands) for the years ended December 31, 2018, 2017, and 2016:

	Years Ended December 31,		
	2018	2017 (as adjusted)	2016 (as adjusted)
Revenues			
Product licenses	\$88,057	\$93,259	\$114,874
Subscription services	29,570	32,368	30,574
Total product licenses and subscription services	117,627	125,627	145,448
Product support	296,216	289,184	285,136
Other services	83,795	89,032	83,005
Total revenues	497,638	503,843	513,589
Cost of revenues			
Product licenses	4,864	7,176	8,573
Subscription services	13,620	13,435	12,765
Total product licenses and subscription services	18,484	20,611	21,338
Product support	20,242	17,481	15,001
Other services	60,773	58,557	56,808
Total cost of revenues	99,499	96,649	93,147
Gross profit	398,139	407,194	420,442
Operating expenses			
Sales and marketing	205,525	175,045	158,281
Research and development	102,499	78,766	73,142
General and administrative	86,134	80,161	79,462
Restructuring costs	0	0	45
Total operating expenses	394,158	333,972	310,930
Income from operations	\$3,981	\$73,222	\$109,512

As part of our efforts to take greater advantage of the opportunities in the market and grow our market share, we expect to further increase research and development expenditures as we invest in our technology products and personnel in future periods.

As discussed in Note 9, Share-based Compensation, to the consolidated financial statements, we have outstanding stock options to purchase shares of our class A common stock and certain other stock-based awards under our 2013 Equity Plan. Share-based compensation expense (in thousands) from these awards was recognized in the following operating expense line items in our Consolidated Statements of Operations for the periods indicated:

	Years Ended December 31,		
	2018	2017	2016
Cost of product support revenues	\$293	\$0	\$0
Cost of consulting revenues	72	0	0
Cost of education revenues	176	0	0

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Sales and marketing	3,572	2,294	2,971
Research and development	3,078	1,650	1,000
General and administrative	7,445	10,323	7,846
Total share-based compensation expense	\$ 14,636	\$ 14,267	\$ 11,817

As of December 31, 2018, we estimated that approximately \$34.2 million of additional share-based compensation expense for awards granted under the 2013 Equity Plan will be recognized over a remaining weighted average period of 3.0 years.

We base our internal operating expense forecasts on expected revenue trends and strategic objectives. Many of our expenses, such as office leases and certain personnel costs, are relatively fixed. Accordingly, any shortfall in revenue may cause significant variation in our operating results. We therefore believe that quarter-to-quarter comparisons of our operating results may not be a good indication of our future performance.

Non-GAAP Financial Measures

We are providing supplemental financial measures for income from operations that excludes the impact of our share-based compensation arrangements and restructuring activities, and for net income and diluted earnings per share that exclude the impact from the Tax Act. These supplemental financial measures are not measurements of financial performance under generally accepted accounting principles in the United States ("GAAP") and, as a result, these supplemental financial measures may not be comparable to similarly titled measures of other companies. Management uses these non-GAAP financial measures internally to help understand, manage, and evaluate our business performance and to help make operating decisions. We believe that these non-GAAP financial measures are also useful to investors and analysts in comparing our performance across reporting periods on a consistent basis because in the case of the supplemental measure for income from operations, it excludes a significant non-cash expense that we believe is not reflective of our general business performance and restructuring charges that we believe are not reflective of ongoing operating results, and in the case of the supplemental measures for net income and diluted earnings per share, they exclude one-time tax charges and adjustments resulting from the Tax Act. In addition, accounting for share-based compensation arrangements requires significant management judgment and the resulting expense could vary significantly in comparison to other companies. Therefore, we believe the use of these non-GAAP financial measures can also facilitate comparison of our operating results to those of our competitors.

Non-GAAP financial measures are subject to material limitations as they are not in accordance with, or a substitute for, measurements prepared in accordance with GAAP. For example, we expect that share-based compensation expense, which is excluded from our non-GAAP financial measure, will continue to be a significant recurring expense over the coming years and is an important part of the compensation provided to certain employees, officers, and directors. Our non-GAAP financial measures are not meant to be considered in isolation and should be read only in conjunction with our consolidated financial statements, which have been prepared in accordance with GAAP. We rely primarily on such consolidated financial statements to understand, manage, and evaluate our business performance, and use the non-GAAP financial measures only supplementally.

The following is a reconciliation of our non-GAAP financial measures to their most directly comparable GAAP measures (in thousands, except per share data) for the periods indicated:

	Years Ended December 31,		
	2018	2017 (as adjusted)	2016 (as adjusted)
Reconciliation of non-GAAP income from operations:			
Income from operations	\$3,981	\$ 73,222	\$ 109,512
Share-based compensation expense	14,636	14,267	11,817
Restructuring costs	0	0	45
Non-GAAP income from operations	\$18,617	\$ 87,489	\$ 121,374
Reconciliation of non-GAAP net income:			
Net income	\$22,501	\$ 18,195	\$ 92,239
Tax charges and adjustments related to U.S. tax reform	(3,106)	44,018	0
Non-GAAP net income	\$19,395	\$ 62,213	\$ 92,239
Reconciliation of non-GAAP diluted earnings per share:			
Diluted earnings per share	\$1.97	\$ 1.58	\$ 8.01
Impact of tax charges and adjustments related to U.S. tax reform (per diluted share)	(0.27)	3.81	0.00
Non-GAAP diluted earnings per share	\$1.70	\$ 5.39	\$ 8.01

Critical Accounting Policies

Our discussion and analysis of our financial condition and results of operations are based on our consolidated financial statements, which have been prepared in accordance with GAAP.

The preparation of our consolidated financial statements requires us to make estimates and judgments that affect the reported amounts of assets, liabilities, and equity, the disclosure of contingent assets and liabilities at the date of the financial statements, and the reported amounts of revenues and expenses during the reporting period. In particular, estimates relating to revenue recognition have a material impact on our financial statements. Actual results and outcomes could differ from these estimates and assumptions.

Revenue Recognition. We adopted ASU 2014-09 effective as of January 1, 2018 and have adjusted our prior period consolidated financial statements to reflect full retrospective adoption. See Note 3, Recent Accounting Standards, to the consolidated financial statements for a summary of the significant changes in accounting principles and the impact to our previously reported consolidated financial statements.

Under ASU 2014-09, we recognize revenue using a five-step model:

- (i) Identifying the contract(s) with a customer,
- (ii) Identifying the performance obligation,
- (iii) Determining the transaction price,
- (iv) Allocating the transaction price to the performance obligations in the contract, and
- (v) Recognizing revenue when, or as, we satisfy a performance obligation.

We have elected to exclude taxes assessed by government authorities in determining the transaction price, and therefore revenue is recognized net of taxes collected from customers.

Performance Obligations and Timing of Revenue Recognition

We primarily sell goods and services that fall into the categories discussed below. Each category contains one or more performance obligations that are either (i) capable of being distinct (i.e., the customer can benefit from the good or service on its own or together with readily available resources, including those purchased separately from us) and distinct within the context of the contract (i.e., separately identifiable from other promises in the contract) or (ii) a series of distinct goods or services that are substantially the same and have the same pattern of transfer to the customer. Aside from our term and perpetual software licenses, which are delivered at a point in time, the majority of our services are delivered over time.

Product Licenses

We sell different types of on-premise business intelligence software, licensed on a term or perpetual basis. Although license arrangements are sold with product support, the software is fully functional at the outset of the arrangement and is considered a distinct performance obligation. Revenue from product license sales is recognized when control of the software license has transferred to the customer, which is the later of delivery or commencement of the license term. We may also sell through resellers and OEMs who purchase our products for resale. In reseller arrangements, revenue is recognized when control of the product is transferred to the end user. In OEM arrangements, revenue is recognized upon delivery to the OEM.

Subscription Services

We also sell access to our software through a subscription-based cloud offering, wherein customers access the software through a third-party hosting service. Control of the software itself does not transfer to the customer under this arrangement and is not considered a separate performance obligation. Subscription services are regularly sold on a standalone basis with telephone support only. Revenue related to this subscription service is recognized on a straight-line basis over the contract period, which is the period over which the customer has continuous access to the software.

Product Support

In all product license arrangements, customers are required to purchase a standard product support package and may also purchase a premium product support package for a fixed annual fee. All product support packages include both technical support and when-and-if-available software upgrades, which are treated as a single performance obligation as they are considered a series of distinct services that are substantially the same and have the same duration and measure of progress. Revenue from product support is recognized on a straight-line basis over the contract period, which is the period over which the customer has continuous access to product support.

Consulting Services

We sell consulting services to help customers plan and execute deployment of our software. Customers are not required to use consulting services to fully benefit from the software license. Consulting services are regularly sold on a standalone basis and either (i) prepaid upfront or (ii) sold on a time and materials basis. Consulting arrangements are each considered separate performance obligations because they do not integrate with each other or with other products and services to deliver a combined output to the customer, do not modify or customize (or are not modified or customized by) each other or other products and services, and do not affect the customer's ability to use the other consulting offerings or other products and services. Revenue under consulting arrangements is recognized over time as services are delivered. For time and materials-based consulting arrangements, we have elected the practical expedient of recognizing revenue upon invoicing since the invoiced amount corresponds directly to the value of our

service to date.

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Education Services

We sell various education and training services to our customers. Education services are sold on a standalone basis under three different arrangements: (i) prepaid bulk training units that may be redeemed on training courses based on standard redemption rates, (ii) an annual subscription to unlimited training courses, and (iii) individual courses purchased a la carte. Education arrangements are each considered separate performance obligations because they do not integrate with each other or with other products and services to deliver a combined output to the customer, do not modify or customize (or are not modified or customized by) each other or other products and services, and do not affect the customer's ability to use the other education offerings or other products and services. Revenue on prepaid bulk training units and individual course purchases are recognized when the courses are delivered. Revenue on the annual subscription is recognized on a straight-line basis over the contract period, which is the period over which the customer has continuous access to unlimited training courses.

See Note 13, Segment Information, to the consolidated financial statements for information regarding total revenues by geographic region.

Significant Judgments and Estimates

The adoption of ASU 2014-09 requires us to make significant judgments to determine the transaction price of a contract and subsequently allocate the transaction price based on an estimated standalone selling price ("SSP"). We are also required to make significant judgments with respect to capitalizing incremental costs to obtain a customer contract and determining the subsequent amortization period. These significant judgments and estimates are discussed further below.

Determining the Transaction Price

The transaction price includes both fixed and variable consideration. Variable consideration is included in the transaction price to the extent it is probable that a significant reversal will not occur. The amount of variable consideration excluded from the transaction price was not material for the years ended December 31, 2018, 2017, and 2016. Our estimates of variable consideration are also subject to subsequent true-up adjustments and may result in changes to our transaction prices, but such true-up adjustments are not expected to be material. We have the following sources of variable consideration:

- (i) Performance penalties – Subscription services and product support arrangements generally contain performance response time guarantees. For subscription services arrangements, we estimate variable consideration using a portfolio approach because performance penalties are tied to standard up-time requirements. For product support arrangements, we estimate variable consideration on a contract basis because such arrangements are customer-specific. For both subscription services and product support arrangements, we use an expected value approach to estimate variable consideration based on historical business practices and current and future performance expectations to determine the likelihood of incurring penalties.
- (ii) Extended payment terms – Our standard payment terms are generally within 180 days of invoicing. If extended payment terms are granted to customers, those terms generally do not exceed one year. For contracts with extended payment terms, we estimate variable consideration on a contract basis because such estimates are customer-specific, and we use an expected value approach to analyze historical business experience on a customer-by-customer basis to determine the likelihood that extended payment terms lead to an implied price

concession.

(iii) Sales and usage-based royalties – Certain product license arrangements include sales or usage-based royalties, covering both the software license and product support. In these arrangements, we use an expected value approach to estimate and recognize revenue for royalty sales each period, utilizing historical data on a contract-by-contract basis. True-up adjustments are recorded in subsequent periods when royalty reporting is received from the OEMs.

We provide a standard software assurance warranty to repair, replace, or refund software that does not perform in accordance with documentation. The standard software assurance warranty period is generally less than one year. Assurance warranty claims were not material for the years ended December 31, 2018, 2017, and 2016.

We do not adjust the transaction price for significant financing components where the time period between cash payment and performance is one year or less. However, there are circumstances where the timing between cash payment and performance may exceed one year. These circumstances generally involve prepaid multi-year product support and subscription services arrangements where the customer determines when the service is utilized (e.g., when to request on-call support services or when to use and access the software on the cloud). In these circumstances, we have determined no significant financing component exists because the customer controls when to utilize the service and because there are significant business purposes behind the timing difference between payment and performance (e.g., maximizing profit in the case of product support services and ensuring collectability in the case of subscription services).

Allocating the Transaction Price Based on Standalone Selling Prices (SSP)

We allocate the transaction price to each performance obligation in a contract based on its relative SSP. The SSP is the price at which we sell the product or service on a standalone basis at contract inception. In circumstances where SSP is not directly observable, we estimate SSP using the following methodologies:

- (i) Product licenses – Product licenses are not sold on a standalone basis and pricing is highly variable. We establish SSP of product licenses using a residual approach after first establishing the SSP of standard product support. Standard product support is sold on a standalone basis within a narrow range of the net license fee, and because an economic relationship exists between product licenses and standard product support, we have concluded that the residual method to estimate SSP of product licenses sold on both a perpetual and term basis is a fair allocation of the transaction price.
- (ii) Subscription services – Given the highly variable selling price of subscription services, we establish the SSP of our subscription services arrangements using a similar residual approach after first establishing the SSP of consulting and education services. We have concluded that the residual method to estimate SSP of our subscription services is a fair allocation of the transaction price.
- (iii) Standard product support – We establish SSP of standard product support as a percentage of the stated net license fee, given such pricing is consistent with our normal pricing practices and there exists sufficient history of customers renewing at similar percentages. Each quarter, we track renewal rates negotiated when standard product support is initially sold with a perpetual license in order to determine the SSP of standard product support within each geographic region for the upcoming quarter. If the stated standard product support fee falls within the SSP range, the specific rate in the contract will be used to estimate SSP. If the stated fee is above or below SSP, the highest or lowest end of the range, respectively, will generally be used to estimate SSP of standard product support.
- (iv) Premium product support, consulting services, and education services – SSP of premium product support, consulting services, and education services is established by using a bell-shaped curve approach to define a narrow range within each geographic region in which the services are discounted off of the list price on a standalone basis.

We often provide options to purchase future products or services at a discount. We analyze the option price against the previously established SSP of the goods or services to determine if the options represent material rights that should be accounted for as separate performance obligations. In general, an option sold at or above SSP is not considered a

material right because the customer could have received that right without entering into the contract. If a material right exists, revenue associated with the option is recognized when the future goods or services are transferred, or when the option expires. During the years ended December 31, 2018, 2017, and 2016, separate performance obligations arising from future purchase options have not been material.

Incremental Costs to Obtain Customer Contracts

Incremental costs incurred to obtain contracts with customers include certain variable compensation (e.g., commissions and bonuses) paid to our sales team. Although we may bundle our goods and services into one contract, commissions are individually determined on each distinct good or service in the contract. We expense as incurred those amounts earned on consulting and education services, which are generally performed within a one-year period and primarily sold on a standalone basis. We also expense as incurred those amounts earned on product license sales, since the amount is earned when the license is delivered. We capitalize those amounts earned on product support and amortize the costs over a period of time that is consistent with the pattern of transfer of the product support to the customer, which we have determined to be a period of three years. Although we typically sell product support for a period of one year, a majority of customers renew their product support arrangements. Three years is generally the period after which platforms are no longer supported by our support team and when customers generally choose to upgrade their software platform. We do not pay variable compensation on product support renewals. Variable compensation earned on subscription cloud services is expensed as incurred due to its immaterial nature.

Impact of Foreign Currency Exchange Rate Fluctuations on Results of Operations

We conduct a significant portion of our business in currencies other than the U.S. dollar, the currency in which we report our consolidated financial statements. As currency rates change from quarter over quarter and year over year, our results of operations may be impacted. The table below summarizes the impact (in thousands) of fluctuations in foreign currency exchange rates on certain components of our Consolidated Statements of Operations by showing the increase (decrease) in international revenues or expenses, as applicable, from the prior year. The term “international” refers to operations outside of the United States and Canada.

	Years Ended December 31,		
	2018	2017	2016
		(as	(as
		adjusted)	adjusted)
Product licenses revenues	\$(1,692)	\$ 1,099	\$(1,561)
Subscription services revenues	215	(120)	(325)
Product support revenues	1,278	1,089	(4,513)
Other services revenues	856	372	(1,113)
Cost of product support revenues	36	(41)	(327)
Cost of other services revenues	522	664	(950)
Sales and marketing expenses	(603)	599	(1,970)
Research and development expenses	396	(220)	(944)
General and administrative expenses	(22)	5	(1,396)

For example, if there had been no change to foreign currency exchange rates from 2017 to 2018, international product licenses revenues would have been \$40.9 million rather than \$39.2 million for the year ended December 31, 2018. If there had been no change to foreign currency exchange rates from 2017 to 2018, international product support revenues would have been \$120.5 million rather than \$121.8 million for the year ended December 31, 2018. If there had been no change to foreign currency exchange rates from 2017 to 2018, sales and marketing expenses would have been \$206.1 million rather than \$205.5 million for the year ended December 31, 2018.

Results of Operations

Comparison of the years ended December 31, 2018, 2017, and 2016

Revenues

Except as otherwise indicated herein, the term “domestic” refers to operations in the United States and Canada, and the term “international” refers to operations outside of the United States and Canada.

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Product licenses and subscription services revenues. The following table sets forth product licenses and subscription services revenues (in thousands) and related percentage changes for the periods indicated:

	Years Ended December 31,			% Change	% Change		
	2018	2017	2016	in 2018		in 2017	
	(as adjusted)			(as adjusted)			
Product Licenses and Subscription Services Revenues:							
Product Licenses							
Domestic	\$48,824	\$ 46,640	\$ 70,678	4.7	%	-34.0	%
International	39,233	46,619	44,196	-15.8	%	5.5	%
Total product licenses revenues	88,057	93,259	114,874	-5.6	%	-18.8	%
Subscription Services							
Domestic	23,114	25,848	26,359	-10.6	%	-1.9	%
International	6,456	6,520	4,215	-1.0	%	54.7	%
Total subscription services revenues	29,570	32,368	30,574	-8.6	%	5.9	%
Total product licenses and subscription services revenues	\$117,627	\$ 125,627	\$ 145,448	-6.4	%	-13.6	%

The following table sets forth a summary, grouped by size, of the number of recognized product licenses transactions for the periods indicated:

	Years Ended December 31,		
	2018	2017	2016
	(as adjusted) (as adjusted)		
Product Licenses Transactions with Recognized Licenses Revenue in the Applicable Period:			
More than \$1.0 million in licenses revenue recognized	9	11	14
Between \$0.5 million and \$1.0 million in licenses revenue recognized	21	18	24
Total	30	29	38
Domestic:			
More than \$1.0 million in licenses revenue recognized	6	7	11
Between \$0.5 million and \$1.0 million in licenses revenue recognized	12	8	16
Total	18	15	27
International:			
More than \$1.0 million in licenses revenue recognized	3	4	3
Between \$0.5 million and \$1.0 million in licenses revenue recognized	9	10	8
Total	12	14	11

The following table sets forth the recognized revenue (in thousands) attributable to product licenses transactions, grouped by size, and related percentage changes for the periods indicated:

	Years Ended December 31,			% Change	% Change		
	2018	2017	2016	in 2018		in 2017	
	(as adjusted) (as adjusted)						
Product Licenses Revenue Recognized in the Applicable Period:							
More than \$1.0 million in licenses revenue recognized	\$ 14,730	\$ 15,163	\$ 27,292	-2.9	%	-44.4	%
Between \$0.5 million and \$1.0 million in licenses revenue recognized	13,527	12,277	15,044	10.2	%	-18.4	%
Less than \$0.5 million in licenses revenue recognized	59,800	65,819	72,538	-9.1	%	-9.3	%
Total	88,057	93,259	114,874	-5.6	%	-18.8	%
Domestic:							
More than \$1.0 million in licenses revenue recognized	11,156	10,127	23,643	10.2	%	-57.2	%
Between \$0.5 million and \$1.0 million in licenses revenue recognized	7,548	5,645	9,869	33.7	%	-42.8	%
Less than \$0.5 million in licenses revenue recognized	30,120	30,868	37,166	-2.4	%	-16.9	%
Total	48,824	46,640	70,678	4.7	%	-34.0	%
International:							
More than \$1.0 million in licenses revenue recognized	3,574	5,036	3,649	-29.0	%	38.0	%
Between \$0.5 million and \$1.0 million in licenses revenue recognized	5,979	6,632	5,175	-9.8	%	28.2	%
Less than \$0.5 million in licenses revenue recognized	29,680	34,951	35,372	-15.1	%	-1.2	%
Total	\$39,233	\$ 46,619	\$ 44,196	-15.8	%	5.5	%

Product licenses revenues decreased \$5.2 million and \$21.6 million during 2018 and 2017, respectively, as compared to the prior year. For the years ended December 31, 2018, 2017, and 2016, product licenses transactions with more than \$0.5 million in recognized revenue represented 32.1%, 29.4%, and 36.9%, respectively, of our product licenses revenues. During 2018, our top three product licenses transactions totaled \$7.7 million in recognized revenue, or 8.7% of total product licenses revenues, compared to \$5.5 million and \$11.3 million, or 5.9% and 9.8% of total product licenses revenues, during 2017 and 2016, respectively.

Domestic product licenses revenues. Domestic product licenses revenues increased \$2.2 million during 2018, as compared to the prior year, primarily due to an increase in the number of transactions between \$0.5 million and \$1.0 million in recognized revenue and an increase in the average deal size of transactions with more than \$1.0 million in recognized revenue, partially offset by a decrease in the number of transactions with less than \$0.5 million in recognized revenue.

Domestic product licenses revenues decreased \$24.0 million during 2017, as compared to the prior year, primarily due to a decrease in the number and average deal size of transactions with more than \$1.0 million in recognized revenue, and a decrease in the number of transactions with less than \$1.0 million in recognized revenue.

International product licenses revenues. International product licenses revenues decreased \$7.4 million during 2018, as compared to the prior year, primarily due to a decrease in the number of transactions and a \$1.7 million unfavorable foreign currency exchange impact.

International product licenses revenues increased \$2.4 million during 2017, as compared to the prior year, primarily due to an increase in the number of transactions with more than \$0.5 million in recognized revenue and a \$1.1 million favorable foreign currency exchange impact, partially offset by a decrease in the number of transactions with less than \$0.5 million in recognized revenue.

Subscription services revenues. Subscription services revenues are primarily derived from our cloud services offerings that are recognized on a subscription basis over the service period of the contract. Subscription services revenues decreased \$2.8 million during 2018 primarily due to a decrease in the use of subscription services by existing customers. Subscription services revenues increased \$1.8 million during 2017, as compared to the prior year, primarily due to new subscription services customers and an increase in the use of subscription services by existing customers.

Product support revenues. The following table sets forth product support revenues (in thousands) and related percentage changes for the periods indicated:

	Years Ended December 31,			%		%	
	2018	2017	2016	Change		Change	
		(as adjusted)	(as adjusted)	in 2018		in 2017	
Product Support Revenues:							
Domestic	\$ 174,437	\$ 174,326	\$ 172,752	0.1	%	0.9	%
International	121,779	114,858	112,384	6.0	%	2.2	%
Total product support revenues	\$296,216	\$ 289,184	\$ 285,136	2.4	%	1.4	%

Product support revenues are derived from providing technical software support and software updates and upgrades to customers. Product support revenues are recognized ratably over the term of the contract, which is generally one year. Product support revenues increased \$7.0 million during 2018, as compared to the prior year, primarily due to new product and premium support contracts and a \$1.3 million favorable foreign currency exchange impact. Product support revenues increased \$4.0 million during 2017, as compared to the prior year, primarily due to new product and premium support contracts and a \$1.1 million favorable foreign currency exchange impact.

Other services revenues. The following table sets forth other services revenues (in thousands) and related percentage changes for the periods indicated:

	Years Ended December 31,			% Change		% Change	
	2018	2017	2016	in 2018		in 2017	
Other Services Revenues:							
Consulting							
Domestic	\$ 35,086	\$ 40,561	\$ 35,935	-13.5	%	12.9	%
International	39,523	39,257	37,465	0.7	%	4.8	%
Total consulting revenues	74,609	79,818	73,400	-6.5	%	8.7	%
Education	9,186	9,214	9,605	-0.3	%	-4.1	%
Total other services revenues	\$ 83,795	\$ 89,032	\$ 83,005	-5.9	%	7.3	%

Consulting revenues. Consulting revenues are derived from helping customers plan and execute the deployment of our software. Consulting revenues decreased \$5.2 million during 2018, as compared to the prior year, primarily due to a decrease in billable hours worldwide, partially offset by an increase in the average bill rate and a \$0.8 million favorable foreign currency exchange impact. Consulting revenues increased \$6.4 million during 2017, as compared to the prior year, primarily due to an increase in the average bill rate and a \$0.4 million favorable foreign currency exchange impact.

Education revenues. Education revenues are derived from the education and training that we provide to our customers to enhance their ability to fully utilize the features and functionality of our software. These offerings include self-tutorials, custom course development, joint training with customers' internal staff, and standard course offerings, with pricing dependent on the specific offering delivered. Education revenues did not materially change during 2018, as compared to the prior year. Education revenues decreased \$0.4 million during 2017, as compared to the prior year, primarily due to lower overall contract values and a decrease in onsite course delivery.

Costs and Expenses

Cost of revenues. The following table sets forth cost of revenues (in thousands) and related percentage changes for the periods indicated:

	Years Ended December 31,			%		%	
	2018	2017	2016	Change	in 2018	Change	in 2017
Cost of Revenues:							
Product licenses and subscription services:							
Product licenses	\$4,864	\$7,176	\$8,573	-32.2	%	-16.3	%
Subscription services	13,620	13,435	12,765	1.4	%	5.2	%
Total product licenses and subscription services	18,484	20,611	21,338	-10.3	%	-3.4	%
Product support	20,242	17,481	15,001	15.8	%	16.5	%
Other services:							
Consulting	53,605	52,018	50,866	3.1	%	2.3	%
Education	7,168	6,539	5,942	9.6	%	10.0	%
Total other services	60,773	58,557	56,808	3.8	%	3.1	%
Total cost of revenues	\$99,499	\$96,649	\$93,147	2.9	%	3.8	%

Cost of product licenses revenues. Cost of product licenses revenues consists of amortization of capitalized software development costs, referral fees paid to channel partners, the costs of product manuals and media, and royalties paid to third-party software vendors. Capitalized software development costs are generally amortized over a useful life of three years.

Cost of product licenses revenues decreased \$2.3 million during 2018, as compared to the prior year, primarily due to a \$3.5 million decrease in amortization of capitalized software development costs related to MicroStrategy 10™, which became fully amortized in May 2018, partially offset by a \$0.9 million increase in royalties paid to third-party software vendors and a \$0.3 million increase in referral fees related to channel partners. As of December 31, 2018, all previously capitalized software development costs have been fully amortized.

Cost of product licenses revenues decreased \$1.4 million during 2017, as compared to the prior year, primarily due to a \$1.4 million decrease in amortization of capitalized software development costs related to MicroStrategy 9.4™, which became fully amortized in September 2016, and a \$0.3 million decrease in referral fees related to channel partners.

Cost of subscription services revenues. Cost of subscription services revenues consists of equipment, facility and other related support costs, and personnel and related overhead costs. Cost of subscription services revenues increased

\$0.2 million during 2018, as compared to the prior year, primarily due to a \$0.6 million increase in compensation and related costs due to an increase in staffing levels, a \$0.2 million increase in third-party hosting service provider fees, and a \$0.2 million increase in other costs, partially offset by a \$0.9 million decrease in equipment, facility, and other related support costs. Subscription services headcount increased 5.7% to 56 at December 31, 2018 from 53 at December 31, 2017.

Cost of subscription services revenues increased \$0.7 million during 2017, as compared to the prior year, primarily due to a \$1.9 million increase in third-party hosting service provider fees, partially offset by a \$0.6 million decrease in compensation and related costs, and a \$0.4 million decrease in equipment, facility, and other related support costs. Subscription services headcount increased 10.4% to 53 at December 31, 2017 from 48 at December 31, 2016.

Cost of product support revenues. Cost of product support revenues consists of product support personnel and related overhead costs. Cost of product support revenues increased \$2.8 million during 2018, as compared to the prior year, primarily due to a \$1.8 million increase in compensation and related costs due to an increase in staffing levels, a \$0.4 million increase in recruiting costs, a \$0.3 million net increase in share-based compensation expense, and a \$0.2 million increase in travel and entertainment expenditures. The \$0.3 million net increase in share-based compensation expense is due to the grant of additional awards under the 2013 Equity Plan. Product support headcount increased 17.4% to 202 at December 31, 2018 from 172 at December 31, 2017.

As a result of the grant of stock options under the 2013 Equity Plan, we expect that share-based compensation expense, a portion of which is recognized as cost of product support revenues, will continue to be a recurring expense. As of December 31, 2018, we estimated that approximately \$1.0 million of additional share-based compensation expense will be recognized as cost of product support revenues over a remaining weighted average period of 3.1 years.

Cost of product support revenues increased \$2.5 million during 2017, as compared to the prior year, primarily due to a \$2.4 million increase in compensation and related costs due to an increase in average staffing levels, a \$0.2 million increase in travel and entertainment expenditures, and a \$0.2 million increase in facility and other related support costs, partially offset by a \$0.3 million decrease in subcontractor costs. Product support headcount increased 0.6% to 172 at December 31, 2017 from 171 at December 31, 2016.

Cost of consulting revenues. Cost of consulting revenues consists of personnel and related overhead costs. Cost of consulting revenues increased \$1.6 million during 2018, as compared to the prior year, primarily due to a \$0.9 million increase in compensation and related costs and a \$0.4 million increase in recruiting costs, partially offset by a \$0.2 million decrease in subcontractor costs. Included in the above components is an aggregate \$0.5 million unfavorable foreign currency exchange impact. Consulting headcount increased 2.5% to 452 at December 31, 2018 from 441 at December 31, 2017.

As a result of the grant of stock options under the 2013 Equity Plan, we expect that share-based compensation expense, a portion of which is recognized as cost of consulting revenues, will continue to be a recurring expense. As of December 31, 2018, we estimated that approximately \$0.9 million of additional share-based compensation expense will be recognized as cost of consulting revenues over a remaining weighted average period of 3.7 years.

Cost of consulting revenues increased \$1.2 million during 2017, as compared to the prior year, primarily due to a \$1.5 million increase in compensation and related costs and a \$0.9 million increase in travel and entertainment expenditures, partially offset by a \$1.4 million decrease in subcontractor costs. Included in the above components is an aggregate \$0.6 million unfavorable foreign currency exchange impact. Consulting headcount decreased 2.6% to 441 at December 31, 2017 from 453 at December 31, 2016.

Cost of education revenues. Cost of education revenues consists of personnel and related overhead costs. Cost of education revenues increased \$0.6 million during 2018, as compared to the prior year, primarily due to a \$0.6 million increase in subcontractor costs and a \$0.2 million net increase in share-based compensation expense, partially offset by a \$0.2 million decrease in facility and other related support costs. The \$0.2 million net increase in share-based compensation expense is due to the grant of additional awards under the 2013 Equity Plan. Education headcount increased 14.6% to 47 at December 31, 2018 from 41 at December 31, 2017.

As a result of the grant of stock options under the 2013 Equity Plan, we expect that share-based compensation expense, a portion of which is recognized as cost of education revenues, will continue to be a recurring expense. As of December 31, 2018, we estimated that approximately \$0.6 million of additional share-based compensation expense will be recognized as cost of education revenues over a remaining weighted average period of 3.1 years.

Cost of education revenues increased \$0.6 million during 2017, as compared to the prior year, primarily due to a \$0.7 million increase in compensation and related costs due to an increase in average staffing levels and a \$0.2 million increase in dues and subscriptions, partially offset by a \$0.3 million decrease in facility and other related support costs. Education headcount increased 5.1% to 41 at December 31, 2017 from 39 at December 31, 2016.

Sales and marketing expenses. Sales and marketing expenses consist of personnel costs, commissions, office facilities, travel, advertising, public relations programs, and promotional events, such as trade shows, seminars, and technical conferences. The following table sets forth sales and marketing expenses (in thousands) and related percentage changes for the periods indicated:

	Years Ended December 31,			%		%
	2018	2017	2016	Change	Change	
		(as adjusted)	(as adjusted)	in 2018	in 2017	
Sales and marketing expenses	\$205,525	\$ 175,045	\$ 158,281	17.4	%	10.6 %

Sales and marketing expenses increased \$30.5 million during 2018, as compared to the prior year, primarily due to a \$13.5 million increase in compensation and related costs due to an increase in staffing levels, an \$8.4 million increase in marketing and advertising costs, a \$4.0 million increase in travel and entertainment expenditures, a \$2.1 million increase in consulting and advisory costs, a \$1.3 million net increase in share-based compensation expense, a \$1.0 million increase in facility and other related support costs, and a \$0.9 million increase in recruiting costs, partially offset by a 0.6 million decrease in the amortization of capitalized variable compensation and a \$0.2 million decrease in non-income taxes. The increase in sales and marketing expenses reflects our previously announced strategy to seek to take greater advantage of the opportunities in the market by increasing our sales and marketing expenditures. The \$1.3 million net increase in share-based compensation expense is primarily due to the grant of additional awards under the 2013 Equity Plan, partially offset by the effect of forfeitures of certain stock options. Included in the above components is an aggregate \$0.6 million favorable foreign currency exchange impact. Sales and marketing headcount increased 8.4% to 707 at December 31, 2018 from 652 at December 31, 2017.

As a result of the grant of stock options under the 2013 Equity Plan, we expect that share-based compensation expense, a significant portion of which is recognized as sales and marketing expense, will continue to be a significant recurring expense. As of December 31, 2018, we estimated that approximately \$12.8 million of additional share-based compensation expense will be recognized as sales and marketing expense over a remaining weighted average period of 3.3 years.

Sales and marketing expenses increased \$16.8 million during 2017, as compared to the prior year, primarily due to an \$8.4 million increase in marketing and advertising costs, a \$5.5 million increase in compensation and related costs due to an increase in staffing levels, a \$2.7 million increase in travel and entertainment expenditures, a \$0.7 million increase in recruiting costs, and a \$0.5 million increase in facility and other related support costs, partially offset by a \$0.7 million net decrease in share-based compensation expense related primarily to the effect of forfeitures of certain stock options, a \$0.2 million decrease in consulting and advisory costs, and a 0.2 million decrease in the amortization of capitalized variable compensation. Included in the above components is an aggregate \$0.6 million unfavorable foreign currency exchange impact. Sales and marketing headcount increased 11.1% to 652 at December 31, 2017 from 587 at December 31, 2016.

Research and development expenses. Research and development expenses consist of the personnel costs for our software engineering personnel, depreciation of equipment, and other related costs. The following table summarizes research and development expenses and amortization of capitalized software development costs (in thousands) and related percentage changes for the periods indicated:

	Years Ended December 31,			%	%
	2018	2017	2016	Change in 2018	Change in 2017
Research and development expenses	\$102,499	\$78,766	\$73,142	30.1	% 7.7
Amortization of capitalized software development costs included in cost of product licenses revenues	\$2,499	\$5,998	\$7,357	-58.3	% -18.5

Research and development expenses increased \$23.7 million during 2018, as compared to the prior year, primarily due to a \$16.5 million increase in compensation and related costs due to an increase in staffing levels, a \$3.6 million increase in facility and other related support costs, a \$1.4 million net increase in share-based compensation expense, a \$1.2 million increase in recruiting costs, a \$0.6 million increase in consulting and advisory costs, a \$0.3 million increase in travel and entertainment expenditures, and a \$0.2 million increase in employee relations expenses. The increase in research and development expenses reflects our previously announced strategy to seek to take greater advantage of the opportunities in the market by increasing our research and development expenditures as we invest in our technology products and personnel. The \$1.4 million net increase in share-based compensation expense is primarily due to the grant of additional awards under the 2013 Equity Plan. Research and development headcount increased 28.1% to 716 at December 31, 2018 from 559 at December 31, 2017. We expect to further increase our investment in our technology products and personnel in future periods as described in the “Overview” section above. We have significantly accelerated the pace of our software development efforts and increased the frequency of our software releases subsequent to the release of MicroStrategy 10, which has resulted in our software development costs in recent periods being expensed as incurred. We do not expect to capitalize a material amount of software development costs in the near term.

As a result of the grant of stock options under the 2013 Equity Plan, we expect that share-based compensation expense, a significant portion of which is recognized as research and development expense, will continue to be a significant recurring expense. As of December 31, 2018, we estimated that approximately \$6.4 million of additional share-based compensation expense will be recognized as research and development expense over a remaining weighted average period of 2.8 years.

Research and development expenses increased \$5.6 million during 2017, as compared to the prior year, primarily due to a \$2.5 million increase in compensation and related costs due to an increase in staffing levels, a \$1.0 million increase in facility and other related support costs, a \$0.8 million increase in consulting and advisory costs, a \$0.6 million net increase in share-based compensation expense related to the grant of stock options under the 2013 Equity Plan, a \$0.2 million increase in employee relations expenses, and a \$0.2 million increase in travel and entertainment expenditures. Research and development headcount increased 9.2% to 559 at December 31, 2017 from 512 at December 31, 2016.

General and administrative expenses. General and administrative expenses consist of personnel and related overhead costs, and other costs of our executive, finance, human resources, information systems, and administrative departments, as well as third-party consulting, legal, and other professional fees. The following table sets forth general and administrative expenses (in thousands) and related percentage changes for the periods indicated:

	Years Ended December 31,			%	%
	2018	2017	2016	Change in 2018	Change in 2017
General and administrative expenses	\$86,134	\$80,161	\$79,462	7.5	0.9

General and administrative expenses increased \$6.0 million during 2018, as compared to the prior year, primarily due to a \$3.2 million increase in compensation and related costs due to an increase in staffing levels, a \$2.7 million increase in legal, consulting, and other advisory costs, a \$1.4 million increase in facility and other related support costs, a \$1.1 million increase in recruiting costs, a \$0.7 million increase in employee relations expenses, and a \$0.4 million increase in travel and entertainment expenditures, partially offset by a \$2.9 million net decrease in share-based compensation expense and a \$0.4 million decrease in other aircraft-related operating costs. The \$2.9 million net

decrease in share-based compensation expense is primarily due to certain awards becoming fully vested in the second quarter of 2018, partially offset by the grant of additional awards under the 2013 Equity Plan. General and administrative headcount increased 16.8% to 348 at December 31, 2018 from 298 at December 31, 2017.

As a result of the grant of stock options under the 2013 Equity Plan, we expect that share-based compensation expense, a significant portion of which is recognized as general and administrative expense, will continue to be a significant recurring expense. As of December 31, 2018, we estimated that approximately \$12.5 million of additional share-based compensation expense will be recognized as general and administrative expense over a remaining weighted average period of 2.8 years.

As a result of the change in estimate of the useful life and salvage value of our corporate aircraft, we estimate that approximately \$25.0 million of depreciation expense will be recognized as general and administrative expense on a straight-line basis over a remaining period of 10 years. See Note 2, Summary of Significant Accounting Policies, to the consolidated financial statements for further information regarding the estimated remaining useful life and salvage value of our corporate aircraft.

General and administrative expenses increased \$0.7 million during 2017, as compared to the prior year, primarily due to a \$2.5 million net increase in share-based compensation expense, a \$0.6 million increase in other aircraft-related operating costs, a \$0.5 million increase in recruiting costs, and a \$0.3 million increase in travel and entertainment expenditures, partially offset by a \$1.9 million decrease in severance costs associated with the streamlining of our finance organization, a \$0.8 million decrease in compensation and related costs due to a decrease in staffing levels, a \$0.4 million decrease in legal, consulting, and other advisory costs, and a \$0.3 million decrease in facility and other related support costs. The \$2.5 million net increase in share-based compensation expense is primarily due to the inclusion, in the share-based compensation expense in the first quarter of 2016, of a reversal of \$1.6 million of previously recorded share-based compensation expense due to pre-vesting forfeitures of certain stock options of two executives who departed during the 2016 executive management reorganization, and the grant of stock options in 2017 under the 2013 Equity Plan. General and administrative headcount decreased 7.7% to 298 at December 31, 2017 from 323 at December 31, 2016.

Other Income (Expense), Net

Other income (expense), net is comprised primarily of foreign currency transaction gains and losses. During 2018 and 2016, other income, net, of \$4.6 million and \$3.2 million, respectively, were comprised primarily of foreign currency transaction net gains, arising mainly from the revaluation of U.S. dollar denominated cash balances held at international locations. During 2017, other expense, net, of \$7.0 million was comprised primarily of foreign currency transaction net losses, arising mainly from the revaluation of U.S. dollar denominated cash balances held at international locations.

Provision for Income Taxes

During 2018, we recorded a benefit from income taxes of \$2.0 million that resulted in an effective tax rate of (9.9)%, as compared to a provision for income taxes of \$53.3 million that resulted in an effective tax rate of 74.5% during 2017. The change in our effective tax rate in 2018, as compared to the prior year, was primarily due to the change in proportion of U.S. versus foreign income and an estimated one-time tax provision of \$44.0 million during the year ended December 31, 2017 as a result of the Tax Act. This tax provision was comprised of a \$40.3 million tax expense related to the mandatory deemed repatriation transition tax ("Transition Tax") and a \$3.7 million charge related to the re-measurement of net deferred tax assets arising from the new lower corporate tax rate effected by the Tax Act.

The Tax Act imposes a Transition Tax on previously untaxed accumulated and current earnings and profits ("E&P") of certain of our foreign subsidiaries. To determine the amount of the Transition Tax, we must determine, among other things, the amount of post-1986 E&P of the relevant subsidiaries, as well as the amount of non-U.S. income taxes paid on such earnings. In the year ended December 31, 2017, we made a reasonable estimate of the Transition Tax and recorded a provisional Transition Tax obligation of \$40.3 million, of which \$36.8 million was recorded in "Other long-term liabilities" in our Consolidated Balance Sheets. Upon refining our non-U.S. E&P and associated income taxes, we recorded a measurement-period adjustment to reduce the Transition Tax by \$3.1 million in the year ended

December 31, 2018. As of December 31, 2018, our total provision for the Transition Tax was \$37.2 million, of which \$8.3 million had been paid and \$28.9 million was recorded in “Other long-term liabilities” in our Consolidated Balance Sheets.

The Tax Act also reduced the U.S. corporate tax rate from 35% to 21%, effective January 1, 2018. Consequently, we have recorded a decrease related to our U.S. deferred tax assets and liabilities, with a corresponding net deferred income tax expense of \$3.7 million for the year ended December 31, 2017 as a result of re-measuring net deferred tax assets at the new lower corporate tax rate of 21%.

Additionally, the Tax Act requires certain Global Intangible Low Taxed Income (“GILTI”) earned by controlled foreign corporations (“CFCs”) to be included in the gross income of the CFC’s U.S. shareholder. GAAP allows us to either: (i) treat taxes due on future U.S. inclusions in taxable income related to GILTI as a current-period expense when incurred (the “period cost method”); or (ii) factor such amounts into our measurement of deferred taxes (the “deferred method”). We elected the period cost method. The Tax Act allows a U.S. corporation a deduction equal to a certain percentage of its Foreign-Derived Intangible Income (“FDII”). We estimated the impact of the GILTI tax and FDII deduction in determining our 2018 annual effective tax rate that is reflected in our benefit from income taxes for the year ended December 31, 2018.

As of December 31, 2018, we had no U.S. federal net operating loss (“NOL”) carryforwards and had foreign NOL carryforwards of \$3.6 million. As of December 31, 2018, foreign NOL carryforwards, other temporary differences and carryforwards, and credits resulted in deferred tax assets, net of valuation allowances and deferred tax liabilities, of \$17.3 million.

As of December 31, 2018, we had a valuation allowance of \$1.5 million primarily related to certain foreign tax credit carryforwards that, in our present estimation, more likely than not will not be realized. We assessed whether our valuation allowance analyses are affected by various aspects of the Tax Act (e.g., deemed repatriation of deferred foreign income, GILTI inclusions, new categories of foreign tax credits) and concluded that they were not significantly affected by the Tax Act.

If we are unable to sustain profitability in future periods, we may be required to increase the valuation allowance against our deferred tax assets, which could result in a charge that would materially adversely affect net income in the period in which the charge is incurred. We will continue to regularly assess the realizability of deferred tax assets.

As of December 31, 2018, we intend to indefinitely reinvest \$197.4 million of our undistributed foreign earnings. Under the Tax Act, those undistributed earnings (as computed for U.S. federal income tax purposes) are subject to the Transition Tax, which was recorded at a provisional amount of \$40.3 million during the year ended December 31, 2017 and subsequently reduced by \$3.1 million during the year ended December 31, 2018.

During 2016, we recorded a provision for income taxes of \$22.7 million, resulting in an effective tax rate of 19.7%. The change in our effective tax rate in 2017, as compared to the prior year, was primarily due to the one-time tax provision of \$44.0 million recorded in 2017 as a result of the Tax Act.

Deferred Revenue and Advance Payments

Deferred revenue and advance payments represent amounts received or due from our customers in advance of our transferring our products or services to the customer. Revenue is subsequently recognized in the period(s) in which control of the products or services are transferred to the customer.

The following table summarizes deferred revenue and advance payments (in thousands), as of:

	December 31,		
	2018	2017 (as adjusted)	2016 (as adjusted)
Current:			
Deferred product licenses revenue	\$1,768	\$3,760	\$7,043
Deferred subscription services revenue	13,508	17,324	18,303
Deferred product support revenue	152,501	168,185	162,968
Deferred other services revenue	8,763	9,465	10,015
Total current deferred revenue and advance payments	\$176,540	\$198,734	\$198,329
Non-current:			
Deferred product licenses revenue	\$542	\$820	\$630
Deferred subscription services revenue	2,384	126	1,307
Deferred product support revenue	3,091	4,826	5,751
Deferred other services revenue	452	628	690
Total non-current deferred revenue and advance payments	\$6,469	\$6,400	\$8,378
Total current and non-current:			
Deferred product licenses revenue	\$2,310	\$4,580	\$7,673
Deferred subscription services revenue	15,892	17,450	19,610
Deferred product support revenue	155,592	173,011	168,719
Deferred other services revenue	9,215	10,093	10,705
Total current and non-current deferred revenue and advance payments	\$183,009	\$205,134	\$206,707

Total deferred revenue and advance payments decreased \$22.1 million in 2018, as compared to the prior year, primarily due to delays in product support contract renewals in the fourth quarter of 2018 as compared to the same period in the prior year, the decrease in our international deferred revenue balances from the general strengthening of the U.S. dollar, and the recognition of previously deferred product support, product licenses, subscription services, and other services revenues. Total deferred revenue and advance payments decreased \$1.6 million in 2017, as compared to the prior year, primarily due to the recognition of previously deferred product licenses, subscription services, and other services revenues, partially offset by an increase in product support contracts.

We expect to recognize approximately \$176.5 million of deferred revenue and advance payments over the next 12 months. However, the timing and ultimate recognition of our deferred revenue and advance payments depend on our satisfaction of various performance obligations, and the amount of deferred revenue and advance payments at any date should not be considered indicative of revenues for any succeeding period.

Liquidity and Capital Resources

Liquidity. Our principal sources of liquidity are cash and cash equivalents and on-going collection of our accounts receivable. Cash and cash equivalents include holdings in bank demand deposits, money market instruments, certificates of deposit, and U.S. Treasury securities. We also periodically invest a portion of our excess cash in short-term investments with stated maturity dates between three months and one year from the purchase date.

As of December 31, 2018 and 2017, the amount of cash and cash equivalents and short-term investments held by our U.S. entities was \$173.6 million and \$293.8 million, respectively, and by our non-U.S. entities was \$402.5 million and \$381.4 million, respectively. We earn a significant amount of our revenues outside the United States and our accumulated foreign earnings and profits as of December 31, 2018 and 2017 were \$397.4 million and \$360.9 million, respectively. As of December 31, 2018, we intend to indefinitely reinvest \$197.4 million of our undistributed foreign earnings. This amount takes into consideration a possible one-time repatriation in 2019. If we elect to make such one-time repatriation, after taking into account the Transition Tax described above under “Provision for Income Taxes,” we expect it would generate only an immaterial U.S. tax expense related to U.S. state income taxes. We do not anticipate needing to repatriate additional cash or cash equivalents held by non-U.S. entities to the United States to finance our U.S. operations.

We believe that existing cash and cash equivalents and short-term investments held by us and cash and cash equivalents anticipated to be generated by us are sufficient to meet working capital requirements, anticipated capital expenditures, and contractual obligations for at least the next 12 months.

The following table sets forth a summary of our cash flows (in thousands) and related percentage changes for the periods indicated:

	Years Ended December 31,			%	%
	2018	2017	2016	Change in 2018	Change in 2017
Net cash provided by operating activities	\$10,627	\$78,322	\$110,589	-86.4	% -29.2
Net cash (used in) provided by investing activities	\$(209,064)	\$(69,730)	\$4,344	199.8	% -1,705.2
Net cash (used in) provided by financing activities	\$(108,515)	\$1,656	\$(1,004)	-6,652.8	% -264.9

Net cash provided by operating activities. The primary source of our cash provided by operating activities is cash collections of our accounts receivable from customers following the sales and renewals of our software licenses, technical software support, software updates and upgrades, as well as consulting, education, and subscription services. Our primary uses of cash in operating activities are for personnel related expenditures for software development, personnel related expenditures for providing consulting, education, and subscription services, and for sales and marketing costs, general and administrative costs, and income taxes.

Net cash provided by operating activities was \$10.6 million, \$78.3 million, and \$110.6 million during 2018, 2017, and 2016, respectively. The decrease in net cash provided by operating activities during 2018, as compared to the prior year, was due to a \$55.7 million decrease from changes in operating assets and liabilities and a \$16.3 million decrease from changes in non-cash items, offset by a \$4.3 million increase in net income. The decrease in net cash provided by operating activities during 2017, as compared to the prior year, was due to a \$74.0 million decrease in net income, offset by a \$39.2 million increase from changes in operating assets and liabilities and a \$2.6 million increase from changes in non-cash items. Non-cash items generally consist of depreciation and amortization, bad debt expense, net realized losses on short-term investments, deferred taxes, release of liabilities for unrecognized tax benefits, share-based compensation expense, and, in 2016 only, excess tax benefits from share-based compensation arrangements.

Net cash (used in) provided by investing activities. The changes in net cash (used in) provided by investing activities primarily relate to purchases and redemptions of short-term investments, and expenditures on property and equipment. Net cash used in investing activities was \$209.1 million and \$69.7 million during 2018 and 2017, respectively. Net cash provided by investing activities was \$4.3 million during 2016. The increase in net cash used in investing activities during 2018, as compared to the prior year, was due to a \$237.6 million increase in purchases of short-term investments and a \$2.9 million increase in purchases of property and equipment, offset by a \$101.1 million increase in proceeds from the redemption of short-term investments. The increase in net cash used in investing activities during 2017, as compared to the prior year, was due to a \$101.5 million increase in purchases of short-term investments and a \$1.6 million increase in purchases of property and equipment, offset by a \$29.0 million increase in proceeds from the redemption of short-term investments.

Net cash (used in) provided by financing activities. The changes in net cash (used in) provided by financing activities primarily relate to the purchase of treasury stock, the exercise of stock options under the 2013 Equity Plan and, in

2016 only, excess tax benefits from share-based compensation arrangements. Net cash used in financing activities was \$108.5 million and \$1.0 million during 2018 and 2016, respectively. Net cash provided by financing activities was \$1.7 million during 2017. The increase in net cash used in financing activities during 2018, as compared to the prior year, was primarily due to a \$111.0 million increase in purchases of treasury stock, partially offset by a \$0.8 million increase in proceeds from the exercise of stock options under the 2013 Equity Plan. The increase in net cash provided by financing activities during 2017, as compared to the prior year, was primarily due to a \$3.7 million payment in 2016 to tax authorities for shares withheld for taxes related to the net exercise of a stock option under the 2013 Equity Plan, partially offset by a \$1.2 million decrease in excess tax benefits from share-based compensation arrangements.

Share repurchases. Our Board of Directors has authorized us to repurchase up to an aggregate of \$800.0 million of our class A common stock from time to time on the open market through April 29, 2023 under the 2005 Share Repurchase Program, although the program may be suspended or discontinued by us at any time. The timing and amount of any shares repurchased will be determined by management based on its evaluation of market conditions and other factors. The 2005 Share Repurchase Program may be funded using working capital, as well as proceeds from any other funding arrangements that we may enter into in the future. During the year ended December 31, 2018, we repurchased an aggregate of 0.9 million shares of our class A common stock at an average price per share of \$126.02 and an aggregate cost of \$111.0 million pursuant to the 2005 Share Repurchase Program. During the years ended December 31, 2017 and 2016, we did not repurchase any shares of our class A common stock pursuant to the 2005 Share Repurchase Program.

Contractual obligations. As disclosed in Note 7, Commitments and Contingencies, to the consolidated financial statements, we lease office space under operating lease agreements. Under the lease agreements, in addition to base rent, we are generally responsible for certain taxes, utilities and maintenance costs, and other fees. Several of these leases include options for renewal. We do not have any material capital leases.

As of December 31, 2018, we have recorded a \$37.2 million Transition Tax resulting from the Tax Act. We elected to pay this tax over an eight-year period beginning in 2018. See Note 8, Income Taxes, to the consolidated financial statements for further information.

The following table shows future minimum rent payments under noncancellable operating leases and agreements with initial terms of greater than one year and anticipated payments related to the one-time Transition Tax resulting from the Tax Act, based on the expected due dates of the various installments as of December 31, 2018 (in thousands):

	Payments due by period ended December 31,				
	Total	2019	2020-2021	2022-2023	Thereafter
Contractual Obligations:					
Operating leases	\$195,572	\$27,768	\$44,156	\$31,301	\$92,347
Transition Tax	28,935	0	3,848	8,485	16,602
Total	\$224,507	\$27,768	\$48,004	\$39,786	\$108,949

Unrecognized tax benefits. As of December 31, 2018, we had \$4.8 million of total gross unrecognized tax benefits, including penalty and interest accrued, recorded in other long-term liabilities. The timing of any payments that could result from these unrecognized tax benefits will depend on a number of factors, and accordingly the amount and period of any future payments cannot be estimated. We do not expect any significant tax payments related to these obligations during 2019.

Off-balance sheet arrangements. As of December 31, 2018, we did not have any off-balance sheet arrangements that had a material impact on our financial condition, revenues or expenses, results of operations, liquidity, capital expenditures, or capital resources. As discussed in Note 3, Recent Accounting Standards, to the consolidated financial statements, the adoption of ASU 2016-02 is effective for interim and annual periods beginning January 1, 2019 and, amongst other changes, requires the recognition of lease assets and lease liabilities.

Recent Accounting Standards

See Note 3, Recent Accounting Standards, to the consolidated financial statements for further information.

Item 7A. Quantitative and Qualitative Disclosures About Market Risk

The following discussion about our market risk exposures involves forward-looking statements. Actual results could differ materially from those projected in the forward-looking statements. Where applicable, prior period information in this “Item 7A. Quantitative and Qualitative Disclosures About Market Risk” has been adjusted to reflect the full retrospective adoption of ASU 2014-09.

We are exposed to the impact of both interest rate changes and foreign currency fluctuations.

Interest Rate Risk. We face exposure to changes in interest rates primarily relating to our investments. We generally invest our excess cash in short-term, highly-rated, fixed-rate financial instruments. These fixed-rate instruments are subject to interest rate risk and may fall in value if interest rates increase. We do not hold or invest in these fixed-rate instruments for trading purposes or speculation. As of December 31, 2018, we held approximately \$466.2 million of investments in U.S. Treasury securities and certificates of deposit with stated maturity dates between three months and one year from the purchase date.

Foreign Currency Risk. We conduct a significant portion of our business in currencies other than the U.S. dollar, the currency in which we report our consolidated financial statements. International revenues accounted for 42.3%, 41.8%, and 39.2% of our total revenues for the years ended December 31, 2018, 2017, and 2016, respectively. We anticipate that international revenues will continue to account for a significant portion of our total revenues. The functional currency of each of our foreign subsidiaries is generally the local currency.

Assets and liabilities of our foreign subsidiaries are translated into U.S. dollars at exchange rates in effect as of the applicable balance sheet date and any resulting translation adjustments are included as an adjustment to stockholders' equity. Revenues and expenses generated from these subsidiaries are translated at average monthly exchange rates during the quarter in which the transactions occur. Gains and losses from transactions in local currencies are included in net income.

As a result of transacting in multiple currencies and reporting our financial statements in U.S. dollars, our operating results may be adversely impacted by currency exchange rate fluctuations in the future. The impact of foreign currency exchange rate fluctuations on current and comparable periods is described in "Item 7. Management's Discussion and Analysis of Financial Condition and Results of Operations."

We cannot predict the effect of exchange rate fluctuations upon our future results. We attempt to minimize our foreign currency risk by converting our excess foreign currency held in foreign jurisdictions to U.S. dollar denominated cash and investment accounts.

As of December 31, 2018, a 10% adverse change in foreign currency exchange rates versus the U.S. dollar would have decreased our aggregate reported cash and cash equivalents and short-term investments by 0.3%. If average exchange rates during the year ended December 31, 2018 had changed unfavorably by 10%, our revenues for the year ended December 31, 2018 would have decreased by 3.8%. During the year ended December 31, 2018, our revenues were higher by 0.1% as a result of a 1.9% favorable change in weighted average exchange rates, as compared to the prior year.

Item 8. Financial Statements and Supplementary Data

Our consolidated financial statements, together with the related notes and the associated Reports of Independent Registered Public Accounting Firm, are set forth on the pages indicated in Item 15.

Item 9. Changes in and Disagreements with Accountants on Accounting and Financial Disclosure
None.

Item 9A. Controls and Procedures

Evaluation of Disclosure Controls and Procedures

Our management, with the participation of our Chief Executive Officer and Chief Financial Officer, evaluated the effectiveness of our disclosure controls and procedures (as defined in Rules 13a-15(e) and 15d-15(e) under the Exchange Act) as of the end of the period covered by this Annual Report. Management recognizes that any controls and procedures, no matter how well designed and operated, can provide only reasonable assurance of achieving their objectives, and management necessarily applies its judgment in evaluating the cost-benefit relationship of possible controls and procedures. Our disclosure controls and procedures are designed to provide reasonable assurance of achieving their control objectives. Based on the evaluation of our disclosure controls and procedures as of the end of the period covered by this Annual Report, our Chief Executive Officer and Chief Financial Officer concluded that, as of such date, our disclosure controls and procedures were not effective at the reasonable assurance level due to the material weaknesses described below.

Management's Report on Internal Control Over Financial Reporting

Our management is responsible for establishing and maintaining adequate internal control over financial reporting. Internal control over financial reporting is defined in Rules 13a-15(f) and 15d-15(f) promulgated under the Exchange Act as a process designed by, or under the supervision of, the Company's principal executive and principal financial officers and effected by the Company's Board of Directors, management, and other personnel, to provide reasonable assurance regarding the reliability of financial reporting and the preparation of financial statements for external purposes in accordance with GAAP. Such internal control includes those policies and procedures that (i) pertain to the maintenance of records that, in reasonable detail, accurately and fairly reflect the transactions and dispositions of the assets of the Company, (ii) provide reasonable assurance that transactions are recorded as necessary to permit preparation of financial statements in accordance with GAAP, and that receipts and expenditures of the Company are being made only in accordance with authorizations of management and directors of the Company, and (iii) provide reasonable assurance regarding prevention or timely detection of unauthorized acquisition, use, or disposition of the Company's assets that could have a material effect on the financial statements.

Because of its inherent limitations, internal control over financial reporting may not prevent or detect misstatements. Projections of any evaluation of effectiveness to future periods are subject to the risk that the control may become inadequate because of changes in conditions, or that the degree of compliance with the policies or procedures may deteriorate.

Under the oversight of our Chief Executive Officer and Chief Financial Officer, our management conducted an assessment of the effectiveness of our internal control over financial reporting as of December 31, 2018 based on the criteria set forth in Internal Control-Integrated Framework (2013) issued by the Committee of Sponsoring Organizations of the Treadway Commission (COSO). Based on its assessment, management identified certain control deficiencies as of December 31, 2018 related to the implementation of our Configure Price Quote application ("CPQ") and the impact of such implementation on our Professional Services Application ("PSA"), both of which applications reside on a common third-party customer relationship management platform. The identified deficiencies impacted financial reporting processes related to the following accounts: revenue, consulting accounts receivable, deferred revenue, and certain related compensation expenses. These deficiencies can be categorized as follows:

- ineffective IT general controls ("ITGCs"), specifically with respect to (i) an inadequate system development project plan for the implementation of the CPQ, which also did not consider the effects of such implementation on the PSA, (ii) ineffective program change controls that did not include testing and approval of program changes made to the CPQ and PSA, and (iii) ineffective user access controls that did not restrict access to the CPQ and PSA commensurate with users' job responsibilities;
- ineffective process-level automated controls over the CPQ and PSA and manual controls that are dependent on the completeness and accuracy of information derived from the CPQ and PSA; and
- ineffective IT risk assessment related to the design and implementation of the CPQ and ineffective monitoring of the post-implementation operation of the CPQ and PSA, all as a result of inadequate training and experience of certain IT personnel.

We did not identify any misstatements in our consolidated financial statements related to these control deficiencies. However, management concluded that there is a reasonable possibility that a material misstatement could occur if the control deficiencies are not remediated. Accordingly, management concluded that the control deficiencies represent material weaknesses in our internal control over financial reporting and that we did not maintain effective internal control over financial reporting as of December 31, 2018. A material weakness is a deficiency, or combination of deficiencies, in internal control over financial reporting such that there is a reasonable possibility that a material misstatement of annual or interim financial statements will not be prevented or detected on a timely basis.

Our independent registered public accounting firm, KPMG LLP, which audited the consolidated financial statements included in this Annual Report, has expressed an adverse report on the operating effectiveness of our internal control over financial reporting as of December 31, 2018. This report is included in the Reports of Independent Registered Public Accounting Firm in “Item 15. Exhibits, Financial Statement Schedules.”

Remediation of Material Weakness

Management has developed a remediation plan and is implementing measures designed to ensure that the control deficiencies contributing to the material weaknesses described above are remediated, such that these controls are designed, implemented, and operating effectively. The planned remediation actions include:

- creating and filling an Enterprise Applications Oversight function and establishing an IT management oversight plan to monitor ITGCs that support our financial reporting processes and automated controls;
- developing a training program addressing ITGCs and policies, including educating control owners on the design, implementation, operation, and documentation requirements related to user access, change-management, and system development controls that support financial reporting processes;
- developing enhanced risk assessment procedures related to changes in IT systems; and
- designing and implementing effective ITGCs over IT system changes.

We believe that these actions will effectively remediate these material weaknesses. As we continue to take remediation actions, management may determine additional actions are necessary to address these material weaknesses or determine to modify the remediation plan described above. In addition to these specific remediation actions, management will enhance its documentation underlying ITGCs to promote knowledge transfer in connection with personnel and function changes and provide quarterly reporting on the remediation measures to the Audit Committee of the Board of Directors. These material weaknesses will not be considered fully remediated until the applicable controls operate for a sufficient period of time and management concludes, through testing, that these controls are operating effectively. We expect to complete the remediation of these material weaknesses prior to the end of fiscal year ended December 31, 2019.

Changes in Internal Control Over Financial Reporting

We adopted ASU 2014-09 on January 1, 2018 and believe our existing internal control over financial reporting has not been materially affected by the adoption of this standard during the fiscal year ended December 31, 2018.

In order to evaluate the impact of the Tax Act on our consolidated financial statements, we have implemented internal controls to help ensure we have properly assessed previously untaxed accumulated and current E&P of certain of our foreign subsidiaries, the amount of non-U.S. income taxes paid on such earnings, and new calculations related to GILTI and the deduction for FDII.

In order to facilitate our adoption of the new lease accounting standard on January 1, 2019, we implemented internal controls to help ensure we have properly evaluated our existing contracts for embedded leases, executed key system changes, and assessed the impact to our consolidated financial statements. We expect to continue to implement additional internal controls related to the adoption of this standard in the first quarter of 2019.

Except for these changes and the material weaknesses described above that were identified in the fourth quarter of 2018, there have been no other changes in our internal control over financial reporting (as defined in Rules 13a-15(f) and 15d-15(f) under the Exchange Act) that occurred during the fiscal quarter ended December 31, 2018 that have materially affected, or are reasonably likely to materially affect, our internal control over financial reporting.

Item 9B. Other Information

None.

PART III

Item 10. Directors, Executive Officers and Corporate Governance

The information required by this Item is incorporated herein by reference to the information provided under the headings “Executive Officers of the Company,” “Election of Directors – Nominees,” and “Corporate Governance and the Board of Directors and its Committees” in our definitive proxy statement to be filed with the SEC not later than 120 days after the fiscal year ended December 31, 2018 (the “2019 Proxy Statement”).

Item 11. Executive Compensation

The information required by this Item is incorporated herein by reference to the information provided under the headings “Executive and Director Compensation,” “Compensation Committee Report,” and “Corporate Governance and the Board of Directors and its Committees – Compensation Committee” in the 2019 Proxy Statement.

Item 12. Security Ownership of Certain Beneficial Owners and Management and Related Stockholder Matters

The information required by this Item is incorporated herein by reference to the information provided under the headings “Security Ownership of Certain Beneficial Owners and Management,” and “Executive and Director Compensation” in the 2019 Proxy Statement.

Item 13. Certain Relationships and Related Transactions, and Director Independence

The information required by this Item is incorporated herein by reference to the information provided under the heading “Corporate Governance and the Board of Directors and its Committees” in the 2019 Proxy Statement.

Item 14. Principal Accountant Fees and Services

The information required by this Item is incorporated herein by reference to the information provided under the heading “Independent Registered Public Accounting Firm Fees and Services” in the 2019 Proxy Statement.

PART IV

Item 15. Exhibits, Financial Statement Schedules

(a) The following documents are filed as part of this Annual Report:

1. Consolidated Financial Statements	Page
<u>Reports of Independent Registered Public Accounting Firm</u>	53
Consolidated Financial Statements:	
<u>Balance Sheets</u>	56
<u>Statements of Operations</u>	57
<u>Statements of Comprehensive Income</u>	58
<u>Statements of Stockholders' Equity</u>	59
<u>Statements of Cash Flows</u>	60
<u>Notes to Consolidated Financial Statements</u>	61
2. <u>Exhibits</u>	88
3. Consolidated Financial Statement Schedule	
<u>Schedule II - Valuation and Qualifying Accounts</u>	91

(b) Exhibits

We hereby file as part of this Annual Report the exhibits listed in the Index to Exhibits.

(c) Financial Statement Schedule

The following financial statement schedule is filed herewith:

Schedule II—Valuation and Qualifying Accounts

All other items included in an Annual Report on Form 10-K are omitted because they are not applicable or the answers thereto are none.

Report of Independent Registered Public Accounting Firm

To the Stockholders and Board of Directors
MicroStrategy Incorporated:

Opinion on Internal Control Over Financial Reporting

We have audited MicroStrategy Incorporated and subsidiaries' (the Company) internal control over financial reporting as of December 31, 2018, based on criteria established in Internal Control – Integrated Framework (2013) issued by the Committee of Sponsoring Organizations of the Treadway Commission. In our opinion, because of the effect of the material weaknesses, described below, on the achievement of the objectives of the control criteria, the Company has not maintained effective internal control over financial reporting as of December 31, 2018, based on criteria established in Internal Control – Integrated Framework (2013) issued by the Committee of Sponsoring Organizations of the Treadway Commission.

We also have audited, in accordance with the standards of the Public Company Accounting Oversight Board (United States) (PCAOB), the consolidated balance sheets of the Company as of December 31, 2018 and 2017, the related consolidated statements of operations, comprehensive income, stockholders' equity, and cash flows for each of the years in the three-year period ended December 31, 2018, the related notes, and the financial statement schedule, Schedule II, Valuation and Qualifying Accounts, (collectively, the consolidated financial statements), and our report dated February 20, 2019 expressed an unqualified opinion on those consolidated financial statements.

A material weakness is a deficiency, or a combination of deficiencies, in internal control over financial reporting, such that there is a reasonable possibility that a material misstatement of the company's annual or interim financial statements will not be prevented or detected on a timely basis. The following material weaknesses have been identified and included in management's assessment:

- ineffective information technology (IT) risk assessment over the implementation of a new IT application and ineffective monitoring activities over the post-implementation operation of certain IT applications;
- ineffective general information technology controls pertaining to system development, program changes and user access over certain IT applications; and,
- ineffective process-level automated controls and manual controls that are dependent on the completeness and accuracy of information from certain IT applications over revenue, consulting accounts receivable, deferred revenue, and certain related compensation expenses.

The material weaknesses were considered in determining the nature, timing, and extent of audit tests applied in our audit of the 2018 consolidated financial statements, and this report does not affect our report on those consolidated financial statements.

Basis for Opinion

The Company's management is responsible for maintaining effective internal control over financial reporting and for its assessment of the effectiveness of internal control over financial reporting, included in the accompanying Management's Report on Internal Control Over Financial Reporting. Our responsibility is to express an opinion on the Company's internal control over financial reporting based on our audit. We are a public accounting firm registered with the PCAOB and are required to be independent with respect to the Company in accordance with the U.S. federal securities laws and the applicable rules and regulations of the Securities and Exchange Commission and the PCAOB.

We conducted our audit in accordance with the standards of the PCAOB. Those standards require that we plan and perform the audit to obtain reasonable assurance about whether effective internal control over financial reporting was maintained in all material respects. Our audit of internal control over financial reporting included obtaining an understanding of internal control over financial reporting, assessing the risk that a material weakness exists, and testing and evaluating the design and operating effectiveness of internal control based on the assessed risk. Our audit also included performing such other procedures as we considered necessary in the circumstances. We believe that our audit provides a reasonable basis for our opinion.

Definition and Limitations of Internal Control Over Financial Reporting

A company's internal control over financial reporting is a process designed to provide reasonable assurance regarding the reliability of financial reporting and the preparation of financial statements for external purposes in accordance with generally accepted accounting principles. A company's internal control over financial reporting includes those policies and procedures that (1) pertain to the maintenance of records that, in reasonable detail, accurately and fairly reflect the transactions and dispositions of the assets of the company; (2) provide reasonable assurance that transactions are recorded as necessary to permit preparation of financial statements in accordance with generally accepted accounting principles, and that receipts and expenditures of the company are being made only in accordance with authorizations of management and directors of the company; and (3) provide reasonable assurance regarding prevention or timely detection of unauthorized acquisition, use, or disposition of the company's assets that could have a material effect on the financial statements.

Because of its inherent limitations, internal control over financial reporting may not prevent or detect misstatements. Also, projections of any evaluation of effectiveness to future periods are subject to the risk that controls may become inadequate because of changes in conditions, or that the degree of compliance with the policies or procedures may deteriorate.

Disclaimer on Additional Information in Management's Report

We do not express an opinion or any other form of assurance on management's statements, included in the accompanying Management's Report on Internal Control Over Financial Reporting, referring to corrective actions taken after December 31, 2018, relative to the aforementioned material weaknesses in internal control over financial reporting.

/s/ KPMG LLP

McLean, Virginia

February 20, 2019

Report of Independent Registered Public Accounting Firm

To the Stockholders and Board of Directors
MicroStrategy Incorporated:

Opinion on the Consolidated Financial Statements

We have audited the accompanying consolidated balance sheets of MicroStrategy Incorporated and subsidiaries (the Company) as of December 31, 2018 and 2017, the related consolidated statements of operations, comprehensive income, stockholders' equity, and cash flows for each of the years in the three-year period ended December 31, 2018, the related notes, and the financial statement schedule, Schedule II, Valuation and Qualifying Accounts, (collectively, the consolidated financial statements). In our opinion, the consolidated financial statements present fairly, in all material respects, the financial position of the Company as of December 31, 2018 and 2017, and the results of its operations and its cash flows for each of the years in the three-year period ended December 31, 2018, in conformity with U.S. generally accepted accounting principles.

We also have audited, in accordance with the standards of the Public Company Accounting Oversight Board (United States) (PCAOB), the Company's internal control over financial reporting as of December 31, 2018, based on criteria established in Internal Control – Integrated Framework (2013) issued by the Committee of Sponsoring Organizations of the Treadway Commission, and our report dated February 20, 2019 expressed an adverse opinion on the effectiveness of the Company's internal control over financial reporting.

Change in Accounting Principle

As discussed in Note 2 to the consolidated financial statements, the Company has changed its method of accounting for revenue from contracts with customers effective January 1, 2018 due to the adoption of Accounting Standards Update No. 2014-09, Revenue from Contracts with Customers (Topic 606) and its subsequent amendments ("ASU 2014-09"). The Company adopted the new revenue standard using the full retrospective approach.

Basis for Opinion

These consolidated financial statements are the responsibility of the Company's management. Our responsibility is to express an opinion on these consolidated financial statements based on our audits. We are a public accounting firm registered with the PCAOB and are required to be independent with respect to the Company in accordance with the U.S. federal securities laws and the applicable rules and regulations of the Securities and Exchange Commission and the PCAOB.

We conducted our audits in accordance with the standards of the PCAOB. Those standards require that we plan and perform the audit to obtain reasonable assurance about whether the consolidated financial statements are free of material misstatement, whether due to error or fraud. Our audits included performing procedures to assess the risks of material misstatement of the consolidated financial statements, whether due to error or fraud, and performing procedures that respond to those risks. Such procedures included examining, on a test basis, evidence regarding the amounts and disclosures in the consolidated financial statements. Our audits also included evaluating the accounting principles used and significant estimates made by management, as well as evaluating the overall presentation of the consolidated financial statements. We believe that our audits provide a reasonable basis for our opinion.

/s/ KPMG LLP

We have served as the Company's auditor since 2013.

McLean, Virginia

February 20, 2019

MICROSTRATEGY INCORPORATED

CONSOLIDATED BALANCE SHEETS

(in thousands, except per share data)

	December 31, 2018	December 31, 2017 (as adjusted)
Assets		
Current assets:		
Cash and cash equivalents	\$ 109,924	\$ 420,244
Restricted cash	862	938
Short-term investments	466,186	254,927
Accounts receivable, net	171,359	165,364
Prepaid expenses and other current assets	30,068	19,180
Total current assets	778,399	860,653
Property and equipment, net	51,919	53,359
Capitalized software development costs, net	0	2,499
Deposits and other assets	8,134	7,411
Deferred tax assets, net	17,316	9,297
Total assets	\$ 855,768	\$ 933,219
Liabilities and Stockholders' Equity		
Current liabilities:		
Accounts payable and accrued expenses	\$ 33,684	\$ 30,711
Accrued compensation and employee benefits	48,045	41,498
Deferred revenue and advance payments	176,540	198,734
Total current liabilities	258,269	270,943
Deferred revenue and advance payments	6,469	6,400
Other long-term liabilities	61,262	50,146
Deferred tax liabilities	37	4
Total liabilities	326,037	327,493
Commitments and Contingencies		
Stockholders' Equity		
Preferred stock undesignated, \$0.001 par value; 5,000 shares authorized; no shares issued or outstanding	0	0
Class A common stock, \$0.001 par value; 330,000 shares authorized; 15,837 shares issued and 8,552 shares outstanding, and 15,817 shares issued and 9,412 shares outstanding, respectively	16	16
Class B convertible common stock, \$0.001 par value; 165,000 shares authorized; 2,035 shares issued and outstanding, and 2,035 shares issued and outstanding, respectively	2	2
Additional paid-in capital	576,957	559,918
Treasury stock, at cost; 7,285 shares and 6,405 shares, respectively	(586,161)	(475,184)
Accumulated other comprehensive loss	(10,217)	(5,659)
Retained earnings	549,134	526,633
Total stockholders' equity	529,731	605,726

Total liabilities and stockholders' equity	\$ 855,768	\$ 933,219
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The accompanying notes are an integral part of these consolidated financial statements.

MICROSTRATEGY INCORPORATED

CONSOLIDATED STATEMENTS OF OPERATIONS

(in thousands, except per share data)

	Years Ended December 31,		
	2018	2017	2016
		(as adjusted)	(as adjusted)
Revenues:			
Product licenses	\$88,057	\$93,259	\$114,874
Subscription services	29,570	32,368	30,574
Total product licenses and subscription services	117,627	125,627	145,448
Product support	296,216	289,184	285,136
Other services	83,795	89,032	83,005
Total revenues	497,638	503,843	513,589
Cost of revenues:			
Product licenses	4,864	7,176	8,573
Subscription services	13,620	13,435	12,765
Total product licenses and subscription services	18,484	20,611	21,338
Product support	20,242	17,481	15,001
Other services	60,773	58,557	56,808
Total cost of revenues	99,499	96,649	93,147
Gross profit	398,139	407,194	420,442
Operating expenses:			
Sales and marketing	205,525	175,045	158,281
Research and development	102,499	78,766	73,142
General and administrative	86,134	80,161	79,462
Restructuring costs	0	0	45
Total operating expenses	394,158	333,972	310,930
Income from operations	3,981	73,222	109,512
Interest income, net	11,855	5,205	2,203
Other income (expense), net	4,646	(6,953)	3,218
Income before income taxes	20,482	71,474	114,933
(Benefit from) provision for income taxes	(2,019)	53,279	22,694
Net income	22,501	18,195	92,239
Basic earnings per share (1)	\$1.98	\$1.59	\$8.07
Weighted average shares outstanding used in computing basic earnings per share	11,375	11,444	11,425
Diluted earnings per share (1)	\$1.97	\$1.58	\$8.01
Weighted average shares outstanding used in computing diluted earnings per share	11,412	11,547	11,516

(1) Basic and fully diluted earnings per share for class A and class B common stock are the same.
The accompanying notes are an integral part of these consolidated financial statements.

MICROSTRATEGY INCORPORATED

CONSOLIDATED STATEMENTS OF COMPREHENSIVE INCOME

(in thousands)

	Years Ended December 31,		
	2018	2017	2016
		(as adjusted)	(as adjusted)
Net income	\$22,501	\$ 18,195	\$ 92,239
Other comprehensive (loss) income, net of applicable taxes:			
Foreign currency translation adjustment	(4,128)	5,300	(3,533)
Unrealized (loss) gain on short-term investments	(430)	(30)	12
Total other comprehensive (loss) income	(4,558)	5,270	(3,521)
Comprehensive income	\$ 17,943	\$ 23,465	\$ 88,718

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

MICROSTRATEGY INCORPORATED

CONSOLIDATED STATEMENTS OF STOCKHOLDERS' EQUITY

(in thousands)

		Class A Common Stock	Class B Convertible Common Stock	Additional Paid-in Capital	Treasury Stock	Accumulated Other Comprehensive Income (Loss)	Retained Earnings
	Total	Shares	Amount	Shares	Amount		
Balance at December 31, 2015	\$455,281	15,771	\$ 16	2,035	\$ 2	\$534,651	(6,405) \$(475,184) \$(7,408) \$403,204
Opening balance adjustment due to the adoption of ASU 2014-09	12,995	0	0	0	0	0	0
Net income (as adjusted)	92,239	0	0	0	0	0	92,239
Other comprehensive loss (as adjusted)	(3,521)	0	0	0	0	0	(3,521) 0
Issuance of class A common stock under stock option plans	1,663	34	0	0	0	1,663	0 0 0 0
Tax effect of stock option exercises	1,244	0	0	0	0	1,244	0 0 0 0
Share-based compensation expense	11,817	0	0	0	0	11,817	0 0 0 0
Payment of taxes relating to net exercise of employee stock options	(3,739)	0	0	0	0	(3,739)	0 0 0 0
Write-off of deferred tax assets relating to vested employee stock options that are no longer	(1,662)	0	0	0	0	(1,662)	0 0 0 0

exercisable											
Balance at											
December 31,											
2016 (as											
adjusted)	\$566,317	15,805	\$ 16	2,035	\$ 2	\$543,974	(6,405)	\$(475,184)	\$(10,929)	\$508,438	
Net income (as											
adjusted)	18,195	0	0	0	0	0	0	0	0	18,195	
Other											
comprehensive											
income (as											
adjusted)	5,270	0	0	0	0	0	0	0	5,270	0	
Issuance of class											
A common stock											
under stock											
option plans	1,677	12	0	0	0	1,677	0	0	0	0	
Share-based											
compensation											
expense	14,267	0	0	0	0	14,267	0	0	0	0	
Balance at											
December 31,											
2017 (as											
adjusted)	\$605,726	15,817	\$ 16	2,035	\$ 2	\$559,918	(6,405)	\$(475,184)	\$(5,659)	\$526,633	
Net income	22,501	0	0	0	0	0	0	0	0	22,501	
Other											
comprehensive											
loss	(4,558)	0	0	0	0	0	0	0	(4,558)	0	
Issuance of class											
A common stock											
under stock											
option plans	2,471	20	0	0	0	2,471	0	0	0	0	
Purchases of											
treasury stock	(110,977)	0	0	0	0	0	(880)	(110,977)	0	0	
Share-based											
compensation											
expense	14,568	0	0	0	0	14,568	0	0	0	0	
Balance at											
December 31,											
2018	\$529,731	15,837	\$ 16	2,035	\$ 2	\$576,957	(7,285)	\$(586,161)	\$(10,217)	\$549,134	

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

MICROSTRATEGY INCORPORATED

CONSOLIDATED STATEMENTS OF CASH FLOWS

(in thousands)

	Years Ended December 31,		
	2018	2017	2016
		(as adjusted)	(as adjusted)
Operating activities:			
Net income	\$22,501	\$18,195	\$92,239
Adjustments to reconcile net income to net cash provided by operating activities:			
Depreciation and amortization	3,701	15,532	19,944
Bad debt expense	1,912	2,269	224
Net realized loss on short-term investments	153	0	0
Deferred taxes	(8,274)	(3,605)	(4,450)
Release of liabilities for unrecognized tax benefits	0	0	(394)
Share-based compensation expense	14,636	14,267	11,817
Excess tax benefits from share-based compensation arrangements	0	0	(1,244)
Changes in operating assets and liabilities:			
Accounts receivable	(8,357)	15,348	(16,878)
Prepaid expenses and other current assets	(6,561)	(4,739)	(741)
Deposits and other assets	(1,201)	3,029	(4,056)
Accounts payable and accrued expenses	3,378	(9,093)	6,981
Accrued compensation and employee benefits	5,116	(6,209)	579
Accrued restructuring costs	0	0	(58)
Deferred revenue and advance payments	(22,126)	(589)	9,691
Other long-term liabilities	5,749	33,917	(3,065)
Net cash provided by operating activities	10,627	78,322	110,589
Investing activities:			
Proceeds from redemption of short-term investments	491,800	390,720	361,680
Purchases of property and equipment	(6,846)	(3,982)	(2,337)
Purchases of short-term investments	(694,018)	(456,468)	(354,999)
Net cash (used in) provided by investing activities	(209,064)	(69,730)	4,344
Financing activities:			
Proceeds from sale of class A common stock under exercise of employee stock options	2,471	1,677	1,663
Payment of taxes relating to net exercise of employee stock options	0	0	(3,739)
Excess tax benefits from share-based compensation arrangements	0	0	1,244
Purchases of treasury stock	(110,977)	0	0
Payments on capital lease obligations and other financing arrangements	(9)	(21)	(172)
Net cash (used in) provided by financing activities	(108,515)	1,656	(1,004)
Effect of foreign exchange rate changes on cash, cash equivalents, and restricted cash	(3,444)	8,222	(4,176)
Net (decrease) increase in cash, cash equivalents, and restricted cash	(310,396)	18,470	109,753
Cash, cash equivalents, and restricted cash, beginning of year	421,182	402,712	292,959

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Cash, cash equivalents, and restricted cash, end of year	\$110,786	\$421,182	\$402,712
Supplemental disclosure of cash flow information:			
Cash paid during the year for interest	\$0	\$0	\$2
Cash paid during the year for income taxes, net of tax refunds	\$13,214	\$29,279	\$24,332
Supplemental disclosure of noncash investing and financing activities:			
Assets acquired under capital lease obligations and other financing arrangements	\$0	\$0	\$0

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

MICROSTRATEGY INCORPORATED

NOTES TO CONSOLIDATED FINANCIAL STATEMENTS

(1) Organization

MicroStrategy is a leading worldwide provider of enterprise analytics and mobility software. The Company's goal is to provide enterprise customers with a world-class software platform and expert services to enable each of its customers to become a more Intelligent Enterprise.

(2) Summary of Significant Accounting Policies

(a) Basis of Presentation

The accompanying consolidated financial statements include the accounts of the Company and its subsidiaries. All significant intercompany accounts and transactions have been eliminated in consolidation.

Certain amounts in the prior years' consolidated financial statements have been restated upon the adoption of Accounting Standards Update No. 2014-09, Revenue from Contracts with Customers (Topic 606) and its subsequent amendments ("ASU 2014-09"), as discussed in Note 3, Recent Accounting Standards, to the consolidated financial statements.

(b) Use of Estimates

The preparation of the consolidated financial statements, in conformity with GAAP, requires management to make estimates and judgments that affect the amounts reported in the consolidated financial statements and accompanying notes. On an on-going basis, the Company evaluates its estimates, including, but not limited to, those related to revenue recognition, allowance for doubtful accounts, investments, fixed assets, share-based compensation, income taxes, including the carrying value of deferred tax assets, and litigation and contingencies, including liabilities that the Company deems not probable of assertion. The Company bases its estimates on historical experience and on various other assumptions that are believed to be reasonable under the circumstances, the results of which form the basis for making judgments about the carrying value of assets, liabilities, and equity that are not readily apparent from other sources. Actual results and outcomes could differ from these estimates and assumptions.

(c) Fair Value Measurements

The Company measures certain assets and liabilities at fair value on a recurring basis. Fair value is defined as the price that is expected to be received to sell an asset or paid to transfer a liability in an orderly transaction between market participants at the measurement date. The Company uses a three-level hierarchy that prioritizes fair value measurements based on the types of inputs used for the various valuation techniques. The three levels of the fair value hierarchy are described below:

Level 1: Quoted (unadjusted) prices in active markets that are accessible at the measurement date for identical, unrestricted assets or liabilities.

Level 2: Inputs other than quoted prices that are either directly or indirectly observable, such as quoted prices in active markets for similar assets or liabilities, quoted prices for identical or similar assets or liabilities in inactive markets, or other inputs that are observable or can be corroborated by observable market data for substantially the full term of the assets or liabilities.

Level 3: Inputs that are generally unobservable, supported by little or no market activity, and typically reflect management's estimates of assumptions that market participants would use in pricing the asset or liability.

The categorization of an asset or liability within the fair value hierarchy is based on the lowest level of input that is significant to the fair value measurement. The valuation techniques used by the Company when measuring fair value maximize the use of observable inputs and minimize the use of unobservable inputs.

MICROSTRATEGY INCORPORATED

NOTES TO CONSOLIDATED FINANCIAL STATEMENTS

The Company also estimates the fair value of cash and cash equivalents, restricted cash, accounts receivable, accounts payable and accrued expenses, and accrued compensation and employee benefits. The Company considers the carrying value of these instruments in the financial statements to approximate fair value due to their short maturities.

(d) Cash and Cash Equivalents and Restricted Cash

Cash equivalents include bank demand deposits, money market instruments, certificates of deposit, U.S. Treasury securities, and equivalent funds. The Company generally considers all highly liquid investments with an original maturity of three months or less to be cash equivalents. Restricted cash consists of cash balances restricted in use by contractual obligations with third parties.

(e) Short-term Investments

The Company periodically invests a portion of its excess cash in short-term investment instruments. All highly liquid investments with stated maturity dates between three months and one year from the purchase date are classified as short-term investments. The Company determines the appropriate classification of its short-term investments at the time of purchase and reassesses the appropriateness of the classification at each reporting date.

Substantially all of the Company's short-term investments are in U.S. Treasury securities. As of December 31, 2018, all short-term investments have been classified as available-for-sale and are reported at fair value, with unrealized holding gains and losses reported in other comprehensive income (loss) until realized, subject to impairment. Premiums and discounts related to the Company's short-term investments are amortized over the life of the investment and recorded in earnings. Unrealized holding gains and losses are determined by comparing the fair value to the amortized cost. In prior years, all short-term investments were classified as held-to-maturity and reported at amortized cost.

Each reporting period, the Company determines whether a decline in fair value below the amortized cost basis for each individual security is other-than-temporary and if it would be required to sell the security before recovery of its amortized cost basis. Upon recognition of an other-than-temporary impairment, the previous amortized cost basis less the portion of the other-than-temporary impairment recognized in earnings becomes the new amortized cost basis of the investment.

(f) Property and Equipment

Property and equipment are stated at cost, net of accumulated depreciation. Depreciation is computed using the straight-line method over the estimated useful lives of the assets, as follows: three years for computer equipment and purchased software; five years for office equipment and automobiles; and 10 years for office furniture. Leasehold improvements are amortized using the straight-line method over the estimated useful lives of the improvements or the term of the lease, whichever is shorter. The Company periodically evaluates the appropriateness of the estimated useful lives and salvage value of all property and equipment. Any change in the estimated useful life or salvage value is treated as a change in estimate and accounted for prospectively in the period of change. For example, during the fourth quarter of 2018, the Company increased the estimated useful life of its corporate aircraft from 10 years to 19 years and reduced the estimated salvage value from 70% to 21%. These changes in estimates did not have a material impact on the Company's consolidated financial statements for the year ended December 31, 2018.

Expenditures for maintenance and repairs are charged to expense as incurred, except for certain costs related to the aircraft. The costs of normal, recurring, or periodic repairs and maintenance activities related to the aircraft are expensed as incurred. The cost of PMMA may be treated differently because those activities may involve the acquisition of additional aircraft components or the replacement of existing aircraft components. PMMA are performed periodically based on passage of time and the use of the aircraft. The classification of a maintenance activity as part of PMMA requires judgment and can affect the amount of expense recognized in any particular period. The cost of each PMMA is expected to be capitalized and amortized over the period until the next scheduled PMMA. There have been no PMMA to date.

MICROSTRATEGY INCORPORATED

NOTES TO CONSOLIDATED FINANCIAL STATEMENTS

When assets are retired or sold, the capitalized cost and related accumulated depreciation are removed from the property and equipment accounts and any resulting gain or loss is recognized in the results of operations.

Eligible internal-use software development costs are capitalized subsequent to the completion of the preliminary project stage. Such costs include external direct material and service costs, employee payroll, and payroll-related costs. After all substantial testing and deployment is completed and the software is ready for its intended use, capitalization ceases and internal-use software development costs are amortized using the straight-line method over the estimated useful life of the software, generally three years.

The Company reviews long-lived assets for impairment whenever events or changes in business circumstances indicate that the carrying value of the assets may not be fully recoverable or that the useful lives of these assets are no longer appropriate. Each impairment test is based on a comparison of the undiscounted cash flows to the recorded value of the asset. If an asset is impaired, the asset is written down by the amount by which the carrying value of the asset exceeds the related fair value of the asset.

(g) Software Development Costs

Software development costs are expensed as incurred until technological feasibility has been established, at which time such costs are capitalized until the product is available for general release to customers. Capitalized software development costs include direct labor costs and fringe benefit costs attributed to programmers, software engineers, and quality control and field certifiers working on products after they reach technological feasibility, but before they are generally available to customers for sale. Technological feasibility is considered to be achieved when a product design and working model of the software product have been completed. Capitalized software development costs are typically amortized over the estimated product life of three years, on a straight-line basis. The Company has significantly accelerated the pace of its software development efforts and increased the frequency of its software releases subsequent to the release of MicroStrategy 10, which has resulted in the Company's software development costs in recent periods being expensed as incurred within "Research and development" in the Consolidated Statements of Operations.

Capitalized software development costs, net of accumulated amortization, were \$0.0 million and \$2.5 million as of December 31, 2018 and 2017, respectively. Amortization expense related to software development costs was \$2.5 million, \$6.0 million, and \$7.4 million for the years ended December 31, 2018, 2017, and 2016, respectively, and is included in cost of product licenses and subscription services revenues. The Company did not capitalize any software development costs during the years ended December 31, 2018, 2017, and 2016.

(h) Loss Contingencies and Legal Costs

The Company accrues loss contingencies that are believed to be probable and can be reasonably estimated. As events evolve during the administration and litigation process and additional information becomes known, the Company reassesses its estimates related to loss contingencies. Legal costs are expensed in the period in which the costs are incurred.

(i) Deferred Revenue and Advance Payments

Deferred revenue and advance payments represent amounts received or due from customers in advance of the Company transferring its products or services to the customer. In the case of multi-year service contracts, the Company generally does not invoice more than one year in advance of services and does not record any deferred revenue for amounts that have not been invoiced. Revenue is subsequently recognized in the period(s) in which control of the products or services are transferred to the customer. Deferred revenue is comprised of deferred product licenses and subscription services, deferred product support, or other services revenue based on the transaction price allocated to the specific performance obligation in the contract with the customer.

MICROSTRATEGY INCORPORATED

NOTES TO CONSOLIDATED FINANCIAL STATEMENTS

(j) Revenue Recognition

The Company adopted ASU 2014-09 effective as of January 1, 2018 and has adjusted its prior period consolidated financial statements to reflect full retrospective adoption. See Note 3, Recent Accounting Standards, to the consolidated financial statements for a summary of the significant changes in accounting principles and the impact to the Company's previously reported consolidated financial statements.

Under ASU 2014-09, the Company recognizes revenue using a five-step model:

- (i) Identifying the contract(s) with a customer,
- (ii) Identifying the performance obligation,
- (iii) Determining the transaction price,
- (iv) Allocating the transaction price to the performance obligations in the contract, and
- (v) Recognizing revenue when, or as, the Company satisfies a performance obligation.

The Company has elected to exclude taxes assessed by government authorities in determining the transaction price, and therefore revenue is recognized net of taxes collected from customers.

Performance Obligations and Timing of Revenue Recognition

The Company primarily sells goods and services that fall into the categories discussed below. Each category contains one or more performance obligations that are either (i) capable of being distinct (i.e., the customer can benefit from the good or service on its own or together with readily available resources, including those purchased separately from the Company) and distinct within the context of the contract (i.e., separately identifiable from other promises in the contract) or (ii) a series of distinct goods or services that are substantially the same and have the same pattern of transfer to the customer. Aside from the Company's term and perpetual software licenses, which are delivered at a point in time, the majority of the Company's services are delivered over time.

Product Licenses

The Company sells different types of on-premise business intelligence software, licensed on a term or perpetual basis. Although license arrangements are sold with product support, the software is fully functional at the outset of the arrangement and is considered a distinct performance obligation. Revenue from product license sales is recognized when control of the software license has transferred to the customer, which is the later of delivery or commencement of the license term. The Company may also sell through resellers and OEMs who purchase the Company's products for resale. In reseller arrangements, revenue is recognized when control of the product is transferred to the end user. In OEM arrangements, revenue is recognized upon delivery to the OEM.

Subscription Services

The Company also sells access to its software through a subscription-based cloud offering, wherein customers access the software through a third-party hosting service. Control of the software itself does not transfer to the customer under this arrangement and is not considered a separate performance obligation. Subscription services are regularly sold on a standalone basis with telephone support only. Revenue related to this subscription service is recognized on a straight-line basis over the contract period, which is the period over which the customer has continuous access to the software.

Product Support

In all license arrangements, customers are required to purchase a standard product support package and may also purchase a premium product support package for a fixed annual fee. All product support packages include both technical support and when-and-if-available software upgrades, which are treated as a single performance obligation as they are considered a series of distinct services that are substantially the same and have the same duration and measure of progress. Revenue from product support is recognized on a straight-line basis over the contract period, which is the period over which the customer has continuous access to product support.

MICROSTRATEGY INCORPORATED

NOTES TO CONSOLIDATED FINANCIAL STATEMENTS

Consulting Services

The Company sells consulting services to help customers plan and execute deployment of the Company's software. Customers are not required to use consulting services to fully benefit from the software license. Consulting services are regularly sold on a standalone basis and either (i) prepaid upfront or (ii) sold on a time and materials basis. Consulting arrangements are each considered separate performance obligations because they do not integrate with each other or with other products and services to deliver a combined output to the customer, do not modify or customize (or are not modified or customized by) each other or other products and services, and do not affect the customer's ability to use the other consulting offerings or other products and services. Revenue under consulting arrangements is recognized over time as services are delivered. For time and materials-based consulting arrangements, the Company has elected the practical expedient of recognizing revenue upon invoicing since the invoiced amount corresponds directly to the value of the Company's service to date.

Education Services

The Company sells various education and training services to its customers. Education services are sold on a standalone basis under three different arrangements: (i) prepaid bulk training units that may be redeemed on training courses based on standard redemption rates, (ii) an annual subscription to unlimited training courses, and (iii) individual courses purchased a la carte. Education arrangements are each considered separate performance obligations because they do not integrate with each other or with other products and services to deliver a combined output to the customer, do not modify or customize (or are not modified or customized by) each other or other products and services, and do not affect the customer's ability to use the other education offerings or other products and services. Revenue on prepaid bulk training units and individual course purchases are recognized when the courses are delivered. Revenue on the annual subscription is recognized on a straight-line basis over the contract period, which is the period over which the customer has continuous access to unlimited training courses.

See Note 13, Segment Information, to the consolidated financial statements for information regarding total revenues by geographic region.

Significant Judgments and Estimates

The adoption of ASU 2014-09 requires the Company to make significant judgments to determine the transaction price of a contract and subsequently allocate the transaction price based on an estimated SSP. The Company is also required to make significant judgments with respect to capitalizing incremental costs to obtain a customer contract and determining the subsequent amortization period. These significant judgments and estimates are discussed further below.

Determining the Transaction Price

The transaction price includes both fixed and variable consideration. Variable consideration is included in the transaction price to the extent it is probable that a significant reversal will not occur. The amount of variable consideration excluded from the transaction price was not material for the years ended December 31, 2018, 2017, and 2016. The Company's estimates of variable consideration are also subject to subsequent true-up adjustments and may result in changes to its transaction prices, but such true-up adjustments are not expected to be material. The Company has the following sources of variable consideration:

- (i) Performance penalties – Subscription services and product support arrangements generally contain performance response time guarantees. For subscription services arrangements, the Company estimates variable consideration using a portfolio approach because performance penalties are tied to standard up-time requirements. For product support arrangements, the Company estimates variable consideration on a contract basis because such arrangements are customer-specific. For both subscription services and product support arrangements, the Company uses an expected value approach to estimate variable consideration based on historical business practices and current and future performance expectations to determine the likelihood of incurring penalties.

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- (ii) Extended payment terms – The Company’s standard payment terms are generally within 180 days of invoicing. If extended payment terms are granted to customers, those terms generally do not exceed one year. For contracts with extended payment terms, the Company estimates variable consideration on a contract basis because such estimates are customer-specific and uses an expected value approach to analyze historical business experience on a customer-by-customer basis to determine the likelihood that extended payment terms lead to an implied price concession.
- (iii) Sales and usage-based royalties – Certain product license arrangements include sales or usage-based royalties, covering both the software license and product support. In these arrangements, the Company uses an expected value approach to estimate and recognize revenue for royalty sales each period, utilizing historical data on a contract-by-contract basis. True-up adjustments are recorded in subsequent periods when royalty reporting is received from the OEM partners.

The Company provides a standard software assurance warranty to repair, replace, or refund software that does not perform in accordance with documentation. The standard software assurance warranty period is generally less than one year. Assurance warranty claims were not material for the years ended December 31, 2018, 2017, and 2016.

The Company does not adjust the transaction price for significant financing components where the time period between cash payment and performance is one year or less. However, there are circumstances where the timing between cash payment and performance may exceed one year. These circumstances generally involve prepaid multi-year product support and subscription services arrangements where the customer determines when the service is utilized (e.g., when to request on-call support services or when to use and access the software on the cloud). In these circumstances, the Company has determined no significant financing component exists because the customer controls when to utilize the service and because there are significant business purposes behind the timing difference between payment and performance (e.g., maximizing profit in the case of product support services and ensuring collectability in the case of subscription services).

Allocating the Transaction Price Based on Standalone Selling Prices (SSP)

The Company allocates the transaction price to each performance obligation in a contract based on its relative SSP. The SSP is the price at which the Company sells the product or service on a standalone basis at contract inception. In circumstances where SSP is not directly observable, the Company estimates SSP using the following methodologies:

- (i) Product licenses – Product licenses are not sold on a standalone basis and pricing is highly variable. The Company establishes SSP of product licenses using a residual approach after first establishing the SSP of standard product support. Standard product support is sold on a standalone basis within a narrow range of the net license fee, and

because an economic relationship exists between product licenses and standard product support, the Company has concluded that the residual method to estimate SSP of product licenses sold on both a perpetual and term basis is a fair allocation of the transaction price.

- (ii) Subscription services – Given the highly variable selling price of subscription services, the Company establishes the SSP of its subscription services arrangements using a similar residual approach after first establishing the SSP of consulting and education services. The Company has concluded that the residual method to estimate SSP of its subscription services is a fair allocation of the transaction price.
- (iii) Standard product support – The Company establishes SSP of standard product support as a percentage of the stated net license fee, given such pricing is consistent with its normal pricing practices and there exists sufficient history of customers renewing at similar percentages. Each quarter, the Company tracks renewal rates negotiated when standard product support is initially sold with a perpetual license in order to determine the SSP of standard product support within each geographic region for the upcoming quarter. If the stated standard product support fee falls within the SSP range, the specific rate in the contract will be used to estimate SSP. If the stated fee is above or below SSP, the highest or lowest end of the range, respectively, will generally be used to estimate SSP of standard product support.
- (iv) Premium product support, consulting services, and education services – SSP of premium product support, consulting services, and education services is established by using a bell-shaped curve approach to define a narrow range within each geographic region in which the services are discounted off of the list price on a standalone basis.

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The Company often provides options to purchase future products or services at a discount. The Company analyzes the option price against the previously established SSP of the goods or services to determine if the options represent material rights that should be accounted for as separate performance obligations. In general, an option sold at or above SSP is not considered a material right because the customer could have received that right without entering into the contract. If a material right exists, revenue associated with the option is recognized when the future goods or services are transferred, or when the option expires. During the years ended December 31, 2018, 2017, and 2016, separate performance obligations arising from future purchase options have not been material.

Incremental Costs to Obtain Customer Contracts

Incremental costs incurred to obtain contracts with customers include certain variable compensation (e.g., commissions and bonuses) paid to the Company's sales team. Although the Company may bundle its goods and services into one contract, commissions are individually determined on each distinct good or service in the contract. The Company expenses as incurred those amounts earned on consulting and education services, which are generally performed within a one-year period and primarily sold on a standalone basis. The Company also expenses as incurred those amounts earned on product license sales, since the amount is earned when the license is delivered. The Company capitalizes those amounts earned on product support and amortizes the costs over a period of time that is consistent with the pattern of transfer of the product support to the customer, which the Company has determined to be a period of three years. Although the Company typically sells product support for a period of one year, a majority of customers renew their product support arrangements. Three years is generally the period after which platforms are no longer supported by the Company's support team and when customers generally choose to upgrade their software platform. The Company does not pay variable compensation on product support renewals. Variable compensation earned on subscription cloud services is expensed as incurred due to its immaterial nature. As of December 31, 2018 and 2017, capitalized costs to obtain customer contracts, net of accumulated amortization, were \$4.2 million and \$4.5 million, respectively, and are presented within "Deposits and other assets" in the Consolidated Balance Sheets. During the years ended December 31, 2018, 2017, and 2016, amortization expense related to these capitalized costs were \$2.3 million, \$3.0 million, and \$2.7 million, respectively, and are reflected within "Sales and marketing" in the Consolidated Statements of Operations.

(k) Advertising Costs

Advertising costs include production costs, which are expensed the first time the advertisement takes place, and media placement costs, which are expensed in the month the advertising appears. Total advertising costs were \$7.1 million, \$5.7 million, and \$1.3 million for the years ended December 31, 2018, 2017, and 2016, respectively. As of December 31, 2018 and 2017, the Company had no prepaid advertising costs.

(l) Share-based Compensation

The Company maintains the 2013 Equity Plan, under which the Company's employees, officers, directors, and other eligible participants may be awarded various types of share-based compensation, including options to purchase shares of the Company's class A common stock and other stock-based awards. The Company recognizes share-based

compensation expense associated with such stock option and stock-based awards on a straight-line basis over the award's requisite service period (generally, the vesting period). The share-based compensation expense is based on the fair value of such awards on the date of grant, as estimated using the Black-Scholes option pricing model. See Note 9, Share-based Compensation, to the consolidated financial statements for further information regarding the 2013 Equity Plan, related share-based compensation expense, and assumptions used in the Black-Scholes option pricing model.

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(m) Income Taxes

The Company is subject to federal, state, and local income taxes in the United States and many foreign countries. Deferred income taxes are provided based on enacted tax laws and rates applicable to the periods in which the taxes become payable. For uncertain income tax positions, the Company uses a more-likely-than-not recognition threshold based on the technical merits of the income tax position taken. Income tax positions that meet the more-likely-than-not recognition threshold are measured in order to determine the tax benefit recognized in the financial statements. The Company recognizes accrued interest related to unrecognized tax benefits as part of income tax expense. Penalties, if incurred, are recognized as a component of income tax expense.

The Company provides a valuation allowance to reduce deferred tax assets to their estimated realizable value, when appropriate.

(n) Basic and Diluted Earnings Per Share

Basic earnings per share is determined by dividing the net income attributable to common stockholders by the weighted average number of common shares and participating securities outstanding during the period. Participating securities are included in the basic earnings per share calculation when dilutive. Diluted earnings per share is determined by dividing the net income attributable to common stockholders by the weighted average number of common shares and potential common shares outstanding during the period. Potential common shares are included in the diluted earnings per share calculation when dilutive. Potential common shares consisting of common stock issuable upon exercise of outstanding employee stock options and warrants are computed using the treasury stock method. Potential common shares also consist of common stock issuable upon the conversion of preferred stock. Beginning January 1, 2017, excess tax benefits are no longer included in the calculation of diluted earnings per share, on a prospective basis.

The Company has two classes of common stock: class A common stock and class B common stock. Holders of class A common stock generally have the same rights, including rights to dividends, as holders of class B common stock, except that holders of class A common stock have one vote per share while holders of class B common stock have ten votes per share. Each share of class B common stock is convertible at any time, at the option of the holder, into one share of class A common stock. As such, basic and fully diluted earnings per share for class A and class B common stock are the same. The Company has never declared or paid any cash dividends on either class A or class B common stock. As of December 31, 2018 and 2017, there were no shares of preferred stock outstanding.

(o) Foreign Currency Translation

The functional currency of the Company's international operations is generally the local currency. Accordingly, all assets and liabilities of international subsidiaries are translated using exchange rates in effect at the end of the period, and revenue and expenses are translated using weighted average exchange rates for the period. The related translation adjustments are reported in "Accumulated other comprehensive income (loss)" in stockholders' equity. In general, upon complete or substantially complete liquidation of an investment in an international subsidiary, the amount of accumulated translation adjustments attributable to that subsidiary is reclassified from stockholders' equity to the statement of operations. Transaction gains and losses arising from transactions denominated in a currency other than the functional currency of the entity involved are included in the results of operations.

As of December 31, 2018, 2017, and 2016, the cumulative foreign currency translation balances were \$(9.8) million, \$(5.7) million, and \$(11.0) million, respectively. No taxes were recognized on the temporary differences resulting from foreign currency translation adjustments for the years ended December 31, 2018, 2017, and 2016.

Transaction gains and losses arising from transactions denominated in foreign currencies resulted in net gains of \$4.7 million and \$3.0 million in 2018 and 2016, respectively, and a net loss of \$7.0 million in 2017, and are included in “Other income (expense), net” in the Consolidated Statements of Operations.

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(p) Concentrations of Credit Risk

Financial instruments that potentially subject the Company to concentrations of credit risk consist primarily of cash and cash equivalents, restricted cash, short-term investments, and accounts receivable. The Company places its cash equivalents with high credit-quality financial institutions and invests its excess cash primarily in short-term investments. The Company has established guidelines relative to credit ratings and maturities that seek to maintain safety and liquidity.

The Company sells products and services to various companies across several industries throughout the world in the ordinary course of business. The Company routinely assesses the financial strength of its customers and maintains allowances for anticipated losses. As of December 31, 2018 and 2017, no individual customer accounted for 10% or more of net accounts receivable, and for the years ended December 31, 2018, 2017, and 2016, no individual customer accounted for 10% or more of revenue.

(3) Recent Accounting Standards

Revenue from contracts with customers

The Company adopted ASU 2014-09 effective as of January 1, 2018 and adjusted prior period consolidated financial statements to reflect full retrospective adoption. In adopting ASU 2014-09, the Company has made the following significant changes in accounting principles:

- (i) Timing of revenue recognition for term license sales. Under ASU 2014-09, the Company now recognizes product licenses revenue from term licenses upon delivery of the software. Previously, this revenue was recognized over the term of the arrangement.
- (ii) Timing of revenue recognition for sales to channel partners. Under ASU 2014-09, the Company now recognizes revenue from sales made to OEMs when control of the products transfers to the OEM, less adjustments for returns or price protection. Previously, this revenue was not recognized until the product was sold by the OEM to the end user. Revenue from sales made to resellers continues to be recognized when control of the product has transferred to the end user.
- (iii) Allocating the transaction price to the performance obligations in the contract. Under ASU 2014-09, the Company allocates the transaction price to the various performance obligations in the contract based on their relative SSP. Except for SSP of product support, the Company's methodologies for estimating SSP of its various performance obligations are generally consistent with the Company's previous methodologies used to establish vendor specific objective evidence ("VSOE") of fair value on multiple element arrangements. Whereas VSOE of product support was previously based on the optional stated renewal fee within the contract, SSP of product support under ASU 2014-09 is established as a range within each geographic region as discussed in Note 2, Summary of Significant Accounting Policies, to the consolidated financial statements. The impact from SSP-based allocations was not material to the Company's prior or current period financial statements and is not expected to be material in future periods.
- (iv)

Material rights. The Company's contracts with customers may include options to acquire additional goods and services at a discount. Under ASU 2014-09, certain of these options may be considered material rights if sold below SSP and would be treated as separate performance obligations and included in the allocation of the transaction price. Previously, none of the Company's options were considered material rights. The impact from material rights was not material to the Company's prior or current period financial statements and is not expected to be material in future periods.

- (v) Presentation of accounts receivable, contract assets, and contract liabilities (deferred revenue). Under ASU 2014-09, the Company's rights to consideration are presented separately depending on whether those rights are conditional ("contract assets") or unconditional ("accounts receivable"). See Note 5, Contract Balances, to the consolidated financial statements for further discussion on balance sheet presentation. Under ASU 2014-09, the Company cannot net accounts receivable with contract liabilities ("deferred revenue") and the Company no longer offsets its accounts receivable and deferred revenue balances for unpaid items that are included in the deferred revenue balance. Previously, this offsetting of accounts receivable and deferred revenue balances for unpaid amounts was applied in the Company's prior period financial statements.

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(vi) Deferral of incremental direct costs to obtaining a contract with a customer. Under ASU 2014-09, the Company now capitalizes certain variable compensation payable to its sales force and subsequently amortizes the capitalized costs over a period of time that is consistent with the transfer of the related good or service to the customer, which the Company has determined to be three years. Previously, the Company elected to expense these incremental direct costs as incurred.

Upon adoption of ASU 2014-09, the Company recorded a cumulative \$13.0 million increase to its 2016 beginning retained earnings balance, offset by a \$12.9 million decrease in gross deferred revenues, a \$5.2 million decrease in deferred tax assets, net of deferred tax liabilities, a \$4.4 million increase in other non-current assets, and a \$0.9 million increase in other current assets.

The following line items as of December 31, 2017 and for the years ended December 31, 2017 and 2016 have been adjusted in the consolidated financial statements to reflect the adoption of ASU 2014-09:

	December 31, 2017		
	Effect of the		
	Adoption of ASU		
	As Reported	2014-09	As Adjusted
Consolidated Balance Sheet			
Accounts receivable, net	\$69,500	\$95,864	\$165,364
Prepaid expenses and other current assets	18,002	1,178	19,180
Deposits and other assets	2,868	4,543	7,411
Deferred tax assets, net	13,391	(4,094)	9,297
Deferred revenue and advance payments	112,649	86,085	198,734
Deferred revenue and advance payments, non-current	10,181	(3,781)	6,400
Accumulated other comprehensive loss	(5,968)	309	(5,659)
Retained earnings	511,755	14,878	526,633

	Year Ended December 31, 2017		
	Effect of the		
	Adoption of ASU		
	As Reported	2014-09	As Adjusted
Consolidated Statement of Operations:			
Product licenses revenue	\$93,969	\$ (710)	\$93,259
Product support revenues	289,174	10	289,184
Sales and marketing expenses	174,612	433	175,045
Provision for income taxes	54,964	(1,685)	53,279

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Net income	17,643	552	18,195
Diluted earnings per share	1.53	0.05	1.58

Year Ended December 31, 2016

Effect of
the

Adoption
of ASU

	As Reported	2014-09	As Adjusted
Consolidated Statement of Operations:			
Product licenses revenue	\$113,503	\$ 1,371	\$114,874
Product support revenues	285,079	57	285,136
Sales and marketing expenses	158,740	(459)	158,281
Provision for income taxes	22,138	556	22,694
Net income	90,908	1,331	92,239
Diluted earnings per share	7.89	0.12	8.01

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Year Ended December 31,
2017Effect of
theAdoption
of ASU

	As Reported	2014-09	As Adjusted
Consolidated Statement of Comprehensive Income:			
Net income	\$ 17,643	\$ 552	\$ 18,195
Foreign currency translation adjustment	4,805	495	5,300
Comprehensive income	22,418	1,047	23,465

Year Ended December 31,
2016Effect of
theAdoption
of ASU

	As Reported	2014-09	As Adjusted
Consolidated Statement of Comprehensive Income:			
Net income	\$ 90,908	\$ 1,331	\$ 92,239
Foreign currency translation adjustment	(3,347)	(186)	(3,533)
Comprehensive income	87,573	1,145	88,718

Year Ended December 31,
2017Effect of
theAdoption
of ASU

	As Reported	2014-09	As Adjusted
Consolidated Statement of Cash Flows:			
Net income	\$ 17,643	\$ 552	\$ 18,195
Adjustments to reconcile net income to net cash provided by operating activities:			
Depreciation and amortization	12,572	2,960	15,532
Deferred taxes	(2,011)	(1,594)	(3,605)
Changes in operating assets and liabilities:			
Prepaid expenses and other current assets	(4,279)	(460)	(4,739)

Deposits and other assets	2,981	48	3,029
Accrued compensation and employee benefits	(3,683)	(2,526)	(6,209)
Deferred revenue and advance payments	(1,609)	1,020	(589)

Year Ended December 31,
2016

Effect of
the

Adoption
of ASU

As
Reported 2014-09 As
Adjusted

Consolidated Statement of Cash Flows:			
Net income	\$90,908	\$ 1,331	\$ 92,239
Adjustments to reconcile net income to net cash provided by operating activities:			
Depreciation and amortization	17,195	2,749	19,944
Deferred taxes	(4,983)	533	(4,450)
Changes in operating assets and liabilities:			
Prepaid expenses and other current assets	(880)	139	(741)
Deposits and other assets	(4,059)	3	(4,056)
Accrued compensation and employee benefits	3,787	(3,208)	579
Deferred revenue and advance payments	11,238	(1,547)	9,691

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Intra-entity asset transfers

In October 2016, the Financial Accounting Standards Board (“FASB”) issued Accounting Standards Update No. 2016-16, Income Taxes (Topic 740): Intra-Entity Transfers of Assets Other Than Inventory (“ASU 2016-16”), to improve the accounting for income tax effects of intra-entity transfers of assets other than inventory. Under ASU 2016-16, the deferral of the income tax consequences of intra-entity transfers of assets other than inventory is eliminated. Entities will be required to recognize the income tax consequences of intra-entity transfers of assets other than inventory when the transfers occur. The standard requires a cumulative-effect adjustment directly to retained earnings as of the beginning of the period of adoption using a modified retrospective approach. The Company adopted this guidance effective as of January 1, 2018. The adoption of this guidance did not have a material impact on the Company’s consolidated financial position, results of operations, or cash flows. No cumulative-effect adjustment to retained earnings was made.

Lease accounting

In February 2016, the FASB issued Accounting Standards Update No. 2016-02, Leases (Topic 842) (“ASU 2016-02”), which requires lease assets and lease liabilities be recognized for all leases, in addition to the disclosure of key information to enable users of financial statements to assess the amount, timing, and uncertainty of cash flows arising from an entity’s leasing arrangements. ASU 2016-02 defines a lease as a contract, or part of a contract, that conveys both (i) the right to obtain economic benefits from and (ii) direct the use of an identified asset for a period of time in exchange for consideration. Under ASU 2016-02, leases are classified as either finance or operating leases. For finance leases, a lessee shall recognize in profit or loss the amortization of the lease asset and interest on the lease liability. For operating leases, a lessee shall recognize in profit or loss a single lease cost, calculated so that the remaining cost of the lease is allocated over the remaining lease term, generally on a straight-line basis.

The Company will adopt this guidance and its subsequent amendments effective as of January 1, 2019. The Company has elected the transition option to apply the new lease requirements as of the adoption date without restating comparative periods presented in its financial statements and will record a cumulative-effect adjustment to the opening balance of retained earnings in the first quarter of 2019 as needed. The Company has substantially completed the implementation of key system changes and changes to internal controls over financial reporting to allow the Company to timely compile the information needed to account for transactions under this new guidance and to adjust the 2019 beginning balances in its consolidated financial statements upon adoption.

The Company has substantially completed its review of contracts for potential embedded leases and compiled an inventory of current leases. The Company’s current leases are primarily related to office space in the United States and foreign locations and are classified as operating leases under GAAP. The Company plans to elect the package of practical expedients described in ASU 2016-02, which includes not reassessing the following: (i) lease classification

of existing leases, (ii) whether expired or existing contracts contain leases, and (iii) initial direct costs for existing leases. The Company also plans to elect the practical expedient to not separate lease components from non-lease components for leases related to office space, which is the Company's only material underlying asset class.

The adoption of ASU 2016-02 will have a material impact on the Company's consolidated financial position, cash flows and disclosures, but will not have a material impact on its consolidated results of operations. Upon adopting ASU 2016-02, the Company will recognize new right-of-use ("ROU") assets and lease liabilities for operating leases and provide key quantitative and qualitative information relating to these leases. The Company will present the amortization of its operating ROU assets and the change in its operating lease liabilities within the operating activities section of its consolidated statements of cash flows. The Company does not have any material leases that will be classified as finance leases.

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The Company estimates the adoption of ASU 2016-02 will result in the recognition of additional ROU assets and lease liabilities of approximately \$88.0 million and \$117.0 million, respectively, and a reduction in deferred rent of approximately \$29.0 million in the Company's 2019 beginning balances. The Company does not expect a material change in its 2019 beginning retained earnings balance, as the Company does not have material unamortized initial direct costs. Additionally, the Company will provide quantitative and qualitative disclosures in order to meet the overall disclosure objective of ASU 2016-02, which is to enable financial statement users to assess the amount, timing, and uncertainty of cash flows arising from leases. The Company will also retain prior year disclosures for comparative periods as prior periods will not be restated.

Cloud computing arrangements

In August 2018, the FASB issued Accounting Standards Update No. 2018-15, Intangibles – Goodwill and Other – Internal-Use Software (Subtopic 350-40): Customer's Accounting for Implementation Costs Incurred in a Cloud Computing Arrangement That Is a Service Contract ("ASU 2018-15"). ASU 2018-15 requires customers in a hosting arrangement that is a service contract to follow existing internal-use software guidance to determine which implementation costs to capitalize and which costs to expense. Under this model, customers would need to determine the nature of the implementation costs and the project stage in which they are incurred to determine which costs to capitalize or expense. Customers would be required to amortize the capitalized implementation costs over the term of the hosting arrangement, which might extend beyond the noncancelable period if there are options to extend or terminate. ASU 2018-15 specifies the financial statement presentation of capitalized implementation costs and related amortization in addition to required disclosures for material capitalized implementation costs related to hosting arrangements that are service contracts. The standard is effective for interim and annual periods beginning January 1, 2020. Early adoption is permitted. Entities can choose to adopt this guidance prospectively to eligible costs incurred on or after the date the guidance is first applied, or to adopt the guidance retrospectively. The Company is currently evaluating the impact of this guidance on its consolidated financial position, results of operations, and cash flows.

(4) Short-term Investments

The Company periodically invests a portion of its excess cash in short-term investment instruments. Substantially all of the Company's short-term investments are in U.S. Treasury securities and all short-term investments have stated maturity dates between three months and one year from the purchase date. All short-term investments are included within "Short-term investments" on the accompanying Consolidated Balance Sheets. The fair value of the Company's short-term investments is determined based on quoted market prices in active markets for identical securities (Level 1 inputs).

In the fourth quarter of 2018, the Company began to redeem certain short-term investments prior to their stated maturity dates. As a result, all short-term investments were reclassified from held-to-maturity to available-for-sale. As of December 31, 2018, all short-term investments are classified as available-for-sale and reported at fair value. The amortized cost and fair value of available-for-sale investments at December 31, 2018 were \$466.6 million and \$466.2 million, respectively. The gross unrecognized holding losses accumulated in other comprehensive loss were \$0.4 million for the year ended December 31, 2018. The gross unrecognized holding gains

accumulated in other comprehensive loss were not material for the year-ended December 31, 2018. No other-than-temporary impairments related to these available-for-sale investments have been recognized as of December 31, 2018.

As of December 31, 2017, all short-term investments were classified as held-to-maturity and reported at amortized cost. The amortized cost, carrying value, and fair value of held-to-maturity investments at December 31, 2017 were \$254.9 million, \$254.9 million, and \$254.8 million, respectively. The gross unrecognized holding gains and losses were not material for the years ended December 31, 2017 and 2016. No other-than-temporary impairments related to these held-to-maturity investments have been recognized as of December 31, 2017.

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(5) Contract Balances

The Company invoices its customers in accordance with billing schedules established in each contract. The Company's rights to consideration from customers are presented separately in the Company's Consolidated Balance Sheets depending on whether those rights are conditional or unconditional.

The Company presents unconditional rights to consideration from customers within "Accounts receivable, net" in its Consolidated Balance Sheets. All of the Company's contracts are generally non-cancellable and/or non-refundable, and therefore an unconditional right generally exists when the customer is billed or amounts are billable per the contract.

Accounts receivable (in thousands) consisted of the following, as of:

	December 31,	
	2018	2017
		(as adjusted)
Billed and billable	\$176,848	\$169,554
Less: allowance for doubtful accounts	(5,489)	(4,190)
Accounts receivable, net	\$171,359	\$165,364

The Company maintains an allowance for doubtful accounts which represents its best estimate of probable losses inherent in the accounts receivable balances. The Company evaluates specific accounts when it becomes aware that a customer may not be able to meet its financial obligations due to deterioration of its liquidity or financial viability, credit ratings, or bankruptcy. In addition, the Company periodically adjusts this allowance based on its review and assessment of the aging of receivables. For the years ended December 31, 2018, 2017, and 2016, the Company's bad debt expense and write-offs totaled \$1.9 million, \$2.3 million, and \$0.2 million, respectively.

In contrast, rights to consideration that are subject to a condition other than the passage of time are considered contract assets and presented within "Prepaid expenses and other current assets" in the Consolidated Balance Sheets since the rights to consideration are expected to become unconditional and transfer to accounts receivable within one year. Contract assets generally consist of accrued sales and usage-based royalty revenue. In these arrangements, consideration is not billed or billable until the royalty reporting is received, generally in the subsequent quarter, at which time the contract asset will transfer to accounts receivable and a true-up adjustment will be recorded to revenue. During the years ended December 31, 2018, 2017, and 2016, there were no significant impairments to the Company's contract assets, nor were there any significant changes in the timing of the Company's contract assets being reclassified to accounts receivable. Contract assets included in "Prepaid expenses and other current assets" in the Consolidated Balance Sheets consisted of \$0.8 million and \$1.2 million in accrued sales and usage-based royalty revenue as of December 31, 2018 and 2017, respectively.

Contract liabilities are amounts received or due from customers in advance of the Company transferring the products or services to the customer. Revenue is subsequently recognized in the period(s) in which control of the products or

services are transferred to the customer. The Company's contract liabilities are presented as either current or non-current "Deferred revenue and advance payments" in the Consolidated Balance Sheets, depending on whether the products or services are expected to be transferred to the customer within the next year.

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Deferred revenue and advance payments (in thousands) from customers consisted of the following, as of:

	December 31, 2018	2017 (as adjusted)
Current:		
Deferred product licenses revenue	\$1,768	\$3,760
Deferred subscription services revenue	13,508	17,324
Deferred product support revenue	152,501	168,185
Deferred other services revenue	8,763	9,465
Total current deferred revenue and advance payments	\$176,540	\$198,734
Non-current:		
Deferred product licenses revenue	\$542	\$820
Deferred subscription services revenue	2,384	126
Deferred product support revenue	3,091	4,826
Deferred other services revenue	452	628
Total non-current deferred revenue and advance payments	\$6,469	\$6,400

During the years ended December 31, 2018, 2017, and 2016, the Company recognized revenues of \$194.6 million, \$196.7 million, and \$187.3 million, respectively, from amounts included in the total current deferred revenue and advance payments balances at the beginning of the respective year. For the years ended December 31, 2018, 2017, and 2016, there were no significant changes in the timing of revenue recognition on the Company's deferred balances.

As of December 31, 2018, the Company had an aggregate transaction price of \$183.0 million allocated to unsatisfied performance obligations related to product support, subscription services, other services, and product licenses contracts. The Company expects to recognize \$176.5 million within the next year and \$6.5 million thereafter.

(6) Property and Equipment

Property and equipment (in thousands) consisted of the following, as of:

	December 31, 2018	2017
Transportation equipment	\$48,645	\$48,645
Computer equipment and purchased software	56,933	57,515
Furniture and equipment	10,709	10,425

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Leasehold improvements	29,733	28,511
Internally developed software	9,643	9,643
Property and equipment, gross	155,663	154,739
Less: accumulated depreciation and amortization	(103,744)	(101,380)
Property and equipment, net	\$51,919	\$53,359

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Included in transportation equipment is the Company's owned corporate aircraft, including capitalizable costs related to the repairs to the aircraft, and aircraft-related equipment. As of December 31, 2018, the net carrying value of the aircraft and aircraft-related equipment was \$35.2 million, net of \$13.4 million of accumulated depreciation. As of December 31, 2017, the net carrying value of the aircraft and aircraft-related equipment was \$36.9 million, net of \$11.7 million of accumulated depreciation. During the fourth quarter of 2018, the Company changed the estimated useful life and salvage value of its owned corporate aircraft. These changes in estimates were accounted for prospectively. See Note 2, Summary of Significant Accounting Policies to the consolidated financial statements for further detail on these changes in estimates. These changes in estimates did not have a material impact on the Company's consolidated financial statements for the year ended December 31, 2018.

Depreciation and amortization expense related to property and equipment, including assets under capital leases, was \$8.3 million, \$8.4 million, and \$10.6 million for the years ended December 31, 2018, 2017, and 2016, respectively.

(7) Commitments and Contingencies

(a) Commitments

From time to time, the Company enters into certain types of contracts that require it to indemnify parties against third-party claims. These contracts primarily relate to agreements under which the Company assumes indemnity obligations for intellectual property infringement, as well as other obligations from time to time depending on arrangements negotiated with customers and other third parties. The conditions of these obligations vary. Thus, the overall maximum amount of the Company's indemnification obligations cannot be reasonably estimated. Historically, the Company has not been obligated to make significant payments for these obligations and does not currently expect to incur any material obligations in the future. Accordingly, the Company has not recorded an indemnification liability on its balance sheets as of December 31, 2018 or December 31, 2017.

The Company leases office space under operating lease agreements. Under the lease agreements, in addition to base rent, the Company is generally responsible for certain taxes, utilities and maintenance costs, and other fees. Several of these leases include options for renewal. The Company does not have any material capital leases. The Company leases approximately 214,000 square feet of office space at a location in Northern Virginia that began serving as its corporate headquarters in October 2010. In January 2018, the Company amended the lease to extend the lease term through December 2030. The amended lease also provides for certain tenant allowances and incentives. At December 31, 2018 and 2017, deferred rent of \$26.9 million and \$8.5 million, respectively, was included in other long-term liabilities.

As a result of the Tax Act, the Company estimated and recorded a one-time \$40.3 million tax expense related to the Transition Tax during the year ended December 31, 2017. The Company subsequently recorded a measurement-period adjustment to reduce the Transition Tax by \$3.1 million during the year ended December 31, 2018. At December 31, 2018, \$28.9 million of the Transition Tax was unpaid and included in "Other long-term liabilities" in the Company's Consolidated Balance Sheets. See Note 8, Income Taxes, to the consolidated financial statements for further information.

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The following table shows future minimum rent payments under noncancellable operating leases and agreements with initial terms of greater than one year, and anticipated payments related to the one-time Transition Tax resulting from the Tax Act, based on the expected due dates of the various installments as of December 31, 2018 (in thousands):

	Operating	Transition
	Leases	Tax
Year	Amount	Amount
2019	\$27,768	\$ 0
2020	25,583	897
2021	18,573	2,951
2022	15,694	2,951
2023	15,607	5,534
Thereafter	92,347	16,602
	\$195,572	\$ 28,935

Total rental expenses under operating lease agreements for the years ended December 31, 2018, 2017, and 2016 were \$18.9 million, \$19.8 million, and \$20.3 million, respectively.

(b) Contingencies

Following an internal review, the Company believes that its Brazilian subsidiary failed or likely failed to comply with local procurement regulations in conducting business with certain Brazilian government entities. While the Company believes that it is probable that the resolution of this matter will result in a loss, the amount or range of loss is not reasonably estimable at this time. Given the stage of the matter, no assurance can be given that the outcome will not result in a material impact on the Company's earnings and financial results for the period in which any such liability is accrued. However, the Company believes that the outcome of this matter will not have a material effect on the Company's financial position.

The Company is also involved in various legal proceedings arising in the normal course of business. Although the outcomes of these legal proceedings are inherently difficult to predict, management does not expect the resolution of these legal proceedings to have a material adverse effect on the Company's financial position, results of operations, or cash flows.

The Company has contingent liabilities that, in management's judgment, are not probable of assertion. If such unasserted contingent liabilities were to be asserted, or become probable of assertion, the Company may be required to record significant expenses and liabilities in the period in which these liabilities are asserted or become probable of assertion.

(8) Income Taxes

U.S. and international components of income before income taxes (in thousands) were comprised of the following for the periods indicated:

	Years Ended December 31,		
	2018	2017	2016
		(as	(as
		adjusted)	adjusted)
U.S.	\$(18,295)	\$ 18,814	\$52,802
Foreign	38,777	52,660	62,131
Total	\$20,482	\$ 71,474	\$ 114,933

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The provision for income taxes (in thousands) consisted of the following for the periods indicated:

	Years Ended December 31,		
	2018	2017	2016
		(as	(as
		adjusted)	adjusted)
Current:			
Federal	\$(1,916)	\$ 48,794	\$ 18,453
State	1,656	4,077	3,681
Foreign	6,460	4,074	4,941
	\$6,200	\$ 56,945	\$ 27,075
Deferred:			
Federal	\$(6,071)	\$ (1,649)	\$ (4,165)
State	(2,047)	(1,260)	(801)
Foreign	(101)	(757)	585
	\$(8,219)	\$ (3,666)	\$ (4,381)
Total (benefit) provision	\$(2,019)	\$ 53,279	\$ 22,694

The provision for income taxes differs from the amount computed by applying the federal statutory income tax rate to the Company's income before income taxes as follows for the periods indicated:

	Years Ended December 31,					
	2018	2017	2016			
		(as adjusted)	(as adjusted)			
Income tax expense at federal statutory rate	21.0 %	35.0 %	35.0 %			
State taxes, net of federal tax effect	(1.3)%	2.5 %	1.6 %			
Foreign earnings taxed at different rates	(20.5)%	(24.2)%	(15.4)%			
Withholding tax	5.5 %	1.9 %	1.3 %			
Foreign tax credit	(5.2)%	(1.1)%	(0.9)%			
Other international components	0.3 %	0.0 %	(0.1)%			
Change in valuation allowance	2.5 %	0.2 %	(0.8)%			
Deferred tax adjustments and rate changes	(1.7)%	4.0 %	0.0 %			
Section 199 Deduction	0.0 %	(1.4)%	(1.8)%			
Subpart F income	7.0 %	1.5 %	0.6 %			
Research and development tax credit	(11.8)%	(1.1)%	(0.8)%			
GILTI, net of foreign tax credit	0.5 %	0.0 %	0.0 %			
FDII	(4.5)%	0.0 %	0.0 %			
Transition Tax	(15.2)%	55.4 %	0.0 %			
Other permanent differences	13.5 %	1.8 %	1.0 %			

Total (9.9)% 74.5 % 19.7 %

The Company's U.S. and foreign effective tax rates for income before income taxes were as follows for the periods indicated:

	Years Ended December 31,					
	2018	2017		2016		
		(as adjusted)		(as adjusted)		
U.S.	45.8%	265.6	%	32.5	%	
Foreign	16.4%	6.3	%	8.9	%	
Combined	(9.9)%	74.5	%	19.7	%	

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The change in the Company's effective tax rate in 2018, as compared to the prior year, was primarily due to the change in proportion of U.S. versus foreign income and an estimated one-time tax provision of \$44.0 million during the year ended December 31, 2017 as a result of the Tax Act.

The Tax Act imposes a Transition Tax on previously untaxed accumulated and current E&P of certain foreign subsidiaries of the Company. To determine the amount of the Transition Tax, the Company must determine, among other things, the amount of post-1986 E&P of the relevant subsidiaries, as well as the amount of non-U.S. income taxes paid on such earnings. In the year ended December 31, 2017, the Company made a reasonable estimate of the Transition Tax and recorded a provisional Transition Tax obligation of \$40.3 million, of which \$36.8 million was recorded in "other long-term liabilities" in the Company's Consolidated Balance Sheets. Upon refining its non-U.S. E&P and associated income taxes in 2018, the Company recorded a measurement-period adjustment to reduce the Transition Tax by \$3.1 million. As of December 31, 2018, the Company's total provision for the Transition Tax was \$37.2 million, of which \$8.3 million had been paid and \$28.9 million was recorded in "Other long-term liabilities" in the Company's Consolidated Balance Sheets.

The Tax Act also reduced the U.S. corporate tax rate from 35% to 21%, effective January 1, 2018. Consequently, the Company has recorded a decrease related to its U.S. deferred tax assets and liabilities, with a corresponding net deferred income tax expense of \$3.7 million for the year ended December 31, 2017 as a result of re-measuring net deferred tax assets at the new lower corporate tax rate of 21%.

Additionally, the Tax Act requires certain GILTI earned by a CFC to be included in the gross income of the CFC's U.S. shareholder. GAAP allows the Company to either: (i) treat taxes due on future U.S. inclusions in taxable income related to GILTI as a current-period expense when incurred (the "period cost method"); or (ii) factor such amounts into its measurement of deferred taxes (the "deferred method"). The Company elected the period cost method. The Tax Act allows a U.S. corporation a deduction equal to a certain percentage of its FDII. The Company estimated the impact of the GILTI tax and FDII deduction in determining its 2018 annual effective tax rate that is reflected in its benefit from income taxes for the year ended December 31, 2018.

As of December 31, 2018, the Company intends to indefinitely reinvest \$197.4 million of its undistributed foreign earnings. However, under the Tax Act, those undistributed earnings (as computed for U.S. federal income tax purposes) are subject to the Transition Tax, which was recorded at a provisional amount of \$40.3 million during the year ended December 31, 2017 and subsequently reduced by \$3.1 million during the year ended December 31, 2018.

As of December 31, 2018 and 2017, the amount of cash and cash equivalents and short-term investments held by the Company's U.S. entities was \$173.6 million and \$293.8 million, respectively, and by the Company's non-U.S. entities

was \$402.5 million and \$381.4 million, respectively. The Company earns a significant amount of its revenues outside the United States and its accumulated foreign earnings and profits as of December 31, 2018 and 2017 were \$397.4 million and \$360.9 million, respectively. As of December 31, 2018, the Company intends to indefinitely reinvest \$197.4 million of its undistributed foreign earnings. This amount takes into consideration a possible one-time repatriation in 2019. If the Company elects to make such one-time repatriation of cash and cash equivalents and short-term investments held by the Company's non-U.S. entities to the United States, after taking into account the Transition Tax described above, the Company expects that such repatriation would generate only an immaterial U.S. tax expense related to U.S. state income taxes.

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Deferred income taxes reflect the net tax effects of the temporary differences between the carrying amounts of assets and liabilities for financial reporting purposes and the amounts used for income tax purposes. Significant components of the Company's deferred tax assets and liabilities (in thousands) were as follows for the periods indicated:

	December 31, 2018	2017 (as adjusted)
Deferred tax assets, net:		
Net operating loss carryforwards	\$841	\$761
Tax credits	1,839	1,520
Intangible assets	0	10
Deferred revenue adjustment	543	1,214
Accrued compensation	6,519	2,863
Share-based compensation expense	12,987	11,597
Deferred rent	1,764	0
Other	2,115	2,457
Deferred tax assets before valuation allowance	26,608	20,422
Valuation allowance	(1,507)	(1,015)
Deferred tax assets, net of valuation allowance	25,101	19,407
Deferred tax liabilities:		
Prepaid expenses and other	1,049	1,301
Property and equipment	5,841	6,778
Capitalized software development costs	0	695
Method change	932	1,340
Total deferred tax liabilities	7,822	10,114
Total net deferred tax asset	\$17,279	\$9,293
Reported as:		
Non-current deferred tax assets, net	17,316	9,297
Non-current deferred tax liabilities	(37)	(4)
Total net deferred tax asset	\$17,279	\$9,293

As of December 31, 2018, the Company had unrecognized tax benefits of \$4.8 million, recorded in "Other long-term liabilities" in the Company's Consolidated Balance Sheets. The change in unrecognized tax benefits (in thousands) is presented in the table below:

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Unrecognized tax benefits at January 1, 2018 (as adjusted)	\$3,444
Increase related to positions taken in prior period	314
Increase related to positions taken in current period	596
Decrease related to expiration of statute of limitations	(295)
Unrecognized tax benefits at December 31, 2018	4,059
Accrued interest	705
Unrecognized tax benefits recorded in other long-term liabilities at December 31, 2018	\$4,764

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If recognized, \$4.2 million of the gross unrecognized tax benefits would impact the Company's effective tax rate. Over the next 12 months, the amount of the Company's liability for unrecognized tax benefits shown above is not expected to change by a material amount. The Company recognizes estimated accrued interest related to unrecognized tax benefits in the provision for income tax accounts. During the years ended December 31, 2018, 2017, and 2016, the Company released or recognized an immaterial amount of accrued interest. The amount of accrued interest related to the above unrecognized tax benefits was approximately \$0.7 million and \$0.6 million as of December 31, 2018 and 2017, respectively.

The Company files tax returns in numerous foreign countries as well as the United States and its tax returns may be subject to audit by tax authorities in all countries in which it files. Each country has its own statute of limitations for making assessment of additional tax liabilities. In 2018, the Company settled the tax examination in China for tax years 2008 to 2016 without any material audit assessments. The Company's U.S. tax returns for tax years from 2015 forward are subject to potential examination by the Internal Revenue Service.

The Company's major foreign tax jurisdictions and the tax years that remain subject to potential examination are Italy for tax years 2013 forward; Poland for tax years 2014 forward; Spain for tax years 2015 forward; and Germany and the United Kingdom for tax years 2016 forward. To date there have been no material audit assessments related to audits in the United States or any of the applicable foreign jurisdictions.

The Company had no U.S. NOL carryforwards as of December 31, 2018 and 2017. The Company had \$3.6 million and \$2.5 million of foreign NOL carryforwards as of December 31, 2018 and 2017, respectively.

The Company's valuation allowances of \$1.5 million and \$1.0 million at December 31, 2018 and 2017, respectively, primarily relate to certain foreign tax credit carryforward tax assets. The Company assessed whether its valuation allowance analyses are affected by various aspects of the Tax Act (e.g., deemed repatriation of deferred foreign income, GILTI inclusions, new categories of foreign tax credits) and concluded that they were not significantly affected by the Tax Act.

In determining the Company's provision for or benefit from income taxes, net deferred tax assets, liabilities, and valuation allowances, management is required to make judgments and estimates related to projections of domestic and foreign profitability, the timing and extent of the utilization of NOL carryforwards, applicable tax rates, transfer pricing methods, and prudent and feasible tax planning strategies. As a multinational company, the Company is required to calculate and provide for estimated income tax liabilities for each of the tax jurisdictions in which it operates. This process involves estimating current tax obligations and exposures in each jurisdiction, as well as making judgments regarding the future recoverability of deferred tax assets. Changes in the estimated level of annual pre-tax income, changes in tax laws, particularly changes related to the utilization of NOLs in various jurisdictions, and changes resulting from tax audits can all affect the overall effective income tax rate which, in turn, impacts the overall level of income tax expense or benefit and net income.

Judgments and estimates related to the Company's projections and assumptions are inherently uncertain. Therefore, actual results could differ materially from projections. The timing and manner in which the Company will use research and development tax credit carryforward tax assets, alternative minimum tax credit carryforward tax assets, and foreign tax credit carryforward tax assets in any year, or in total, may be limited by provisions of the Internal Revenue Code regarding changes in the Company's ownership. Currently, the Company expects to use the tax assets, subject to Internal Revenue Code limitations, within the carryforward periods. Valuation allowances have been

established where the Company has concluded that it is more likely than not that such deferred tax assets are not realizable. If the Company is unable to sustain profitability in future periods, it may be required to increase the valuation allowance against the deferred tax assets, which could result in a charge that would materially adversely affect net income in the period in which the charge is incurred.

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Section 382 of the Internal Revenue Code provides an annual limitation on the amount of federal NOLs and tax credits that may be used in the event of an ownership change. The limitation is based on, among other things, the value of the company as of the change date multiplied by a U.S. federal long-term tax exempt interest rate. The Company does not currently expect the limitations under the Section 382 ownership change rules to impact the Company's ability to use its NOL carryforwards or tax credits that existed as of the date of the ownership change.

(9) Share-based Compensation

The 2013 Equity Plan authorizes the issuance of various types of share-based awards to the Company's employees, officers, directors, and other eligible participants. As of December 31, 2018, the total number of shares of the Company's class A common stock authorized for issuance under the 2013 Equity Plan was 2,300,000 shares. As of December 31, 2018, there were 566,250 shares of class A common stock reserved and available for future issuance under the 2013 Equity Plan.

Stock option awards

During 2018, stock options to purchase an aggregate of 710,000 shares of class A common stock were granted pursuant to the 2013 Equity Plan. As of December 31, 2018, there were options to purchase 1,479,983 shares of class A common stock outstanding under the 2013 Equity Plan.

Shares issued under the 2013 Equity Plan may consist in whole or in part of authorized but unissued shares or treasury shares. No awards may be issued more than 10 years after the 2013 Equity Plan's effective date. Stock options that are granted under the 2013 Equity Plan must have an exercise price equal to at least the fair market value of the Company's class A common stock on the date of grant, become exercisable as established by the Board of Directors or the Compensation Committee, and expire no later than 10 years following the date of grant. The Company recognizes share-based compensation expense associated with such stock option awards on a straight-line basis over the award's requisite service period (generally, the vesting period). The stock option awards granted to date vest in equal annual installments over an approximately four-year vesting period (unless accelerated in connection with a change in control event under specified conditions as set forth in the applicable option agreement or otherwise in accordance with provisions of the 2013 Equity Plan or applicable option agreement).

Share-based compensation expense is based on the fair value of the stock option awards on the date of grant, as estimated using the Black-Scholes option pricing model. The Black-Scholes option pricing model requires the input of certain management assumptions, including the expected term, expected stock price volatility, risk-free interest rate, and expected dividend yield. The Company estimates the term over which option holders are expected to hold their stock options by using the simplified method for "plain-vanilla" stock option awards because the Company's stock option exercise history does not provide a reasonable basis to compute the expected term for stock options granted under the 2013 Equity Plan. The Company relies exclusively on its historical stock price volatility to estimate the expected stock price volatility over the expected term because the Company believes future volatility is unlikely to differ from the past. In estimating the expected stock price volatility, the Company uses a simple average calculation method. The risk-free interest rate is based on U.S. Treasury securities with terms that approximate the expected term of the stock options. The expected dividend yield is based on the Company's past cash dividend history and anticipated future cash dividend payments. The expected dividend yield is zero, as the Company has not previously

declared cash dividends and does not currently intend to declare cash dividends in the foreseeable future. These assumptions are based on management's best judgment, and changes to these assumptions could materially affect the fair value estimates and amount of share-based compensation expense recognized.

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The following table summarizes the Company's stock option activity (in thousands, except per share data and years) for the periods indicated:

	Stock Options Outstanding		Aggregate Intrinsic Value	Weighted Average Remaining Contractual Term (Years)
	Shares	Weighted Average Exercise Price Per Share		
Balance as of January 1, 2016	1,323	\$ 129.04		
Granted	45	189.62		
Exercised	(112)	97.82	\$ 8,102	
Forfeited/Expired	(370)	110.28		
Balance as of December 31, 2016	886	143.89		
Granted	175	169.04		
Exercised	(12)	143.35	\$ 541	
Forfeited/Expired	(57)	196.52		
Balance as of December 31, 2017	992	145.28		
Granted	710	130.27		
Exercised	(21)	121.13	\$ 196	
Forfeited/Expired	(201)	154.49		
Balance as of December 31, 2018	1,480	\$ 137.16		
Exercisable as of December 31, 2018	701	\$ 136.01	\$ 3,317	5.5
Expected to vest as of December 31, 2018	779	\$ 138.20	174	9.0
Total	1,480	\$ 137.16	\$ 3,491	7.3

Stock options outstanding as of December 31, 2018 are comprised of the following range of exercise prices per share (in thousands, except per share data and years):

	Stock Options Outstanding at December 31, 2018		
	Shares	Weighted Average Exercise Price	Weighted Average Remaining Contractual Term (Years)
Range of Exercise Prices per Share		Per Share	
\$117.85 - \$120.00	23	\$ 118.50	3.1
\$120.01 - \$150.00	1,174	\$ 126.66	7.6
\$150.01 - \$180.00	121	\$ 168.44	5.8
\$180.01 - \$201.25	162	\$ 192.40	7.3
Total	1,480	\$ 137.16	7.3

An aggregate of 251,250, 215,000, and 222,500 stock options with an aggregate fair value of \$15.5 million, \$13.0 million, and \$13.7 million vested during the years ended December 31, 2018, 2017, and 2016,

respectively. Beginning January 1, 2017, the Company made an accounting policy election to prospectively account for forfeitures as they occur. Therefore, share-based compensation expense has not been adjusted for any estimated forfeitures.

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The weighted average grant date fair value of stock option awards using the Black-Scholes option pricing model was \$51.68, \$68.67, and \$75.54 for each share subject to a stock option granted during the years ended December 31, 2018, 2017, and 2016, respectively, based on the following assumptions:

	Years Ended December 31,		
	2018	2017	2016
Expected term of options in years	6.3	6.3	6.3
Expected volatility	33.7% - 35.5%	37.4% - 37.8%	38.5%
Risk-free interest rate	2.7% - 2.9%	1.9% - 2.3%	1.4% - 1.6%
Expected dividend yield	0.0%	0.0%	0.0%

The Company recognized approximately \$14.6 million, \$14.3 million, and \$11.8 million in share-based compensation expense for the years ended December 31, 2018, 2017, and 2016, respectively, from stock options granted under the 2013 Equity Plan. As of December 31, 2018, there was approximately \$33.8 million of total unrecognized share-based compensation expense related to unvested stock options. As of December 31, 2018, the Company expected to recognize this remaining share-based compensation expense over a weighted-average vesting period of approximately 3.0 years.

During the year ended December 31, 2016, the Company was able to recognize and utilize tax deductions related to equity compensation in excess of compensation recognized for financial reporting that was generated under the 2013 Equity Plan. Accordingly, additional paid-in capital increased by \$1.2 million during the year ended December 31, 2016. Beginning January 1, 2017, excess tax benefits are no longer recognized as additional paid-in capital; instead they are prospectively included within the provision for income taxes.

During the year ended December 31, 2016, the Company wrote off \$1.7 million of deferred tax assets related to certain vested stock options that were no longer exercisable. Accordingly, additional paid-in capital decreased by \$1.7 million during the year ended December 31, 2016. No such adjustment was made during the years ended December 31, 2018 and 2017.

During the year ended December 31, 2016, the Company paid \$3.7 million to tax authorities related to the net exercise of a stock option under the 2013 Equity Plan. This payment resulted in a \$3.7 million reduction to additional paid-in capital during the year ended December 31, 2016. No net exercises of stock options were made during the years ended December 31, 2018 and 2017.

Other stock-based awards

During 2018, the Company granted certain awards characterized as “other stock-based awards” under the 2013 Equity Plan. These other stock-based awards are similar to stock options, but these awards are settled in cash only and not in shares of the Company’s class A common stock. Upon exercise of one of these awards, the participant would be entitled to receive an amount in cash equal to the fair market value of the Company’s class A common stock in excess of a stated exercise price. These awards vest in equal annual installments over a four-year period (unless accelerated in connection with a change in control event under specified conditions as set forth in the applicable award agreement or

otherwise in accordance with provisions of the 2013 Equity Plan or applicable award agreement). During 2018, the Company granted such other stock-based awards with respect to an aggregate of 10,000 underlying shares of class A common stock with a weighted average exercise price per share of \$129.90 pursuant to the 2013 Equity Plan.

Similar to stock option awards, the Company recognizes share-based compensation expense associated with these awards on a straight-line basis over the award's requisite service period (generally, the vesting period), with share-based compensation expense based on the fair value of the award estimated using the Black-Scholes option pricing model. However, due to the required cash settlement feature, these awards are classified as liabilities in the Company's Consolidated Balance Sheets and the fair value of the awards is remeasured each quarterly reporting period with resulting adjustments to share-based compensation expense recorded until the earlier of settlement or expiration.

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For the year ended December 31, 2018, the Company did not recognize a material amount in share-based compensation expense from these awards. As of December 31, 2018, there was approximately \$0.4 million of total unrecognized share-based compensation expense related to these awards. The Company expects to recognize this remaining share-based compensation expense over a weighted average vesting period of approximately 3.4 years, subject to additional fair value adjustments through the earlier of settlement or expiration.

(10) Basic and Diluted Earnings per Share

Potential shares of common stock are included in the diluted earnings per share calculation when dilutive. Potential shares of common stock, consisting of common stock issuable upon exercise of outstanding stock options, are calculated using the treasury stock method.

The following table sets forth the computation of basic and diluted earnings per share (in thousands, except per share data) for the periods indicated:

	Years Ended December 31,		
	2018	2017	2016
		(as	(as
		adjusted)	adjusted)
Numerator:			
Net income	\$22,501	\$ 18,195	\$ 92,239
Denominator:			
Weighted average common shares of class A common stock	9,340	9,409	9,390
Weighted average common shares of class B common stock	2,035	2,035	2,035
Total weighted average common stock shares outstanding	11,375	11,444	11,425
Effect of dilutive securities:			
Employee stock options	37	103	91
Adjusted weighted average shares	11,412	11,547	11,516
Earnings per share:			
Basic earnings per share	\$ 1.98	\$ 1.59	\$ 8.07
Diluted earnings per share	\$ 1.97	\$ 1.58	\$ 8.01

For the years ended December 31, 2018, 2017, and 2016, stock options issued under the 2013 Equity Plan to purchase a weighted average of approximately 896,000, 398,000, and 391,000 shares of class A common stock, respectively, were excluded from the diluted earnings per share calculation because their impact would have been anti-dilutive.

(11) Treasury Stock

The Board of Directors has authorized the Company's repurchase of up to an aggregate of \$800.0 million of its class A common stock from time to time on the open market through April 29, 2023 under the 2005 Share Repurchase Program, although the program may be suspended or discontinued by the Company at any time. The timing and amount of any shares repurchased will be determined by the Company's management based on its evaluation of market conditions and other factors. The 2005 Share Repurchase Program may be funded using the Company's working capital, as well as proceeds from any other funding arrangements that the Company may enter into in the future. During 2018, the Company repurchased an aggregate of 880,667 shares of its class A common stock at an average price per share of \$126.02 and an aggregate cost of \$111.0 million pursuant to the 2005 Share Repurchase Program. As of December 31, 2018, the Company had repurchased an aggregate of 4,707,614 shares of its class A common stock at an average price per share of \$96.92 and an aggregate cost of \$456.3 million pursuant to the 2005 Share Repurchase Program. The average price per share and aggregate cost amounts disclosed above include broker commissions. During the years ended December 31, 2017 and 2016, the Company did not repurchase any shares of its class A common stock pursuant to the 2005 Share Repurchase Program.

MICROSTRATEGY INCORPORATED

NOTES TO CONSOLIDATED FINANCIAL STATEMENTS

(12) Employee Benefit Plan

The Company sponsors a benefit plan to provide retirement benefits for its employees, known as the MicroStrategy 401(k) Savings Plan (the “401(k) Plan”). Participants may make voluntary contributions to the 401(k) Plan of up to 50% of their annual base pre-tax compensation, cash bonuses, and commissions not to exceed the federally determined maximum allowable contribution amounts. The 401(k) Plan permits for discretionary Company contributions. The Company currently makes a matching contribution to each 401(k) Plan participant in the amount of 50% of the first 6% of a participant’s contributions, up to a maximum of \$3,000 per year. A participant vests in the matching contributions in increments based on the participant’s years of employment by the Company, becoming fully vested after completing six years of employment. The Company made contributions to the 401(k) Plan totaling \$2.4 million, \$2.1 million, and \$1.9 million during the years ended December 31, 2018, 2017, and 2016, respectively.

Effective January 1, 2019, the Company will make matching contributions to each 401(k) Plan participant in the amount of 50% of the first 12% of a participant’s contributions, up to a maximum of \$5,000 per year. Further, all current active participants will become fully vested in the Company’s matching contributions after completing four years of employment, vesting in increments based on the participant’s years of employment by the Company.

(13) Segment Information

The Company manages its business in one reportable operating segment. The Company’s one reportable operating segment is engaged in the design, development, marketing, and sales of its software platform through licensing arrangements and cloud-based subscriptions and related services. The following table presents total revenues, gross profit, and long-lived assets, excluding long-term deferred tax assets, (in thousands) according to geographic region:

Geographic regions:	Domestic	EMEA	Other Regions	Consolidated
Year ended December 31, 2018				
Total revenues	\$287,258	\$156,706	\$ 53,674	\$ 497,638
Gross profit	\$228,310	\$126,315	\$ 43,514	\$ 398,139
Year ended December 31, 2017 (as adjusted)				
Total revenues	\$293,251	\$154,716	\$ 55,876	\$ 503,843
Gross profit	\$234,266	\$126,296	\$ 46,632	\$ 407,194
Year ended December 31, 2016 (as adjusted)				
Total revenues	\$312,400	\$149,792	\$ 51,397	\$ 513,589
Gross profit	\$254,662	\$122,235	\$ 43,545	\$ 420,442
As of December 31, 2018				
Long-lived assets	\$49,611	\$5,931	\$ 4,511	\$ 60,053
As of December 31, 2017 (as adjusted)				

Long-lived assets	\$55,355	\$5,626	\$ 2,288	\$ 63,269
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The domestic region consists of the United States and Canada. The EMEA region includes operations in Europe, the Middle East, and Africa. The other regions include all other foreign countries, generally comprising Latin America and the Asia Pacific region. For the years ended December 31, 2018, 2017, and 2016, no individual foreign country accounted for 10% or more of total consolidated revenues.

For the years ended December 31, 2018, 2017, and 2016, no individual customer accounted for 10% or more of total consolidated revenues.

As of December 31, 2018 and 2017, no individual foreign country accounted for 10% or more of total consolidated assets.

MICROSTRATEGY INCORPORATED

NOTES TO CONSOLIDATED FINANCIAL STATEMENTS

(14) Selected Quarterly Financial Data (Unaudited)

The following tables contain unaudited Statement of Operations information for each quarter of 2018 and 2017. During the fourth quarter of 2017, the Company estimated and recorded a one-time tax provision of \$44.0 million as a result of the Tax Act. This tax provision was comprised of a \$40.3 million Transition Tax and a \$3.7 million charge related to the re-measurement of net deferred tax assets arising from the new lower corporate tax rate effected by the Tax Act. The Company subsequently recorded a measurement-period adjustment to reduce the Transition Tax by \$3.1 million in the third quarter of 2018.

	Quarter Ended				
	March 31	June 30	September 30	December 31	Year
	(in thousands, except per share data)				
2018					
Revenues	\$ 122,967	\$ 120,602	\$ 122,152	\$ 131,917	\$ 497,638
Gross profit	\$ 97,782	\$ 95,562	\$ 98,763	\$ 106,032	\$ 398,139
Net income	\$ 1,673	\$ 4,828	\$ 12,699	\$ 3,301	\$ 22,501
Earnings per share: ⁽¹⁾					
Basic	\$ 0.15	\$ 0.42	\$ 1.11	\$ 0.30	\$ 1.98
Diluted	\$ 0.15	\$ 0.42	\$ 1.10	\$ 0.30	\$ 1.97

	Quarter Ended				
	March 31	June 30	September 30	December 31	Year
	(in thousands, except per share data)				
2017 (as adjusted)					
Revenues	\$ 122,232	\$ 119,220	\$ 126,010	\$ 136,381	\$ 503,843
Gross profit	\$ 99,100	\$ 94,845	\$ 101,621	\$ 111,628	\$ 407,194
Net income (loss)	\$ 15,557	\$ 9,953	\$ 18,184	\$ (25,499)	\$ 18,195
Earnings (loss) per share: ⁽¹⁾					
Basic	\$ 1.36	\$ 0.87	\$ 1.59	\$ (2.23)	\$ 1.59
Diluted	\$ 1.34	\$ 0.86	\$ 1.58	\$ (2.23)	\$ 1.58

(1) The sum of the basic and diluted earnings (loss) per share for the four quarters may differ from annual earnings per share as the weighted-average shares outstanding are computed independently for each of the quarters presented.

(15) Subsequent Events

On January 1, 2019, certain enhancements to the 401(k) Plan became effective, including amendments to the Company's matching contributions and the vesting schedule for current and active participants. See Note 12,

Employee Benefit Plan, to the consolidated financial statements for further information regarding the 401(k) Plan.

During the period January 1, 2019 through February 11, 2019, the Company repurchased an aggregate of 314,774 shares of its class A common stock at an average price per share of \$132.01 and an aggregate cost of \$41.6 million pursuant to the 2005 Share Repurchase Program. See Note 11, Treasury Stock, to the consolidated financial statements for further information regarding the 2005 Share Repurchase Program.

INDEX TO EXHIBITS

Exhibit

Number Description

- 3.1 Second Restated Certificate of Incorporation of the registrant (incorporated herein by reference to Exhibit 3.1 to the registrant's Quarterly Report on Form 10-Q for the fiscal quarter ended March 31, 2003 (File No. 000-24435)).
- 3.2 Amended and Restated By-Laws of the registrant (incorporated herein by reference to Exhibit 3.1 to the registrant's Current Report on Form 8-K filed with the SEC on January 30, 2015 (File No. 000-24435)).
- 4.1 Form of Certificate of Class A Common Stock of the registrant (incorporated herein by reference to Exhibit 4.1 to the registrant's Quarterly Report on Form 10-Q for the fiscal quarter ended June 30, 2003 (File No. 000-24435)).
- 10.1† MicroStrategy Incorporated 2013 Stock Incentive Plan (incorporated herein by reference to Exhibit 10.1 to the registrant's Current Report on Form 8-K filed with the SEC on September 9, 2013 (File No. 000-24435)).
- 10.2† Amendment No. 1 to the MicroStrategy Incorporated 2013 Stock Incentive Plan (incorporated herein by reference to Exhibit 10.1 to the registrant's Current Report on Form 8-K filed with the SEC on April 28, 2014 (File No. 000-24435)).
- 10.3† Amendment No. 2 to the MicroStrategy Incorporated 2013 Stock Incentive Plan (incorporated herein by reference to Exhibit 99.3 to the registrant's Registration Statement on Form S-8 filed with the SEC on July 25, 2014 (File No. 333-197645)).
- 10.4† Amendment No. 3 to the MicroStrategy Incorporated 2013 Stock Incentive Plan (incorporated herein by reference to Exhibit 10.1 to the registrant's Current Report on Form 8-K filed with the SEC on October 26, 2015 (File No. 000-24435)).
- 10.5† Amendment No. 4 to the MicroStrategy Incorporated 2013 Stock Incentive Plan (incorporated herein by reference to Exhibit 10.4 to the registrant's Quarterly Report on Form 10-Q for the fiscal quarter ended June 30, 2018 (File No. 000-24435)).
- 10.6† 2013 Form of Nonstatutory Stock Option Agreement (incorporated herein by reference to Exhibit 10.2 to the registrant's Current Report on Form 8-K filed with the SEC on September 9, 2013 (File No. 000-24435)).
- 10.7† 2016 Form of Nonstatutory Stock Option Agreement (incorporated herein by reference to Exhibit 10.1 to the registrant's Quarterly Report on Form 10-Q for the fiscal quarter ended June 30, 2016 (File No. 000-24435)).
- 10.8† Summary of Perquisites and Associated Other Compensation Arrangements for Named Executive Officers (incorporated herein by reference to Exhibit 10.6 to the registrant's Annual Report on Form 10-K for the fiscal year ended December 31, 2015 (File No. 000-24435)).
- 10.9†

Summary of Director Fees and Perquisites and Associated Other Compensation Arrangements for Non-Employee Directors (incorporated herein by reference to Exhibit 10.2 to the registrant's Quarterly Report on Form 10-Q for the fiscal quarter ended March 31, 2014 (File No. 000-24435)).

- 10.10† Sublease Agreement, dated as of January 31, 2011, by and between the Company and Aeromar Management Company, LLC (incorporated herein by reference to Exhibit 10.14 to the registrant's Annual Report on Form 10-K for the fiscal year ended December 31, 2010 (File No. 000-24435)).
- 10.11† Summary of Designated Company Vehicles Policy (incorporated herein by reference to Exhibit 10.1 to the registrant's Quarterly Report on Form 10-Q for the fiscal quarter ended June 30, 2007 (File No. 000-24435)).

- 10.12† Amended and Restated Performance Incentive Plan (incorporated herein by reference to Exhibit 99.1 to the registrant's Current Report on Form 8-K filed with the SEC on December 28, 2012 (File No. 000-24435)).
- 10.13† Summary of 2017 Cash Bonus Determinations for Executive Officers (incorporated herein by reference to Item 5.02 of the registrant's Current Report on Form 8-K filed with the SEC on January 25, 2018 (File No. 000-24435)).
- 10.14† 2018 Senior Executive Vice President, Worldwide Sales Compensation Plan (incorporated herein by reference to Exhibit 99.1 to the registrant's Current Report on Form 8-K filed with the SEC on February 14, 2018 (File No. 000-24435)).
- 10.15† 2018 Senior Executive Vice President, Worldwide Services Compensation Plan (incorporated herein by reference to Exhibit 99.2 to the registrant's Current Report on Form 8-K filed with the SEC on February 14, 2018 (File No. 000-24435)).
- 10.16† Summary of Salary Determinations for Certain Executive Officers (incorporated herein by reference to the registrant's Current Report on Form 8-K filed with the SEC on March 14, 2018 (File No. 000-24435)).
- 10.17† Summary of Compensation for Senior Executive Vice President, Worldwide Sales (incorporated herein by reference to the registrant's Current Report on Form 8-K filed with the SEC on April 4, 2018 (File No. 000-24435)).
- 10.18† Agreement, dated as of April 23, 2018, by and between the registrant and David Rennyson (incorporated herein by reference to Exhibit 10.5 to the registrant's Quarterly Report on Form 10-Q for the fiscal quarter ended March 31, 2018 (File No. 000-24435)).
- 10.19† 2018 Senior Executive Vice President, Worldwide Sales Compensation Plan (incorporated herein by reference to Exhibit 10.3 to the registrant's Quarterly Report on Form 10-Q for the fiscal quarter ended June 30, 2018 (File No. 000-24435)).
- 10.20† Summary of Compensation for Senior Executive Vice President & Chief Marketing Officer (incorporated herein by reference to Exhibit 10.1 to the registrant's Quarterly Report on Form 10-Q for the fiscal quarter ended September 30, 2018 (File No. 000-24435)).
- 21.1 Subsidiaries of the registrant.
- 23.1 Consent of KPMG LLP.
- 31.1 Certification pursuant to Rule 13a-14(a) or Rule 15d-14(a) of the Chairman of the Board of Directors, President & Chief Executive Officer.
- 31.2 Certification pursuant to Rule 13a-14(a) or Rule 15d-14(a) of the Senior Executive Vice President, Chief Operating Officer & Chief Financial Officer.
- 32.1 Certification pursuant to 18 U.S.C. Section 1350, as adopted pursuant to Section 906 of the Sarbanes-Oxley Act of 2002.
- 101.INS XBRL Instance Document.

101.SCH XBRL Taxonomy Extension Schema.

101.CAL XBRL Taxonomy Extension Calculation Linkbase.

101.DEF XBRL Taxonomy Extension Definition Linkbase.

101.LAB XBRL Taxonomy Extension Label Linkbase.

101.PRE XBRL Taxonomy Extension Presentation Linkbase.

Management contracts and compensatory plans or arrangements.

SIGNATURES

Pursuant to the requirements of Section 13 or 15(d) of the Securities Exchange Act of 1934, as amended, the registrant has duly caused this report to be signed on its behalf by the undersigned, thereunto duly authorized.

MicroStrategy Incorporated
(Registrant)

By: /s/ Michael J. Saylor
Name: Michael J. Saylor
Title: Chairman of the Board of Directors,
President & Chief Executive Officer

Date: February 20, 2019

Pursuant to the requirements of the Securities Exchange Act of 1934, as amended, this report has been signed below by the following persons on behalf of the registrant and in the capacities and on the dates indicated.

Name	Position	Date
/s/ Michael J. Saylor Michael J. Saylor	Chairman of the Board of Directors, President & Chief Executive Officer (Principal Executive Officer)	February 20, 2019
/s/ Phong Le Phong Le	Senior Executive Vice President, Chief Operating Officer & Chief Financial Officer (Principal Financial and Accounting Officer)	February 20, 2019
/s/ Stephen X. Graham Stephen X. Graham	Director	February 20, 2019
/s/ Jarrod M. Patten Jarrod M. Patten	Director	February 20, 2019
/s/ Leslie Rechan Leslie Rechan	Director	February 20, 2019
/s/ Carl J. Rickertsen Carl J. Rickertsen	Director	February 20, 2019

SCHEDULE II

VALUATION AND QUALIFYING ACCOUNTS

For the years ended December 31, 2018, 2017, and 2016

(in thousands)

	Balance at the beginning of the period	Additions (1)	Deductions	Balance at the end of the period
Allowance for doubtful accounts:				
December 31, 2018	\$ 4,190	1,912	(613)	\$ 5,489
December 31, 2017	\$ 3,181	2,269	(1,260)	\$ 4,190
December 31, 2016	\$ 3,825	224	(868)	\$ 3,181
Deferred tax valuation allowance:				
December 31, 2018	\$ 1,015	492	0	\$ 1,507
December 31, 2017	\$ 832	183	0	\$ 1,015
December 31, 2016	\$ 1,984	20	(1,172)	\$ 832

(1) Reductions in/charges to revenues and expenses.