

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, 2019
- TRANSITION REPORT PURSUANT TO SECTION 13 OR 15(d) OF THE SECURITIES EXCHANGE ACT OF 1934
For the transition period from _____ to _____

Commission file number: 001-34675



SS&C TECHNOLOGIES HOLDINGS, INC.

(Exact name of Registrant as Specified in Its Charter)

Delaware
(State or Other Jurisdiction of Incorporation or Organization)

71-0987913
(I.R.S. Employer Identification No.)

80 Lambertson Road
Windsor, CT 06095
(Address of Principal Executive Offices, Including Zip Code)
860-298-4500
(Registrant's Telephone Number, Including Area Code)
Securities registered pursuant to Section 12(b) of the Act:

Title of Each Class	Trading Symbol	Name of Each Exchange on Which Registered
Common Stock, \$0.01 par value per share	SSNC	The Nasdaq Global Select Market

Securities registered pursuant to Section 12(g) of the Act: None

- 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 and posted on its corporate Web site, if any, every Interactive Data File required to be submitted and posted pursuant to Rule 405 of Regulation S-T during the preceding 12 months (or for such shorter period that the registrant was required to submit and post such files. Yes No
- Indicate by check mark 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 | <input checked="" type="checkbox"/> | Accelerated filer | <input type="checkbox"/> |
| Non-accelerated filer | <input type="checkbox"/> | Smaller reporting company | <input type="checkbox"/> |
| | (Do not check if a smaller reporting company) | Emerging growth company | <input type="checkbox"/> |

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

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

As of June 30, 2019, the aggregate market value of the registrant's common stock held by non-affiliates was \$12,765,942,008 based on the closing sale price per share of the registrant's common stock on The Nasdaq Global Select Market on such date.

There were 255,672,036 shares of the registrant's common stock outstanding as of February 20, 2020.

DOCUMENTS INCORPORATED BY REFERENCE:

Part III of this annual report on Form 10-K incorporates by reference certain information from the registrant's definitive proxy statement for the 2020 annual meeting of stockholders, which the registrant intends to file pursuant to Regulation 14A with the Securities and Exchange Commission not later than 120 days after the registrant's fiscal year end of December 31, 2019. With the exception of the sections of the definitive proxy statement specifically incorporated herein by reference, the definitive proxy statement is not deemed to be filed as part of this annual report on Form 10-K.

SS&C TECHNOLOGIES HOLDINGS, INC.
ANNUAL REPORT ON FORM 10-K
FOR THE FISCAL YEAR ENDED December 31, 2019
TABLE OF CONTENTS

	Page
<u>PART I</u>	
Item 1. Business	4
Item 1A. Risk Factors	17
Item 1B. Unresolved Staff Comments	31
Item 2. Properties	31
Item 3. Legal Proceedings	32
Item 4. Mine Safety Disclosures	32
<u>PART II</u>	
Item 5. Market for Registrant’s Common Equity, Related Stockholder Matters and Issuer Purchases of Equity Securities	32
Item 6. Selected Financial Data	34
Item 7. Management’s Discussion and Analysis of Financial Condition and Results of Operations	35
Item 7A. Quantitative and Qualitative Disclosures about Market Risk	49
Item 8. Financial Statements and Supplementary Data	50
Item 9. Changes in and Disagreements with Accountants on Accounting and Financial Disclosure	88
Item 9A. Controls and Procedures	88
Item 9B. Other Information	88
<u>PART III</u>	
Item 10. Directors, Executive Officers and Corporate Governance	89
Item 11. Executive Compensation	89
Item 12. Security Ownership of Certain Beneficial Owners and Management and Related Stockholder Matters	89
Item 13. Certain Relationships and Related Transactions, and Director Independence	89
Item 14. Principal Accountant Fees and Services	89
<u>PART IV</u>	
Item 15. Exhibits and Financial Statement Schedules	89
Item 16. Form 10-K Summary	92

FORWARD-LOOKING INFORMATION

Certain statements contained in this annual report constitute forward-looking statements for purposes of the safe harbor provisions under the Private Securities Litigation Reform Act of 1995. Forward-looking statements include statements concerning plans, objectives, goals, strategies, expectations, intentions, projections, developments, future events, performance, underlying assumptions, and other statements that are other than statements of historical facts. Without limiting the foregoing, the words “believes”, “anticipates”, “plans”, “expects”, “estimates”, “projects”, “forecasts”, “may”, “assume”, “intend”, “will”, “continue”, “opportunity”, “predict”, “potential”, “future”, “guarantee”, “likely”, “target”, “indicate”, “would”, “could” and “should” and similar expressions are intended to identify forward-looking statements, although not all forward-looking statements are accompanied by such words. Such statements reflect management’s best judgment based on factors currently known but are subject to risks and uncertainties, which could cause actual results to differ materially from those anticipated. Such risks and uncertainties include, but are not limited to, the state of the economy and the financial services industry and other industries in which our clients operate, our ability to realize anticipated benefits from its acquisitions, including Algorithmics, the effect of customer consolidation on demand for our products and services, the increasing focus of our business on the hedge fund industry, the variability of revenue as a result of activity in the securities markets, the ability to retain and attract clients, fluctuations in customer demand for our products and services, the intensity of competition with respect to our products and services, the exposure to litigation and other claims, terrorist activities and other catastrophic events, disruptions, attacks or failures affecting our software-enabled services, risks associated with our foreign operations, privacy concerns relating to the collection and storage of personal information, evolving regulations and increased scrutiny from regulators, our ability to protect intellectual property assets and litigation regarding intellectual property rights, delays in product development, investment decisions concerning cash balances, regulatory and tax risks, risks associated with our joint ventures, changes in accounting standards, risks related to our substantial indebtedness, and the market price of our stock prevailing from time to time. The 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. You should not place undue reliance on any such forward-looking statements. Forward-looking statements speak only as of the date on which they are made and, except to the extent required by applicable securities laws, we undertake no obligation to update or revise any forward-looking statements.

The following are some of our registered trademarks and/or service marks in the U.S. and/or in other countries: ADVENT, ADVENT CORPORATE ACTIONS, ADVENT CUSTODIAL DATA, ADVENT ONDEMAND, ADVENT PORTFOLIO EXCHANGE, ALGO, ALGO CREDIT, ALGO MARKET, ALGO ONE, ALGO RISK, ALGORITHMICS, BLUEDOOR, ADVENT REVENUE CENTER, ADVISORWARE, ALL-STAR FUNDS, ALPS, AWD, AXYS, BENEFIX, BLACK DIAMOND, CAREANALYZER, CARESTEPP, DBC, DST, DSTHS, DST HEALTH SOLUTIONS, DST PHARMACY SOLUTIONS, DST SYSTEMS, EXETER, EZE, EZE CASTLE, EZE ECLIPSE, FAN, FAN MAIL, FIXLINK, FUNDRUNNER, GENEVA, GLOBEOP, GLOBEOP HEDGE FUND INDEX, GOREC, GORISK, HiTRUST, INFOSTEPP, INTRALINKS, KNOW YOUR RISK, LIBERTY ALL-STAR FUNDS, MARGINMAN, MARK-TO-FUTURE, MAXIMIS, MOXY, PACER, PAGES, PAS, PORTIA, PORTPRO, POWERSTEPP, REALTICK, RECON, ROLLOVER CENTRAL, RISKWATCH, RXFOCUS, SKYLINE, SS&C, SYNCOVA, SYLVAN, TA2000, TAMALE, TAMALE RMS, TRAC, TRADETHRU, TRADEWARE, VISION, WALLETSARE, and ZOOLOGIC. SS&C Technologies Holdings, Inc. and/or its subsidiaries in the U.S. and/or in other countries have trademark or service mark rights to certain other names and marks other than those referred to in this annual report.

SS&C Technologies Holdings, Inc., or “SS&C Holdings,” is our top-level holding company. SS&C Technologies, Inc., or “SS&C,” is our primary operating company and a wholly-owned subsidiary of SS&C Technologies Holdings, Inc. “We,” “us,” “our” and the “Company” mean SS&C Technologies Holdings, Inc. and its consolidated subsidiaries, including SS&C.

ITEM 1. BUSINESS**Overview**

SS&C Technologies Holdings (NASDAQ: SSNC) is the world's largest hedge fund and private equity administrator, as well as the largest mutual fund transfer agent. SS&C's unique business model combines end-to-end expertise across financial services operations with software and solutions to service even the most demanding customers in the financial services and healthcare industries. SS&C owns and operates the full technology stack across securities accounting, front-to-back-office operations, performance and risk analytics, regulatory reporting, and healthcare information processes.

SS&C's trusted and proven technology delivers an unparalleled level of scalable capabilities for the most complex portfolios, the most sophisticated strategies, and the highest volumes of transactions. Through a series of carefully selected acquisitions and organic growth, the breadth and depth of SS&C's expertise in financial services and healthcare technology are unmatched.

Founded in 1986 and headquartered in Windsor, Connecticut, the company is home to 22,000+ employees across 150 office locations in 35 countries globally. With 18,000+ clients across spanning the health and financial services industries, our customer's needs and requirements are always at the forefront of our strategy.

In addition, we provide solutions to the healthcare industry including pharmacy, healthcare administration and health outcomes optimization solutions to satisfy their information processing, quality of care, cost management and payment integrity needs. Our healthcare solutions include claims adjudication, benefit management, care management and business intelligence services.

We provide the global financial services industry and healthcare industry with a broad range of software-enabled services, which consist of software-enabled outsourcing services and subscription-based on-demand cloud solutions that are managed and hosted at our facilities, and specialized software products, which are deployed at our clients' facilities. Our software-enabled services, which combine the strengths of our proprietary software with our domain expertise, enable our clients to contract with us to provide many of their mission-critical and complex business processes. For example, we utilize our software to deliver comprehensive fund administration services to alternative and traditional asset managers, including fund manager services, transfer agency services, funds-of-funds services, tax processing and accounting. We offer clients the flexibility to choose from multiple software delivery options, including on-premise applications and hosted, multi-tenant or dedicated applications. Additionally, we provide clients with targeted, blended solutions based on a combination of software and software-enabled services. We believe that our software-enabled services provide superior client support and an attractive alternative to clients that do not wish to install, manage and maintain complicated financial software.

Our business model is characterized by high revenue retention rates and significant cash flow. We generate revenues primarily through our high-value software-enabled services. Our software-enabled services are generally provided under contracts with initial terms of one to five years that require monthly or quarterly payments and are subject to automatic annual renewal at the end of the initial term unless terminated by either party. We also generate revenues by licensing our software to clients through either perpetual or term licenses and by selling maintenance services. Maintenance services are generally provided under annually renewable contracts. Our pricing typically scales as a function of our clients' assets under management, the complexity of asset classes managed, the volume of transactions, and the level of service the client requires. We have experienced average revenue retention rates in each of the last five years of greater than 90% on our software-enabled services and maintenance and term licenses contracts for our core enterprise products. We believe that the high value-added nature of our products and services has enabled us to maintain our high revenue retention rates.

We generated revenues of \$4,632.9 million for the year ended December 31, 2019 as compared to revenues of \$3,421.1 million for the year ended December 31, 2018. In 2019, we generated 75% of our revenues from clients in North America and 25% from clients outside North America. Our revenues are highly diversified, with our largest client in 2019 accounting for less than 5% of our revenues. Additional financial information, including geographic information, is available in our Consolidated Financial Statements and Note 12 to our Consolidated Financial Statements.

Our Industry

We serve a number of vertical markets within the financial services and healthcare industries. Our financial services clients include alternative investment funds, investment management firms, institutional and retail asset managers, insurance companies, registered investment advisors (“RIAs”), wealth managers, banks and brokerage firms. Our healthcare clients include individual and government sponsored health plans and healthcare providers. We believe that financial services and healthcare providers will increasingly turn to IT solutions, provided by an independent vendor, as a result of economic challenges and heightened regulatory requirements. Financial services firms are in a search for more risk-averse business strategies, simplified regulatory compliance, and full service solutions provided by a single vendor. Healthcare providers are looking to improve their customers’ experience through better access to data and an enhanced user interface. As a result, we believe these industries will continue to invest in IT and outsourcing solutions.

Market Trends

The demand for our products and services comes from a number of distinct sources: new formations in asset and wealth management and healthcare, new business lines and combinations of business lines at existing clients, replacement of legacy in-house operations and competitor systems and expansion of our existing client relationships. Underlying these demand drivers are several industry trends, including:

- *Diversification of business lines and product proliferation.* As investment managers look to grow through diversified offerings (alternatives, real assets, and private equity) in global markets, they need their technology investments and servicing partners to be long-lived and deliver a return on their investment for different types of businesses models. Our scalable solutions empower client growth while diversifying their product offering.
- *Regulatory changes.* Our clients must comply with rules, regulations, directives and standards from governmental and self-regulating organizations. Our clients rely on us to navigate new requirements and facilitate compliance in today’s dynamic and evolving regulatory environment. We are uniquely positioned in our ability to interpret regulations and impact to clients and to implement technology solutions. We expect regulatory changes to increase the complexity of compliance and the demand for our products and services and motivate clients to develop systems infrastructure and research management processes to comply with regulatory requirements.
- *Technological paradigm shift.* Evaluating the implications of new technologies is a challenge for our clients. By combining institutional-grade quality with cutting edge technology, we help apply the right solutions to help grow our client’s business more efficiently. Many of our clients are faced with internal digital transformation projects or external threats from emerging tech disrupter competition. As a result, clients are investing in new technology to help expand profit margins and offer new products. New technology incorporating artificial intelligence (“AI”), including machine learning and Robotic Process Automation (“RPA”), are gaining traction in the financial technology industry. We believe that these next generation tools will increase efficiency and reduce errors without human intervention. Overall, we continue to see increasing migration to the cloud to achieve operational scalability and lower fixed costs.
- *Increased demands for transparency, efficiency, and risk management in financial services.* Firms continue to focus on operational risk, resulting from discoveries of fraud and mismanagement during the 2008-2009 U.S. financial crisis and concerns regarding transparency and counterparty exposure. This continued focus has led investment management firms to strive to provide investment data accurately, institutionalize investment operations and automate their investment process. On the wealth management and advisory sides of our business, we have seen further evolution of the relationship between the end client and a firm, with investors demanding transparency and a customized client experience. We expect that wealth managers will need to become familiar with their clients’ preferences for account access and communication and cater to them. Finally, both institutional and individual investors, faced with increasingly competitive low-fee and automated options, are pushing investment managers for greater efficiencies and lower fees.
- *Aging population and more sophisticated healthcare solutions.* An aging population, with an average of 10,000 individuals turning 65 years of age per day in the United States in 2019; increased regulatory oversight and changing business models, as seen in value-based payment constructs; the prevalence of data and demand for data security; utilization of data and analytics to drive outcomes; a continued drive towards outsourcing as a way to manage costs and better position for growth – all are contributing to an evolving landscape.

Competitive Strengths

The following are our core strengths that we believe enable us to differentiate ourselves in the markets we serve:

Enhanced capability through software ownership.

We use our proprietary software products and infrastructure to provide our software-enabled services, strengthening our overall operating margins and providing a competitive advantage. Because we primarily use our own proprietary software in the execution of our software-enabled services and generally own and control our products' source code, we can quickly identify and deploy product improvements and respond to client feedback, enhancing the competitiveness of our software and software-enabled service offerings. This continuous feedback process provides us with a significant advantage over many of our competitors, specifically those software competitors that do not provide a comparable model and therefore do not have the same level of hands-on experience with their products.

Global industry leader with strong market position focused on software and software-enabled services for the financial services industries.

We are a global business providing a broad portfolio of software products and software-enabled services and have approximately 150 offices worldwide. As of December 31, 2019, we had over 20,500 development, service and support professionals with significant expertise across the industries that we serve and a deep working knowledge of our clients' businesses. We provide highly flexible, scalable and cost-effective solutions that enable our financial services clients to track complex securities, better employ sophisticated investment strategies, scale efficiently and meet evolving regulatory requirements. Our products and services allow our clients to automate and integrate their front-office, middle-office and back-office functions, thus enabling straight-through processing that increases productivity and reduces costs. We believe our product and service offerings position us as a leader within the specific verticals of the financial services software and services market in which we compete.

Trusted provider to our highly diversified and growing client base.

By providing mission-critical, reliable software products and services for over 30 years, we have become a trusted provider to the financial services industry. We have developed a large and growing installed base within multiple segments of the financial services industry. Our clients include some of the largest and most well-recognized firms in the financial services industry. We believe that our high-quality products and superior services have led to long-term client relationships, some of which date from our earliest days of operations. Our strong client relationships, coupled with the fact that many of our current clients use our products for a relatively small portion of their total funds and investment vehicles under management, provide us with a significant opportunity to sell additional solutions to our existing clients and drive future revenue growth at lower cost.

Largest independent alternative fund administration services provider and mutual fund transfer agent.

The third-party service providers that participate in the alternative investment market include fund managers, auditors, fund administrators, attorneys, custodians and prime brokers. Each provider performs a valuable function with the intention of providing transparency of the fund's assets and the valuation of those assets. Conflicts of interest may arise when the above parties attempt to provide more than one of these services. The industry is increasingly recognizing these conflicts and, as a result, seeking independent fund administrators such as SS&C.

SS&C is currently the largest fund administrator for alternative investment managers, including hedge funds, private equity, real assets and fund of funds. As the largest third-party mutual fund transfer agent we offer the advantage of significant leverage from a scale and investment perspective. Our highly tenured staff of industry experts allow us to deliver consistent service excellence to the asset management customers we service. The fact that we are operating our own proprietary software to deliver these services allows us to ensure all aspects of our offering are optimized to deliver cost effective, accurate solutions.

As a publicly traded company, our clients and prospects have access to our 10-Qs and 10-Ks filed with the SEC, giving them transparency into our overall financial strength.

Experienced management team with strong integrating and operating track record.

Our senior management team has a track record of operational excellence and an average of more than 20 years of experience in the financial services and healthcare industries and a proven ability to acquire and integrate complementary businesses, as demonstrated by the 55 businesses we have acquired since 1995. By leveraging our domain expertise and knowledge, we have developed, and continue to improve, our mission-critical software products and services to enable our clients to overcome the complexities inherent in their businesses. All of our senior executives are compensated based upon our financial success.

Business Strategies

Our strategy is to continue to deliver compelling solutions and value propositions to our customers in the financial services and healthcare industries. The following are key elements to our strategy for achieving this objective:

Build upon and extend our leadership position in software and software-enabled services in the financial services and healthcare industries.

Since our founding in 1986, we have focused on building substantial financial services domain expertise through close working relationships with our clients. We have developed a deep knowledge base that enables us to respond to our clients' most complex financial, accounting, actuarial, tax and regulatory needs. We intend to maintain and enhance our technological leadership by using our domain expertise to build valuable new software-enabled services and solutions, continuing to invest in internal development and opportunistically acquiring products and services that address the highly specialized needs of the financial services industry.

Our internal product development team works closely with marketing, sales and client service personnel to ensure that product evolution reflects developments in the marketplace and trends in client requirements. In addition, we intend to continue to develop our products in a cost-effective manner by leveraging common components across product families. We believe that we enjoy a competitive advantage because we can address the needs of high-end clients by providing industry-tested products and services, including cloud-based services and related mobility platforms that meet global market demands and enable our clients to automate and integrate functions for improved productivity, compliance, reduced manual intervention and bottom-line savings.

SS&C's products are sold to a diverse group of clients from niche players in the financial services and healthcare industries to the largest institutions in the world. Furthermore, we believe our client base represents a fraction of the total number of financial services providers globally. We believe there is opportunity to grow our client base over time as our products become more widely adopted. We believe we also have an opportunity to capitalize on the increasing adoption of outsourcing mission-critical operations by financial services and healthcare providers as they continue to replace inadequate legacy solutions and custom in-house solutions that are inflexible and costly to maintain. Our software-enabled services revenues increased from \$1,114.0 million for the year ended December 31, 2017 to \$3,869.2 million for the year ended December 31, 2019.

Capitalize on longer-term secular growth trends in financial services and healthcare industries.

With our global footprint and best-in-class product offerings, we aim to capture a significant share of the IT spend of alternative asset, institutional and retail asset managers, wealth managers and the healthcare industry through leveraging the deeply embedded service offering we provide and outdistancing the competition. We expect regulatory changes to increase the complexity of compliance and the demand for our products and services, as well as motivate clients to develop infrastructure and research management processes to mitigate regulatory exposure. We plan to benefit from the growing software spend in the increasingly complex and more highly regulated financial services and healthcare landscape.

Continue to capitalize on acquisitions of complementary businesses and technologies.

We intend to continue to employ a highly disciplined and focused acquisition strategy to broaden and enhance our product and service offerings, expand our intellectual property portfolio, add new clients and supplement our internal development efforts. We believe our acquisitions have been an extension of our research and development effort that has enabled us to purchase proven products and remove the uncertainties associated with software development projects. We will seek to opportunistically acquire, at reasonable valuations, businesses, products and technologies in our existing or complementary vertical markets that will enable us to better satisfy our clients' rigorous and evolving needs. We have a proven ability to integrate complementary businesses as demonstrated by the 55 businesses we have acquired since 1995. Our experienced senior management team leads a rigorous evaluation of our targets to ensure that they satisfy our product or service needs and will successfully integrate with our business while meeting our targeted financial goals. As a result, our acquisitions have contributed marketable products or services that have added to our revenues. Through the broad reach of our direct sales force and our large installed client base, we believe we can market these acquired products and services to a large number of prospective clients. Additionally, we have been able to improve the operational performance and profitability of our acquired businesses, creating significant value for our stockholders.

Strengthen our international presence.

We believe that there is a significant market opportunity to provide software and services to financial services providers outside North America. In the year ended December 31, 2019, we generated 25% of our revenues from clients outside North America. We are building our international operations in order to increase our sales outside North America. We plan to continue to expand our international market presence by leveraging our existing software products and software-enabled services. We also plan to leverage our growing presence in the Asia Pacific region as a result of recent acquisitions. Over the last three years, revenue from the Asia Pacific region has increased 84.2% to \$207.6 million. We believe this region presents a compelling growth opportunity.

Increase profitability through margin expansion.

We expect to drive increased margins through delivering innovative end-to-end solutions that provide significant value to customers and warrant premium pricing. We have significant scale with best-in-class solutions and software-enabled services across the delivery spectrum, which we believe, combined with a diversified service offering and client base, drives stable revenues and increased operating leverage. Our operating flexibility allows us to scale our costs based on client demands.

Our Acquisitions

As mentioned above, we intend to continue to employ a highly disciplined and focused acquisition strategy. Our past acquisitions have enabled us to expand our product and service offerings into new markets or client bases within the financial services industry. The addition of new products and services has also enabled us to market other products and services to acquired client bases. We believe our acquisitions have been an extension of our research and development effort and have enabled us to add to our product and service offerings without incurring the uncertainties sometimes associated with software development projects.

Since 1995, we have acquired 55 businesses within our industry. These acquisitions have contributed marketable products and services, which have added to our revenues and earnings. We have generally been able to improve the operating performance and profitability of our acquired businesses. We seek to reduce the costs of the acquired businesses by consolidating sales and marketing efforts and by eliminating redundant administrative tasks and research and development expenses. In many cases, we have also been able to increase revenues generated by acquired products and services by leveraging our existing products and services, larger sales capabilities and client base.

We generally seek to acquire companies that satisfy our financial metrics, including expected return on investment. Through our acquisitions, we seek companies that:

- provide complementary products or services in the financial services industries;
- possess proven technology and an established client base that will provide a source of ongoing revenue and to whom we may be able to sell existing products and services;
- expand our intellectual property portfolio to complement our business;
- address a highly specialized problem or a market niche in the financial services and healthcare industries;
- expand our global reach into strategic geographic markets; and
- have solutions that lend themselves to being delivered as software-enabled services.

We believe, based on our experience, that there are numerous solution providers addressing highly particularized financial services needs or providing specialized services that would meet our disciplined acquisition criteria.

Acquisitions are discussed further in *Liquidity and Capital Resources* and in Note 8 to our Consolidated Financial Statements. The following table provides a list of the most substantial acquisitions we have made since 2010 (in millions):

<u>Acquisition Date</u>	<u>Acquired Business</u>	<u>Contract Purchase Price</u>	<u>Acquired Capabilities, Products and Services</u>
December 2010	TimeShareWare	\$ 30.5	Added shared ownership property management platform to real estate offering
May 2012	Thomson Reuters' PORTIA Business	\$ 170.0	Added portfolio management software and outsourcing services for institutional managers
June 2012	GlobeOp Financial Services S.A.	\$ 834.4	Expanded fund administration services in hedge fund and other asset management sectors
November 2014	DST Global Solutions	\$ 95.0	Added investment management software and services
July 2015	Advent Software, Inc.	\$ 2,600.0	Expanded global investment management software and services
September 2015	Varden Technologies	\$ 25.0	Added cloud-based client and advisor communication solutions for investment firms
November 2015	Primatics Financial	\$ 116.0	Added cloud-based integrated risk, compliance and finance solution for the banking industry
March 2016	Citigroup's Alternative Investor Service	\$ 425.0	Expanded fund administration services in hedge fund and private equity sectors
December 2016	Wells Fargo's Global Funds Service	\$ 75.1	Expanded fund administration services in hedge fund and private equity sectors
December 2016	Conifer Financial Services, LLC	\$ 88.5	Expanded fund administration services in hedge fund and other asset management sectors
October 2017	CommonWealth Fund Services Ltd.	\$ 16.4	Expanded fund administration services in hedge fund and private equity sectors
April 2018	DST Systems, Inc.	\$ 5,400.0	Provided additional scale and breadth across institutional and retail asset management, alternatives, wealth management, and healthcare sectors
June 2018	CACEIS North America	\$ 20.0	Expanded fund administration services in hedge fund and private equity sectors
October 2018	Eze Software Group, LLC	\$ 1,450.0	Strengthened SS&C's front to back office technology
November 2018	Intralinks Holdings, Inc.	\$ 1,500.0	Increased key account footprint and adds cloud-based virtual data rooms and secure collaboration solutions for SS&C's banking and alternative clients
November 2019	Algorithmics	\$ 88.8	Added cloud-based risk analytics and additional regulatory solutions

Products and Services

Our products and services allow professionals in the financial services and healthcare industries to automate complex business processes and are instrumental in helping our clients manage significant information processing requirements. Our solutions enable our clients to focus on core operations, better monitor and manage business performance and risk, improve operating efficiency and reduce operating costs. Our portfolio of products and software-enabled services allows our financial services clients to automate and integrate front-office functions such as trading and modeling, middle-office functions such as portfolio management and reporting, and back-office functions such as accounting, performance measurement, reconciliation, reporting, processing and clearing, and compliance and tax reporting. Our healthcare solutions include claims adjudication, benefit management, care management and business intelligence solutions.

Software-enabled Services

- **SS&C GlobeOp** – Named “Best Global Hedge Fund Administrator” of 2018 by Hedgeweek, SS&C GlobeOp serves a worldwide clientele of hedge funds, private equity funds, funds of funds, real asset funds, managed accounts, family office and undertakings for collective investments in transferable securities (“UCITS”), with more than \$1.7 trillion in assets under administration. SS&C provides a full suite of comprehensive capabilities, including but not limited to: global regulatory compliance reporting, tax reporting, risk reporting, net asset value (“NAV”) calculations, valuation services, daily reconciliation of cash and security balances, full investor and transfer agency services and automated support of post-trade activities. Under SS&C GlobeOp, SS&C Direct provides similar middle- and back-office outsourcing services and application hosting to institutional asset managers, insurance companies and real estate investment trusts.
- **SS&C Asset Management Solutions** – Utilizing proprietary software applications (including TA 2000, TRAC systems,

FAST platform, Bluedoor and Percana), we offer our clients information processing solutions to support direct and intermediary sales of mutual funds, alternative investments, retirement plans and participant accounting and recordkeeping for wealth management. This includes transaction processing; account opening and maintenance; reconciliation of trades, positions and cash; corporate actions; regulatory reporting and compliance functions; and tax reporting. We also support full reporting to investors for confirmations, statements and tax forms, web access and electronic delivery of documents. We also offer similar investor and policyholder administration and technology services in Canada, Ireland and Luxembourg through our joint venture IFDS L.P. utilizing its iFAST platform.

- **Black Diamond Wealth Platform** – Black Diamond offers independent advisors, wealth managers, independent broker dealers (“IBDs”) and aggregators an innovative and dynamic portfolio management and reporting solution delivered through an easy-to-use, feature-rich web-based application. As a cloud-based product offering, advisors can access Black Diamond’s customizable portfolio management and reporting online from anywhere, anytime without the need to maintain costly technology infrastructures. Black Diamond also provides outsourced daily reconciliation and data management services so firms can focus their efforts on servicing clients and growing their business rather than managing complex back-office functions.
- **Advent Outsourcing Services** – Advent Outsourcing services provides a full spectrum of tailored options to our clients’ specific needs, from cloud-delivered technology to co-sourcing specific workflows to full outsourcing of operational processes including data management services such as full account aggregation, daily portfolio reconciliation, corporate actions processing and reference data management. Advent OnDemand is the pre-configured SaaS delivery of one of Advent’s asset management solutions hosted by Advent without managed outsourced operational processes.
- **Advent Data Solutions** – Advent Data Solutions consists of a variety of data offerings provided to clients in an automated manner and format. These solutions include:
 - **Advent Custodial Data** which provides account level information from a firm’s custodian(s) through a single, secure connection to a data network managed by Advent. Using Advent Custodial Data, firms can reconcile positions, transactions and cash activity on an exceptions-only basis, or firms can post data directly into their portfolio accounting system.
 - **Advent Corporate Actions** which delivers reports on all corporate actions that affect a clients’ portfolios and provides staff with reliable transaction instructions.
 - **Advent Portfolio Data** which extends the delivery of account level data for reconciliation and other workflows from global custodians and counterparties.
 - **Advent Market Data** which is a single, cloud-based platform with connectivity to several leading global market data sources, allowing clients to acquire critical data for managing portfolios.
- **ALPS Advisors** – ALPS is a comprehensive suite of asset servicing, distribution solutions and asset management for open-end mutual funds, closed-end funds, exchange-traded funds and alternative investment funds. Focusing on the needs of small- to medium-sized funds that require a broad set of customizable services, we provide compliance, creative services, medallion distribution, fund administration, fund accounting, legal, tax administration, transfer agency and asset management services. Our distribution services range from consulting to active wholesaling and marketing, including closed-end funds initial public offering launch platform services. We also offer products designed to assist clients in meeting the expanding needs associated with distributing U.S. investment products through financial intermediaries. We serve as the asset manager to proprietary open-end mutual funds, closed-end funds and exchange-traded funds through active management and through the utilization of sub-advisors and index providers. Additionally, we offer data analytics and consulting services in the U.S. to help our clients gain actionable insights into the needs and preferences of their customers.
- **Virtual Data Rooms (Intralinks)** – Intralinks Virtual Data Rooms (“VDR’s”), are designed for the mergers and acquisitions (M&A), alternative investments and capital markets communities. The Intralinks VDR is a rich SaaS application providing a secure, customizable environment for deal makers to exchange sensitive documents and information. Within M&A the VDR is primarily used for sharing content during due diligence. For alternative investments, VDR’s are used to facilitate fundraising and fund reporting. Customers working in debt capital markets use VDR’s for managing the lifecycle of financing deals.
- **Healthcare Services**

- **Pharmacy Solutions** – We use our proprietary software applications, supporting technology and enhanced clinical expertise to provide pharmacy health management solutions supporting commercial, Medicaid and Medicare Part D plans. These services include pharmacy claims administration, pharmacy network solutions, government programs administration, formulary and rebate management, trend control and quality compliance programs, member services and discount drug card programs.
- **Healthcare Administration** – We use our proprietary software applications to provide medical claim administration services and health plan compliance and revenue integrity services for payers and providers in the domestic healthcare industry. Healthcare administration services are offered on a software license, remote and business process outsourcing (“BPO”) basis. Our solutions, combined with our health outcomes optimization solutions described below, are offered as stand-alone component solutions to complement health plans, existing operations or systems, or as an integrated core administration package of solutions.
- **Health Outcomes Optimization** – We provide health outcomes optimization solutions through the use of our integrated care management and population health analytics applications and professional services for health plans and providers in the domestic healthcare industry. Our Integrated Care Management solution is a real-time, intuitive, workflow-driven solution suite that assists clients to improve member outcomes and manage costs. In addition to our proprietary systems, we are the exclusive distributor of Johns Hopkins’ Adjusted Clinical Groups (“ACG”), a patient classification system developed by Johns Hopkins University. The ACG System is a software tool that provides health plans the ability to easily identify their at-risk population and stratify them into the optimal care management program.

Software license, maintenance and related

- **Portfolio Accounting Software** – We provide comprehensive, integrated software solutions that help our clients streamline operations and accelerate global accounting processes. Our portfolio accounting solutions provide seamless front-to-back office integration, with the flexibility to meet the unique accounting needs of our customers and virtually unlimited scalability to accommodate growth. Our fund accounting solutions meet the challenges of high-volume, global fund managers with support for complex, multi-asset class and multi-currency strategies. We also have solutions catered to insurance accounting and commercial, consumer and residential loan accounting.
 - **Geneva** – Geneva is a global portfolio management platform designed to meet the real-time needs of global asset managers, hedge funds, prime brokers, fund administrators, private equity firms and family offices worldwide. Geneva integrates all phases of the investment management process – portfolio management, reconciliation and light trade capture and risk capabilities. Its “main memory” database offers more accurate and flexible reporting, and eliminates batch processing and time-consuming error corrections. Geneva enables firms to grow into new markets, deliver greater operational efficiencies, enhance investor service, process high trade volumes across multiple securities, improve compliance and security and lower operating costs and risks.
 - **Advent Portfolio Exchange** – Advent Portfolio Exchange (“APX”) is a comprehensive portfolio management solution for asset managers and wealth managers worldwide, which integrates the front-office functions of prospecting, marketing, customer relationship management and internal business management with the back-office operations of portfolio accounting, performance measurement and reporting. It allows firms to manage both high-net-worth and institutional clients through a comprehensive range of capabilities, including customized reporting, automated report packaging and performance analytics. APX can be deployed locally as well as hosted in the cloud.
 - **Axys** – Axys is a turnkey portfolio management and reporting system for small to mid-size investment management organizations. Axys provides investment professionals with broad portfolio accounting functionality on a variety of investment instruments, including equities, fixed income, mutual funds and cash. By using Axys, clients have a timely decision support tool with immediate access to portfolio holdings, asset allocation, realized and unrealized gains and losses, actual and projected income and other data including performance measurement and flexible reporting.
 - **Global Wealth Platform (“GWP”)** – GWP is our comprehensive, cloud-based solution that enables wealth managers to manage the entire investment process on a single platform, leveraging a single database. GWP bridges the front-, middle-, and back-offices and ensures consistency of data across all phases of the investment process. This solution

simplifies the management of complex investment strategies with support of all asset classes and multicurrency capabilities in one system, and the automation and integration eliminates offline workarounds and manual processes.

- *HiPortfolio* – HiPortfolio is an investment accounting and asset servicing solution for third-party administrators, asset managers, and insurance firms in over 35 countries. With broad instrument coverage and multi-currency capabilities, HiPortfolio allows our clients to manage the full transaction lifecycle, from trade capture, investment accounting and fund administration, through cash management, reconciliation, corporate actions processing, unit pricing and taxation, to performance measurement and attribution.
- *PORTIA* – PORTIA is a comprehensive, middle-to-back office investment operations platform that encompasses portfolio accounting, fund accounting, performance measurement and attribution, reconciliation and client reporting for your global assets. Firms of all types around the world rely on PORTIA to track day-to-day portfolio activity, with visibility across all transactions and positions. Its modular design and open architecture allow for a high level of customization and easy integration with other systems. With flexible deployment operations, PORTIA can be installed on-premise, hosted in the cloud or fully outsourced to reduce your IT footprint and overhead.
- *CAMRA* – CAMRA is a portfolio accounting solution tailored to the needs of insurance investment operations. Its multi-currency, multi-instrument portfolio accounting supports complex securities, sophisticated investment strategies, multi-currency investment management, multiple-bases accounting, and global tax and regulatory processing requirements such as generally accepted accounting principles and Schedule D.

- **Portfolio Management Software**

- *SS&C Singularity* – Our first smart investment operations and accounting system – a cloud-based solution designed to support the operating model of financial institutions. Empowered by embedded disruptive technologies including artificial intelligence, machine learning, robotic process automation, intelligent workflow optimization and advanced predictive analytics, Singularity can drive significant cost savings and continuous operational improvements for our clients.
- *Performance and Performance Attribution (Sylvan, Insight)* – SS&C’s performance measurement, attribution and composite management platforms that streamline the calculation and reporting of performance while enabling our clients to analyze the sources of return. It supports multiple attribution methodologies, customized benchmarking and composite management. We provide full support for industry-mandated GIPS performance reporting standards.
- *Reporting (Vision FI)* – SS&C Vision FI (Financial Insights) is a comprehensive, end-to-end solution for designing, producing and distributing client communications. It enables financial organizations to create high-quality reports in a matter of minutes. The system enables our customers to deliver information to clients through their preferred channels, whether that’s print, email or online through a customizable portal.
- *Reconciliation (Recon)* – SS&C’s Recon is a highly scalable reconciliation and exception management system that gives our customers more control over the accounting lifecycle, including account, cash and position reconciliations. With data translation, and rules-based matching and superior investigative tools, Recon streamlines operational efficiency delivering full visibility into cash, holdings, transactions, trial balances and security masters.

- **Trading Software**

- *Order Management (Moxy, Eze OMS)* – SS&C’s trade order management systems provide centralized platforms for making and managing trade order decisions quickly and confidently. The platforms have built-in connectivity between asset managers and multiple brokers, counterparties, custodians and trading venues, and give our clients control and visibility across the entire trading process, from asset allocation through settlement.
- *Execution Management (Eze EMS)* – SS&C’s multi-broker execution management system is a high-speed cloud-based platform that provides traders with centralized access to aggregated liquidity for trade execution, critical trading data and insight for making fast and informed decisions, and the tools necessary to dynamically manage positions, portfolios and trading risk across global equity, futures and options markets.

- **Digital Process Automation**
 - *AWD* – AWD is our digital process automation product suite, encompassing intelligent automation, business process management, content management, case management, outbound communications and a low code development platform. AWD is deployed globally in many industries, including asset management, life insurance, variable annuities, healthcare, property and casualty insurance, banking and wealth management. The AWD value proposition combines the core software with our global professional services organization and secure private cloud application hosting.
- **Banking and Lending Solutions**
 - *EVOLV* – EVOLV is a comprehensive, cloud-based, end-to-end accounting solution for financial institutions that integrates and automates all risk and finance processes relating to a loan portfolio, from data capture to back-end reporting and analytics. It streamlines loan accounting, increases efficiency, assures data integrity and strengthens compliance.
 - *Precision LM* – Precision LM is a single database application that provides comprehensive commercial loan management from initial request to final disposition. Precision LM manages all aspects of our clients’ loan process, including pre-qualifying loan requests, processing applications, commitment processing, loan disposition, servicing and accounting.
- **Research, Analytics, and Training**
 - *Tamale RMS* – Tamale RMS is a purpose-built research management solution, enabling investment analysts and portfolio managers to organize an escalating volume of research data and apply it more effectively in due diligence. It is a centralized repository for capturing, organizing and sharing every piece of research received or created.
 - *Research, Analytics and Consulting* - SS&C’s Research, Analytics and Consulting (RAC) group helps leading companies in the financial services industry manage data, gain insight and ignite change in their business. Through effective use of advanced analytics, research and distribution intelligence technologies, SS&C RAC enables business to better understand, predict and optimize key business factors impacting their asset growth and profitability.
 - *Learning Institute* – The SS&C Learning Institute is an education, training and research organization dedicated to the enrichment of investment management professionals and those seeking careers in financial services. Our digital library, instructor-led classes and blended programs are used by many of the world’s leading wealth management firms, investment banks, insurance companies, hedge funds, commercial banks and other asset management companies. In addition, the SS&C Learning Institute offers customized learning paths to enhance the business and finance programs of colleges and universities.

Professional services

We offer a range of professional services to assist clients. Professional services consist of consulting and implementation services, including the initial installation of systems, conversion of historical data and ongoing training and support. Our in-house consulting teams work closely with the client to ensure the smooth transition and operation of our systems. Our consulting teams have a broad range of experience in the financial services industry and include certified public accountants, chartered financial analysts, mathematicians and IT professionals from the asset management, real estate, investment, insurance, hedge fund, municipal finance, banking and healthcare industries. We believe our commitment to professional services facilitates the adoption of our software products across our target markets. For the year ended December 31, 2019, revenues from professional services represented 2% of total revenues.

Product support

We believe a close and active service and support relationship is important to enhancing client satisfaction and furnishes an important source of information regarding evolving client issues. We provide our larger clients with a dedicated client support team whose primary responsibility is to answer questions and provide solutions to address ongoing needs. Direct telephone support is provided during extended business hours and additional hours are available during peak periods. We distribute content-rich, periodic

blogs and thought leadership targeted at clients and prospects in each of our vertical and geographic markets. We supplement our service and support activities with comprehensive training. Training options include regularly hosted classroom and online instruction, *SS&C Learning Institute*, and online client seminars, or “webinars,” that address current, often technical, issues in the financial services industry.

We periodically make maintenance releases of licensed software available to our clients, as well as regulatory updates (generally during the fourth quarter, on a when and if available basis), to meet industry reporting obligations and other processing requirements.

Clients

Our global financial services and healthcare clients require a full range of information management and analysis on a timely and flexible basis. Our financial services clients include multinational banks, retail banks and credit unions, hedge funds, private equity funds, funds of funds and family offices, institutional and retail asset managers, insurance companies and pension funds, municipal finance groups, brokers/dealers, financial exchanges, commercial lenders, real estate lenders and property managers. Our healthcare clients include health insurance companies, health plans and benefits administrators. Our clients include many of the largest and most well-recognized firms in the financial services and healthcare industries. During the year ended December 31, 2019, our top 10 clients represented approximately 16% of total revenues, with no single client accounting for more than 5% of total revenues.

Sales and Marketing

We believe a direct sales organization is essential to the successful implementation of our business strategy, given the complexity and importance of the operations and information managed by our products, the extensive regulatory and reporting requirements of each industry, and the unique dynamics of each vertical market. Our dedicated direct sales and support personnel are located in various sales offices worldwide and routinely undergo product and sales training. We also use telemarketing to support sales of our real estate property management products and work through alliance partners that sell our software-enabled services to their correspondent banking clients.

Our marketing personnel have extensive experience in marketing to the financial services and healthcare industries and are responsible for identifying market trends, evaluating and developing marketing opportunities, generating client leads and providing sales support. Our marketing activities focus on cost-effective means of reaching current and potential clients, including:

- Providing content-rich, periodic blogs and thought leadership targeted at clients and prospects in each of our vertical and geographic markets;
- publishing and distributing thought leadership white papers or articles to appropriate press outlets;
- hosting regular product-focused webinars;
- attending seminars and symposiums;
- participating in trade shows, hosted events and speaking engagements; and
- delivering e-marketing campaigns.

This strategy achieves lower marketing costs, more direct contacts with actual and potential clients, increased marketing leads, distribution of more up-to-date marketing information and an improved ability to measure marketing initiatives.

The marketing department also supports the sales force with appropriate and relevant materials, including brochures and fact sheets, for use during the sales process.

Product Development and Engineering

We believe we must introduce new products and offer product innovation on a regular basis to maintain our competitive advantage. To meet these goals, we use multidisciplinary teams of highly trained personnel and leverage this expertise across all product lines. We have invested heavily in developing a comprehensive product analysis process to ensure a high degree of product functionality and quality. Maintaining and improving the integrity, quality and functionality of existing products is the responsibility of individual product managers. Product engineering management efforts focus on enterprise-wide strategies, implementing best-practice technology regimens, maximizing resources and mapping out an integration plan for our entire umbrella of products as well as third-party products. For the years ended December 31, 2019, 2018 and 2017, our research and development expenses were \$383.7 million, \$318.2 million and \$153.3 million, respectively. In addition, we have made significant investments in intellectual property through our acquisitions.

Our research and development engineers work closely with our marketing and support personnel to ensure that product evolution reflects developments in the marketplace and trends in client requirements. We have generally issued a major release of our core products during the second or third quarter of each fiscal year, which includes both functional and technical enhancements. We also provide an annual release typically in the fourth quarter to reflect evolving regulatory changes in time to meet clients' year-end reporting requirements.

Competition

The market for the software and services we provide is competitive, rapidly evolving and highly sensitive to new product introductions and marketing efforts by industry participants, although high conversion costs can create barriers to adoption of new products or technologies. The market is fragmented and served by both large-scale firms with broad offerings as well as firms that target only local markets or specific types of clients. We also face competition from information systems developed and serviced internally by the IT departments of large financial services and healthcare firms. We believe that we generally compete effectively as to the factors identified for each market below, although some of our existing competitors and potential competitors have substantially greater financial, technical, distribution and marketing resources than we have and may offer products with different functions or features that are more attractive to potential customers than our offerings.

Alternative Investments: In our alternative investments market, we compete with multiple vendors that may be categorized into two groups, the first consists of independent specialized administration providers, which are generally smaller than us, and the second includes prime brokerage and other financial services firms offering fund administration services. Major competitors in this market include large custodian banks, such as State Street, BNY Mellon and Northern Trust, as well as CITCO Group. The key competitive factors in marketing software and services to the alternative investment industry are the need for independent fund administration, features and adaptability of the software, level and quality of customer support, level of software development expertise and total cost of ownership. Our strengths in this market are our expertise, our independence, our transparency, our ability to deliver functionality by multiple methods and our technology, including the ownership of our own software.

Asset Management: In our asset management market, we compete with a variety of other vendors depending on client characteristics such as size, type, location, computing environment and functionality requirements. Competitors in this market range from larger providers of integrated portfolio management systems and outsourcing services, such as BNY Mellon Financial to smaller providers of specialized applications and technologies such as StatPro, Empower and others. We also compete with internal processing and IT departments of our clients and prospective clients. The key competitive factors in marketing asset management solutions are the reliability, accuracy, timeliness and reporting of processed information to internal and external customers, features and adaptability of the software, level and quality of customer support, level of software development expertise and return on investment. Our strengths in this market are our technology, our ability to deliver functionality by multiple delivery methods and our ability to provide cost-effective solutions for clients.

Healthcare: In our healthcare markets, we compete with providers of pharmacy and medical claims processing, benefit management, care management, business process outsourcing, business intelligence and analytics. We compete with other third-party providers such as United Health/OptumRx and Magellan and companies that perform their services in-house with licensed or internally developed systems and processes. We believe that we compete effectively in the market due to our ongoing investment in our products and the development of new products to meet the evolving business requirements of our clients. Our competitors' healthcare administration and health outcomes optimization solutions are primarily based on complete replacement of a payer's core system. We believe that a component application approach shifts the focus away from core application replacement to one in which clients have more alternatives for modernization of the business operation. With a component approach, health payer clients can still choose core application replacement if warranted, or adopt component applications that address only those areas of the business that offer the most opportunity for improvement for the client, resulting in protection of the client's current IT investment and less disruption to its business operation.

Insurance and Pension Funds: In our insurance and pension funds market, we compete with a variety of vendors depending on client characteristics such as size, type, location, computing environment and functionality requirements. Competitors in this market range from large providers of portfolio management systems, such as State Street (Princeton Financial Systems) and FIS, to smaller providers of specialized applications and services.

We also compete with outsourcers, as well as the internal processing and information technology departments of our clients and prospective clients. The key competitive factors in marketing insurance and pension plan systems are the accuracy, timeliness and reporting of processed information provided to internal and external clients, features and adaptability of the software, level and quality of customer support, economies of scale and return on investment. Our strengths in this market are our years of experience, our top-

tier clients, our ability to provide solutions by multiple delivery methods, our cost-effective and customizable solutions and our expertise.

Financial Advisory: We define the advisory market as independent and regional broker-dealers, wealth managers, trust companies, advisory firms and registered investment advisers. We compete with a variety of vendors, which are generally smaller firms focused solely on the advisory market. Our competitors include Envestnet, Orion, Addepar, SEI's wealth management platform and custodians such as Charles Schwab, Fidelity and Raymond James. Our strengths in this market are our premier platforms with flexible and on-demand delivery models and complementary products and services.

Real Estate Property Management: In our real estate property management market, we compete with numerous software vendors consisting of smaller specialized real estate property management solution providers and larger property management software vendors with more dedicated resources than our real estate property management business, such as Yardi Systems. The key competitive factors in marketing property management and timeshare systems are the features and adaptability of the software, level of quality and customer support, degree of responsiveness and overall net cost. Our strengths in this market are the quality of our software and our reputation with our clients.

Financial Institutions: In our financial institutions market, there are multiple software and services vendors that are either smaller providers of specialized applications and technologies or larger providers of enterprise systems, such as FIS and Misys. We also compete with outsourcers as well as the internal processing and IT departments of our clients and prospective clients. The key competitive factors in marketing financial institution software and services include accuracy and timeliness of processed information provided to clients, features and adaptability of the software, level and quality of customer support, level of software development expertise, total cost of ownership and return on investment. Our strengths in this market include our flexible technology platform and our ability to provide integrated solutions for our clients.

Commercial Lending: In our commercial lending market, we compete with a variety of other vendors depending on client characteristics such as size, type, location and functional requirements. Competitors in this market range from large competitors whose principal businesses are not in the loan management business, such as PNC Financial Services (Midland Loan Services) and McCracken Financial Solutions Corporation, to smaller providers of specialized applications and technologies. The key competitive factors in marketing commercial lending solutions are the accuracy, timeliness and reporting of processed information provided to customers, level of software development expertise, level and quality of customer support and features and adaptability of the software. Our strength in this market is our ability to provide both broadly diversified and customizable solutions to our clients.

Financial Markets: In our financial markets, our competition falls into two categories — the internal development organizations within financial enterprises and specialized financial vendors. The key competitive factors in marketing financial markets technology solutions are a proven track record of delivering high quality solutions, level of responsiveness and overall net cost. Our strengths in this market are a successful track record of delivering solutions and our reputation with our clients.

Proprietary Rights

We rely on a combination of trade secret, copyright, trademark and patent law, nondisclosure agreements and technical measures to protect our proprietary technology. We have registered trademarks for many of our products and will continue to evaluate the registration of additional trademarks as appropriate. We generally enter into confidentiality and/or license agreements with our employees, distributors, clients and potential clients. We seek to protect our software, documentation and other written materials under trade secret and copyright laws, which afford limited protection. These efforts may be insufficient to prevent third-parties from asserting intellectual property rights in our technology. Furthermore, it may be possible for unauthorized third-parties to copy portions of our products or to reverse engineer or otherwise obtain and use proprietary information, and third-parties may assert ownership rights in our proprietary technology. For additional risks relating to our proprietary technology, please see "Risk Factors — Risks "Relating to Our Business". If we are unable to protect our proprietary technology and other confidential information, our success and our ability to compete will be subject to various risks, such as third-party infringement claims, unauthorized use of our technology, disclosure of our proprietary information or inability to license technology from third-parties.

Rapid technological change characterizes the software development industry. We believe factors such as the technological and creative skills of our personnel, new product developments, frequent product enhancements, name recognition and reliable service and support are more important to establishing and maintaining a leadership position than legal protections of our technology.

Employees

As of December 31, 2019, we had over 22,800 full-time employees, consisting of approximately:

- 3,100 employees in research and development;
- 17,400 employees in client support, consulting and services;
- 1,000 employees in sales and marketing;
- 1,300 employees in finance and administration.

As of December 31, 2019, approximately 11,700 of our employees were in our international operations. No employee is covered by any collective bargaining agreement. We believe that we have good relations with our employees.

Additional Information

We were incorporated in Delaware in July 2005, as the successor to a corporation originally formed in Connecticut in March 1986. Our principal executive offices are located at 80 Lamberton Road, Windsor, Connecticut 06095, and the telephone number of our principal executive offices is (860) 298-4500.

Our website address is www.ssctech.com. We make available, free of charge, on our website our annual reports on Form 10-K, quarterly reports on Form 10-Q, current reports on Form 8-K, Proxy Statements for the annual stockholder meetings and amendments thereto that we have filed or furnished with the SEC, as soon as reasonably practicable after we electronically file them with the SEC. The same information is available in print to any stockholder who submits a written request to our Investor Relations department. We are not, however, including the information contained on our website, or information that may be accessed through links on our website, as part of, or incorporating such information by reference into, this annual report on Form 10-K. The SEC maintains an internet site at www.sec.gov that contains reports, proxy and information statements, and other information regarding issuers that file electronically with the SEC.

ITEM 1A. RISK FACTORS

You should carefully consider the following risk factors, in addition to other information included in this annual report on Form 10-K and the other reports we submit to the SEC. If any of the following risks occur, it could materially affect our business, operating results, cash flows and financial condition and possibly lead to a decline in our stock price. The risks and uncertainties described below are those that we have identified as material, but are not the only risks and uncertainties facing us. Our business is also subject to general risks and uncertainties that affect many other companies. Additional risks and uncertainties not currently known to us or that we currently believe are not material may also impair our business, operating results, cash flows and financial condition.

Risks Relating to Our Business

Our business is greatly affected by changes in the state of the general economy and the financial markets, and uncertainty in the general economy, the financial services industry or other industries in which our clients operate could disproportionately affect the demand for our products and services.

We derive our revenues from the delivery of products and services to clients primarily in the financial services and healthcare industries. Demand for our products and services among companies in those industries could decline for many reasons. If demand for our products or services decreases or if any of the industries we serve decline, our business and our operating results could be adversely affected.

In 2008-09, the global economy experienced a significant recession, severe disruptions in the credit markets, increased uncertainty about economic, political, global trade and market conditions, and periods of heightened volatility in a variety of financial and other markets, including commodity prices and currency rates, all of which had experienced a material and adverse effect at that time on those markets and on client activity levels. While the U.S. economy recovered from the recession, the recovery may not be sustainable for any specific period of time, and the economy could slip back into recession. Our clients include a range of organizations in the financial services industry whose success is linked to the health of the economy generally and of the financial markets specifically. Unfavorable or uncertain economic conditions, economic instability or economic downturns could: (i) cause our clients or prospective clients to cancel, reduce or delay planned expenditures for our products and services; (ii) impair our clients' ability to pay for products they have purchased; or (iii) cause our clients to process fewer transactions through our software-enabled services, renegotiate their contracts with us, move their IT solutions in-house, switch to lower-priced solutions offered by our competitors or exit the industry. Fluctuations in the value of assets under our clients' management could also adversely affect our revenues because pricing in many of our agreements is adjusted based on assets under management. We cannot predict the

occurrence, timing or duration of any economic downturn, generally, or in the markets in which our businesses operate. Turbulence in the U.S. and international markets, renewed concern about the strength and sustainability of a recovery and prolonged declines in business consumer spending could materially adversely affect our business, results of operations and financial condition, and the liquidity and financial condition of our clients.

In addition, any other events that adversely affect our clients' businesses, rates of growth or numbers of clients they serve could decrease demand for our products and services and the number of transactions we process. Events that could adversely affect our clients' businesses include decreased demand for our clients' products and services, adverse conditions in our clients' markets or adverse economic conditions generally. We may be unsuccessful in predicting the needs of changing industries and whether potential clients will accept our products or services. We also may invest in technology or infrastructure for specific clients and not realize additional revenue from such investments. If trends or events do not occur as we expect, our business could be negatively impacted.

We may not achieve the anticipated benefits from our acquisitions and may face difficulties in integrating our acquisitions.

We have acquired and intend in the future to acquire companies, products or technologies that we believe could complement or expand our business, augment our market coverage, enhance our technical capabilities or otherwise offer growth opportunities. For example, in 2019 we consummated our acquisitions of Investrack and Algorithmics. However, acquisitions could subject us to contingent or unknown liabilities, and we may have to incur debt or severance liabilities or write off investments, infrastructure costs or other assets. Our success is also dependent on our ability to complete the integration of the operations of acquired businesses in an efficient and effective manner, which may be difficult to accomplish in the rapidly changing financial services software and services industry. We may not realize the benefits we anticipate from acquisitions, such as lower costs, increased revenues, synergies and growth opportunities, or we may realize such benefits more slowly than anticipated, due to our inability to:

- combine operations, facilities and differing firm cultures;
- maintain employee morale or retain the clients or employees of acquired entities;
- generate market demand for new products and services;
- coordinate geographically dispersed operations and successfully adapt to the complexities of international operations, including compliance with laws, rules and regulations in multiple jurisdictions;
- integrate the technical teams of acquired companies within our organization; or
- incorporate acquired technologies, products and services into our current and future product and service lines.

The process of integrating the operations of acquired companies could disrupt our ongoing operations, divert management from day-to-day responsibilities, increase our expenses and harm our business, results of operations and financial condition. Acquisitions may also place a significant strain on our administrative, operational, financial and other resources. In addition, certain of our acquisitions have generated disputes with stockholders or management of acquired companies or other claimants that have required the expenditure of our resources to address or have led to litigation; any such disputes may reduce the value we hope to realize from our acquisitions, either by increasing our costs of the acquisition, reducing our opportunities to realize revenues from the acquisition or imposing litigation costs or adverse judgments on us. Acquisitions may also expose us to litigation from our stockholders arising out of the acquisition, which, even if unsuccessful, could be costly to defend and serve as a distraction to management.

Consolidations or failures among our clients or within their respective industries could adversely affect us by causing a decline in demand for our products and services.

If banks and financial services firms fail or consolidate, there could be a decline in demand for our products and services. Failures, mergers and consolidations of banks and financial institutions reduce the number of our clients and potential clients, which could adversely affect our revenues even if these events do not reduce the aggregate activities of the consolidated entities. Further, if our clients fail and/or merge with or are acquired by other entities that are not our clients, or that use fewer of our products and services, they may discontinue or reduce their use of our products and services. It is also possible that the larger financial institutions resulting from mergers or consolidations would have greater leverage in negotiating terms with us. In addition, these larger financial institutions could decide to perform in-house some or all of the services that we currently provide or could provide or to consolidate their processing on a non-SS&C system. The resulting decline in demand for our products and services over time could have a material adverse effect on our business, results of operations and financial condition.

Our revenues may decrease due to declines in the levels of participation and activity in the securities markets.

We generate significant revenues from the transaction processing fees we earn for our products and services. These revenue sources are substantially dependent on the levels of participation and activity in the securities markets. The number of unique

securities positions held by investors through our clients and our clients' customer trading volumes reflect the levels of participation and activity in the markets, which are impacted by market prices and the liquidity of the securities markets, among other factors. We could be negatively impacted by the volatile markets as certain of our fees are tied to the asset bases of our clients. The occurrence of significant market volatility or decreased levels of participation would likely result in reduced revenues and decreased profitability from our business operations. Additionally, we may be exposed to operational or other risks in connection with any systematic failures in the markets, or the default due to market-related failures of one or more counterparties with whom we transact.

Our business has become increasingly focused on the hedge fund industry, and we are subject to the variations and fluctuations of that industry.

Certain of our acquisitions have resulted in a higher percentage of our clients being hedge funds or funds of hedge funds. We derive significant revenues from asset management, administration and distribution contracts with such clients. Under these contracts, the fees paid to us are based on a variety of factors, including the market value of assets under management, assets under administration and number of transactions processed. Assets under management, assets under administration or the number of transactions processed may decline for various reasons, causing results to vary. Factors that could decrease assets under management and assets under administration (and therefore revenues) include declines in the market value of the assets in the funds (and accounts as applicable) managed, administered and distributed, redemptions and other withdrawals from, or shifts among, the funds (and accounts as applicable) managed, administered and distributed, as well as market conditions generally.

These clients and our business relating to them are affected by trends, developments and risks associated with the global hedge fund industry. In addition, the market environment for hedge funds involves risk and has suffered significant turmoil, including as a result of substantial changes in global economies, political uncertainty, stock market declines, a trend toward passive and algorithmic investment strategies and various regulatory initiatives. Even in the absence of such factors, the global hedge fund industry is subject to fluctuations in assets under management that are impossible to predict or anticipate. These risks and trends could significantly and adversely affect some or all of our hedge fund clients, which could adversely affect our business, results of operations and financial condition. In addition, market forces have negatively impacted liquidity for many of the financial instruments in which hedge fund client's trade, which, in turn, could negatively impact our ability to access independent pricing sources for valuing those instruments.

If we are unable to retain and attract clients, our revenues and net income would remain stagnant or decline.

If we are unable to keep existing clients satisfied, sell additional products and services to existing clients or attract new clients, then our revenues and net income would remain stagnant or decline. A variety of factors could affect our ability to successfully retain and attract clients, including:

- the level of demand for our products and services;
- the difficulty of potential customers to change software service providers;
- the level of client spending for IT;
- the level of competition from internal client solutions and from other vendors;
- the quality of our client service and the performance of our products;
- our ability to update our products and services and develop new products and services needed by clients;
- our ability to understand the organization and processes of our clients; and
- our ability to integrate and manage acquired businesses.

An increase in subaccounting services performed by brokerage firms has and will continue to adversely impact our revenues.

We service open-end and closed-end funds registered under the Investment Company Act of 1940, including mutual funds, exchange-traded funds, interval funds and exchange-listed closed-end funds, as well as private funds, collective investment trusts and other accounts under shareowner recordkeeping arrangements which we refer to as registered accounts. These arrangements are distinguished from broker subaccounts, which are serviced under contract with a broker/dealer. Our clients may adopt the broker subaccount structure. We offer subaccounting services to brokerage firms that perform shareowner subaccounting. As the recordkeeping functions in connection with subaccounting are more limited than traditional shareowner accounting, the fees charged are generally lower on a per unit basis. Brokerage firms that obtain agreements from our clients to use a broker subaccount structure cause accounts currently on our traditional recordkeeping system to convert to our subaccounting system, or to the subaccounting systems of other service providers, which generally results in lower revenues. While subaccounting conversions have generally been limited to our non tax-advantaged mutual fund accounts, such conversions have begun to extend to the tax-advantaged accounts (such as retirement and Section 529 accounts) we service, which could adversely affect our business and operating results.

We face significant competition with respect to our products and services, which may result in price reductions, reduced gross margins or loss of market share.

In the financial and healthcare markets we serve, we compete based on a variety of factors, including investment performance, the range of products or services offered, brand recognition, business reputation, financial strength, stability and continuity of client and other intermediary relationships, quality of service, and level of fees charged for products and services. The market for financial and healthcare services software and services is competitive, rapidly evolving and highly sensitive to new product and service introductions, technology innovations and marketing efforts by industry participants. The markets we serve are also highly fragmented and served by numerous firms that target only local markets or specific client types. We also face competition from information systems developed and serviced internally by the IT departments of financial services firms. Some of our current and potential competitors may have significantly greater financial, technical, distribution and marketing resources, generate higher revenues and have greater name recognition. Our current or potential competitors may develop products comparable or superior to those developed by us, or adapt more quickly to new technologies, evolving industry trends or changing client or regulatory requirements. It is also possible that our competitors may enter into alliances with each other or other third-parties, and through such alliances, acquire increased market share. Increased competition may result in price reductions, reduced gross margins and loss of market share. Accordingly, our failure to successfully compete in any of our material businesses could have a material adverse effect on results of operations. Competition could also affect the revenue mix of products or services we provide, resulting in decreased revenues in lines of business with higher profit margins, and our business may not grow as expected and may decline.

Our role as a fund administrator has in the past, and may in the future, expose us to claims and litigation from clients, their investors, regulators or other third-parties.

As a service provider, we have been, and may in the future be, subject to claims and lawsuits from investors, regulators, liquidators, other third-parties and our clients, some of which pursue high-risk investment strategies and all of which are subject to substantial market risk, in the event that the underlying fund suffers investment losses, incurs instances of fraud, becomes insolvent, files for bankruptcy or otherwise becomes defunct. Even if we are not ultimately found to be liable, defending such claims or lawsuits could be time-consuming, divert management resources, harm our reputation and cause us to incur significant expenses. These claims or lawsuits could have an adverse effect on our business, results of operations and financial condition.

Our software-enabled services may be subject to disruptions, attacks or failures that could adversely affect our reputation and our business.

Our software-enabled services maintain and process confidential data and process trades and perform other back-office functions, including wiring funds, on behalf of our clients, some of which is critical to their business operations. For example, our trading systems maintain account and trading information for our clients and their customers. In addition, following our acquisition of Intralinks in 2018, our platforms now house sensitive, confidential client information. Our internal technology infrastructure on which our software-enabled services depend may be subject to disruptions or may otherwise fail to operate properly or become disabled or damaged as a result of a number of factors, including events that are wholly or partially beyond our control and that could adversely affect our ability to process transactions, provide services or otherwise appropriately conduct our business activities. Such events include IT attacks or failures, threats to physical security, sudden increases in transaction volumes, electrical or telecommunications outages, damaging weather or other acts of nature, or employee or contractor error or malfeasance. In particular, cybersecurity threats have become prevalent in our industry as well as for many firms that process information. Cybersecurity threats are evolving and our security measures, and those of our service providers, may not detect or prevent all attempts to hack our systems, denial-of-service attacks, viruses, malicious software, attempts to gain unauthorized access to data, phishing attacks, social engineering, security breaches or employee or contractor malfeasance and other electronic security breaches that may jeopardize the security of information stored in or transmitted by our sites, networks and systems or that we or our third-party service providers otherwise maintain. Such cyber security incidents could lead to disruptions in our systems, the unauthorized release or destruction of our or our clients' or other parties' confidential or otherwise protected information and corruption of data. We and our service providers may not have the resources or technical sophistication to anticipate or prevent all types of attacks, and techniques used to obtain unauthorized access to or sabotage systems change frequently and may not be known until launched against us or our third-party service providers. In the last few years there have been many successful advanced cyber-attacks that have damaged several prominent companies in spite of strong information security measures, and we expect that the risks associated with cyber-attacks and the costs of preventing such attacks will continue to increase in the future. We and our clients are regularly the target of attempted cyber-attacks and we must continuously monitor and develop our systems to protect our technology infrastructure and data from misappropriation or corruption. Although we expend significant resources and oversight efforts in an attempt to ensure that we maintain appropriate safeguards with respect to cyber-attacks, there is no guarantee that our systems and procedures are adequate to protect against all security breaches. If our software-enabled services are disrupted or fail for any reason, or if our systems or facilities are infiltrated or damaged by unauthorized persons, we and our clients could experience data loss, including confidential and personal information, financial loss, harm to their

reputation and significant business interruption. If that happens, we may be exposed to significant liability, our reputation may be harmed, our clients may be dissatisfied and we may lose business. Although we maintain privacy, data breach and network security liability insurance, we cannot be certain that our coverage will be adequate or cover liabilities actually incurred, or that insurance will continue to be available to us on economically reasonable terms, or at all. Given the unpredictability of the timing, nature and scope of such failures or disruptions, we could potentially experience significant costs and exposures, including production downtimes, operational delays, other detrimental impacts on our operations or ability to provide services to our customers, the compromising of confidential or otherwise protected information, misappropriation, destruction or corruption of data, security breaches, other manipulation or improper use of our systems or networks, financial losses from remedial actions, loss of business, potential liability, regulatory inquiries, enforcements, actions and fines and/or damage to our reputation, any of which could have a material adverse effect on our business, results of operations and financial condition.

Because our platform could be used to collect and store personal information of our customers' employees or customers, privacy concerns could result in additional cost and liability to us or inhibit use of our platform.

Personal privacy has become a significant issue in the U.S. and in many other countries where we offer our solutions or may offer them in the future. The regulatory framework for privacy issues worldwide is currently evolving, is not uniform and is likely to remain uncertain for the foreseeable future. Many federal, state and foreign government bodies and agencies have adopted or are considering adopting laws and regulations regarding the collection, use, disclosure, control, security and deletion of personal information. In the U.S., these include, without limitation, laws and regulations promulgated by states, as well as rules and regulations promulgated under the authority of the Federal Trade Commission ("FTC") and federal financial regulatory bodies. Additionally, California recently enacted and amended legislation, the California Consumer Privacy Act of 2018, that came into effect on January 1, 2020 and affords consumers expanded privacy protections. There may be additional amendments to this legislation, and it remains unclear what, if any, modification will be made to this legislation or how it will be interpreted. The effects of this legislation potentially are far-reaching, however, and may require us to modify our data processing practices and policies and to incur costs to comply. Internationally, most of the jurisdictions in which we operate have established their own data security and privacy legal frameworks, many of which are broader in scope, more restrictive and impose greater obligations on us and our customers. For instance, the European Union's ("E.U.") General Data Protection Regulation ("GDPR") became effective in May 2018 and imposes strict requirements related to processing the personal data of E.U. individuals and provides for robust regulatory enforcement and sanctions for non-compliance. EU data protection authorities will have the power to impose administrative fines for violations of the GDPR of up to a maximum of €20 million or 4% of the noncompliant company's annual global turnover for the preceding financial year, whichever is higher, and violations of the GDPR may also lead to damages claims by data controllers and data subjects. Such penalties are in addition to any civil litigation claims by data controllers, data processors, customers and data subjects. The GDPR is likely to increase our obligations, including by mandating documentation requirements and granting certain rights to individuals to inquire into how we collect, use, disclose, retain and process information about them. Although we are continuing to take steps to comply with applicable portions of the GDPR, the scope of many of the GDPR's requirements remains unclear and regulatory guidance on several topics is still forthcoming. Therefore, we cannot assure you that such steps will be sufficient. On June 23, 2016, the U.K. held a referendum in which voters approved an exit from the E.U, commonly referred to as "Brexit," and it is unclear how Brexit will affect the applicability of the GDPR with respect to U.K. individuals.

In addition to government regulation, privacy advocacy and industry groups may propose new and different self-regulatory standards that either legally or contractually apply to us. As a result of uncertainty regarding the interpretation and application of privacy and data protection-related laws, regulations, and self-regulatory requirements, it is possible that these laws, regulations, and requirements may be interpreted and applied in a manner that is inconsistent with our existing data handling practices or the technological features of our solutions. If so, in addition to the possibility of fines, lawsuits and other claims, each of which may be material, we could be required to fundamentally change our business activities and practices or modify our solutions, which could have an adverse effect on our business. Any inability to adequately address privacy or data protection-related concerns, even if unfounded, or comply with applicable privacy or data protection-related laws, regulations and policies, could result in additional cost and liability to us, damage our reputation, inhibit sales and harm our business. Furthermore, the costs of compliance with, and other burdens imposed by, the laws, regulations, standards and policies that are applicable to the businesses of our customers may limit the use and adoption of, and reduce the overall demand for, our solutions. Also, privacy concerns, whether valid or not valid, may inhibit market adoption of our solutions, particularly in foreign countries.

We expect that our operating results, including our profit margins and profitability, may fluctuate over time.

Historically, our revenues, profit margins and other operating results have fluctuated from period to period and over time primarily due to the timing, size and nature of our license and service transactions. See "Management's Discussion and Analysis of Financial Condition and Results of Operations" for further discussion on fluctuations in revenues, profit margins and other operating results. Additional factors that may lead to such fluctuation include:

- the costs, timing of the introduction and the market acceptance of new products, product enhancements or services by us or our competitors;
- the lengthy and often unpredictable sales cycles of large client engagements;
- the amount and timing of our operating costs and other expenses;
- the financial health of our clients;
- changes in the volume of assets under our clients' management;
- cancellations of maintenance and/or software-enabled services arrangements by our clients;
- changes in local, national and international regulatory requirements;
- acquisitions during the relevant period;
- implementation of our licensing contracts and software-enabled services arrangements;
- changes in economic and financial market conditions; and
- changes in the types of products and services we provide.

Additional tax expense or additional tax exposures could affect our future profitability.

We are subject to income taxes in the U.S. and various international jurisdictions. Changes in tax laws and regulations, as well as changes in related interpretations and other tax guidance could materially impact our tax receivables and liabilities and our deferred tax assets and deferred tax liabilities. On December 22, 2017, U.S. federal tax legislation, commonly referred to as the Tax Cuts and Jobs Act ("Tax Act"), was signed into law, significantly reforming the U.S. Internal Revenue Code. The Tax Act, among other things, reduces the U.S. federal statutory corporate tax rate, imposed a one-time transition tax on previously undistributed foreign earnings, limits the deductibility on executive compensation, imposes a tax on Global Intangible Low-Taxed Income ("GILTI") and modifies or repeals many business deductions and credits. During 2018 and 2019, the U.S. Department of Treasury and Internal Revenue Service issued several complex proposed and final regulations, and related guidance, regarding provisions of the Tax Act. However, several aspects of the legislation remain unclear and subject to interpretation. Further guidance, technical corrections and regulations are expected to be issued, which could lessen or increase certain impacts of the legislation. Furthermore, states continue to issue guidance and enact legislation in response to the Tax Act, all of which could have a material impact on our income tax expense, assets and liabilities. See "Management's Discussion and Analysis of Financial Condition and Results of Operations" for additional information.

Additionally, in the ordinary course of business we are subject to examinations by various authorities, including tax authorities. In addition to ongoing investigations, there could be additional investigations launched in the future by governmental authorities in various jurisdictions, and existing investigations could be expanded. The global and diverse nature of our operations means that these risks will continue to exist and additional investigations, proceedings and contingencies will arise from time to time. Our business, results of operations and financial condition may be affected by the outcome of investigations, proceedings and other contingencies that cannot be predicted with certainty.

If third-party service providers on which we rely, or other third-parties with which we do business or which facilitate our business activities, suffer disruptions to their IT systems, our business could be harmed.

In providing our software-enabled services to our customers, we depend upon IT infrastructure that is primarily managed by our firm, but we also depend on third-party service providers to provide some of the IT infrastructure on which we rely. Although we seek to ensure that appropriate security and other standards are maintained by these third-parties, these third-parties are also subject to the risks discussed in the preceding risk factor, and there is no guarantee that they will maintain systems and procedures sufficient to protect against system failures and security breaches, including as a result of cyber-attacks.

In addition, the third-parties with which we do business or which facilitate our business activities, including financial intermediaries, are susceptible to the risks described in the preceding risk factor (including regarding the third-parties with which they are similarly interconnected), and our or their business operations and activities may therefore be adversely affected, perhaps materially, by failures, terminations, errors or malfeasance by, or attacks or constraints on, one or more financial, technology or infrastructure institutions or intermediaries with whom they are interconnected or conduct business.

Catastrophic events may adversely affect our business.

A war, terrorist attack, natural disaster, pandemic or other catastrophe may adversely affect our business. A catastrophic event could have a direct negative impact on us or an indirect impact on us by, for example, affecting our clients, the financial markets or

the overall economy and reducing our ability to provide, our clients' ability to use, and the demand for, our products and services. The potential for a direct effect on our business operations is due primarily to our significant investment in infrastructure. Although we maintain redundant facilities and have contingency plans in place to protect against both man-made and natural threats, it is impossible to fully anticipate and protect against all potential catastrophes. A computer virus, physical or cyber security breach, criminal act, military action, power or communication failure, flood, severe storm or the like could lead to service interruptions and data losses for clients, disruptions to our operations, or damage to important facilities. In addition, such an event may cause clients to cancel their agreements with us for our products or services. Any of these events could adversely affect our business, results of operation and financial condition.

We have substantial operations and a significant number of employees in India and we are therefore subject to regulatory, economic and political uncertainties in India.

As of December 31, 2019, we had approximately 5,000 employees located in India. The economy of India may differ favorably or unfavorably from the U.S. economy and our business may be adversely affected by the general economic conditions and economic and fiscal policy in India, including changes in exchange rates and controls, interest rates and taxation policies. In particular, in recent years, India's government has adopted policies that are designed to promote foreign investment, including significant tax incentives, relaxation of regulatory restrictions, liberalized import and export duties and preferential rules on foreign investment and repatriations. These policies may not continue. In addition, we are subject to risks relating to social stability, political, economic or diplomatic developments affecting India in the future.

India faces major challenges in the years ahead sustaining the economic growth that it has experienced over the past several years. These challenges include the need for substantial infrastructure development and improving access to healthcare and education. Our ability to recruit, train and retain qualified employees and develop and operate our facilities in India could be adversely affected if India does not successfully meet these challenges, in which case we may need to relocate those facilities and that could have a material adverse effect on our business, financial condition and results of operations.

We are dependent on our senior management and their continued performance and productivity.

We are dependent on the continued efforts of the members of our senior management. The loss of any of the members of our senior management may cause a significant disruption in our business, jeopardize existing customer relationships, impair our compliance efforts as a public company, and have a material adverse effect on our business objectives. We do not maintain key man life insurance policies for any senior officer or manager.

If we cannot attract, train and retain qualified employees, we may not be able to provide adequate technical expertise and customer service to our clients.

We believe that our success is due in part to our ability to attract, train and retain highly skilled employees. Competition for qualified personnel in the software and hedge fund industries is intense, and we have, at times, found it difficult to attract and retain skilled personnel for our operations. Our failure to attract and retain a sufficient number of highly skilled employees could prevent us from developing and servicing our products at the same levels as our competitors; therefore, we may lose potential clients and suffer a decline in revenues.

If we are unable to protect our proprietary technology and other confidential information, our success and our ability to compete will be subject to various risks, such as third-party infringement claims, unauthorized use of our technology, disclosure of our proprietary information or inability to license technology from third-parties.

Our success and ability to compete depends in part upon our ability to protect our proprietary technology and other confidential information. We rely on a combination of patent, trade secret, copyright and trademark law, and nondisclosure agreements, license agreements and technical measures to protect our proprietary technology and other confidential information. We have registered trademarks for some of our products and will continue to evaluate the registration of additional trademarks as appropriate. We generally enter into confidentiality agreements with our employees, distributors, clients and potential clients. However, these efforts may be insufficient to prevent those parties or others from infringing, misappropriating, violating or asserting rights in our intellectual property, confidential information or other technology and our proprietary technology and confidential information may be subject to embezzlement, theft, or other similar illegal behavior by our employees or third-parties. In addition, our employees, distributors, clients and potential clients may breach our confidentiality agreements and we may not have adequate remedies for any such breach. Furthermore, unauthorized third-parties may seek to copy portions of our products or to reverse engineer or otherwise obtain and use our proprietary information. If a third-party were to gain unauthorized access to or independently develop the confidential or proprietary information we possess, we could suffer a loss of revenues, we could experience an adverse impact on our competitive position, and our relationships with our clients and our reputation could be materially adversely effected. Existing patent and

copyright laws afford only limited protection. Third-parties may develop substantially equivalent or superseding proprietary technology or may offer equivalent products in competition with our products in a manner that does not infringe, misappropriate or otherwise violate our intellectual property or other proprietary rights, thereby substantially reducing the value of our proprietary rights. A number of third-parties hold patents and other intellectual property rights with application in the financial services field. Consequently, we are subject to the risk that such third-parties will claim that our products infringe, misappropriate or otherwise violate their intellectual property rights, including their patent rights. Such claims, regardless of merit, could result in expensive and time-consuming litigation, divert the attention of our personnel, and impair our intellectual property rights. Moreover, as a result of such claims, we may be required to redesign our products or services in a manner that is not infringing, misappropriating or otherwise violating such third-party's intellectual property rights, which may not be technically or commercially feasible. We may also be required to obtain a license to such intellectual property rights, which may not be available on commercially reasonable terms or at all. Any of the foregoing could have a material adverse effect on our business, results of operation, and financial condition.

We incorporate open source software into a limited number of our software products. We monitor our use of open source software in an effort to avoid subjecting our products to unfavorable conditions or conditions we do not intend. Some open source licenses require that source code subject to the license be disclosed to third-parties, grant such third-parties the right to modify and redistribute that source code and a requirement that the source code for any software derived from it be disclosed. If we combine our proprietary software with open source software in a certain manner, we could, under certain open source licenses, be required to release the source code of our proprietary software to the public. Although we believe that we have complied with our obligations under the applicable licenses for open source software that we use, there is little or no legal precedent governing the interpretation of many of the terms of certain of these licenses. As a result, the potential impact of these terms is uncertain and may result in unanticipated obligations or restrictions regarding those of our products, technologies or solutions affected.

We have acquired and may acquire important technology rights through our acquisitions and have often incorporated and may incorporate features of these technologies across many of our products and services. As a result, we are subject to the above risks and the additional risk that the seller of the technology rights may not have appropriately protected the intellectual property rights we acquired. Indemnification and other rights under applicable acquisition documents are limited in term and scope and therefore provide us with only limited protection.

In addition, we rely on third-party software in providing some of our products and services. If we lose our licenses to use such software or if such licenses are found to infringe, misappropriate or otherwise violate upon the rights of others, we will need to seek alternative means of obtaining the licensed software to continue to provide our products or services, which may not be feasible on a technical or commercial basis. Our inability to replace such software, or to replace such software in a timely manner, could significantly disrupt our business and our ability to deliver products and services to our clients, and adversely affect our business, results of operation and financial condition.

We could become subject to litigation regarding our or a third-party's intellectual property rights or other confidential or proprietary information, which could seriously harm our business and require us to incur significant costs.

In recent years, there has been a high incidence of litigation in the U.S. involving patents and other intellectual property rights. We are from time to time a party to litigation to enforce our intellectual property rights or to protect our confidential or proprietary information, or as a result of an allegation that we infringe, misappropriate or otherwise violate a third-party's intellectual property rights, including patents, trademarks, trade secrets and copyrights. From time to time, we have received notices claiming our technology may infringe, misappropriate or otherwise violate third-party intellectual property rights or otherwise threatening to assert intellectual property rights. These claims and any resulting lawsuit, if successful, could subject us to significant liability for damages and our intellectual property rights being reduced, narrowed or held unenforceable or invalid. These lawsuits, regardless of their success, could be time-consuming and expensive to resolve, adversely affect our revenues, profitability and prospects, and divert management time and attention. If we are found to infringe, misappropriate or otherwise violate a third-party's intellectual property rights, we may be required to pay the third-party substantial monetary damages and to cease the activities covered by such intellectual property rights, unless we obtain a license to such intellectual property rights, which may not be available on commercially reasonable terms or at all. In addition, these claims and threats could also cause us to undertake to re-engineer our products or services which may not be technically or commercially feasible. Any of the foregoing could have a material adverse effect on our business, results of operation and financial condition.

We may be unable to adapt to rapidly changing technology and evolving industry standards and regulatory requirements.

Rapidly changing technology, evolving industry standards and regulatory requirements and new product and service introductions characterize the market for our products and services. Our future success will depend in part upon our ability to enhance our existing products and services and to develop and introduce new products and services to keep pace with such changes and developments and to meet changing client needs. The process of developing our software products is complex and is expected to

become increasingly complex and expensive in the future due to the introduction of new platforms, operating systems and technologies. Current areas of significant technological change include mobility, cloud-based computing and the processing and analyzing of large amounts of data. Our ability to keep up with technology and business and regulatory changes is subject to a number of risks, including that:

- we may find it difficult or costly to update our services and software and to develop new products and services quickly enough to meet our clients' needs;
- we may find it difficult or costly to make some features of our software work effectively and securely over the Internet or with new or changed operating systems;
- we may find it difficult or costly to update our software and services to keep pace with business, evolving industry standards, regulatory requirements and other developments in the industries in which our clients operate; and
- we may be exposed to liability for security breaches that allow unauthorized persons to gain access to confidential information stored on our computers or transmitted over our network.

Our failure to enhance our existing products and services and to develop and introduce new products and services to promptly address the needs of our clients and a changing marketplace could adversely affect our business, results of operations and financial condition.

Undetected software design defects, errors or failures, or employee errors, may result in defects, delays, loss of our clients' data, litigation against us and harm to our reputation and business.

Our software products are highly complex and sophisticated and could contain design defects or software errors that are difficult to detect and correct. Errors or bugs in our software may affect the ability of our products to work with other hardware or software products, delay the development or release of new products or new versions of products, result in the loss of client data, damage our reputation, affect market acceptance of our products or result in the rejection of our products by the market, cause loss of revenues, divert development resources, increase product liability and warranty claims, and increase service and support costs. We cannot be certain that, despite testing by us and our clients, errors will not be found in new products or new versions of products. Moreover, our clients engage in complex trading activities and this complexity increases the likelihood that our employees may make errors. Employee errors, poor employee performance or misconduct may be difficult to detect and deter. These product defects or errors in the product operations, or employee errors, poor performance or misconduct, could cause damages to our clients for which they may assert claims or lawsuits against us. The cost of defending such a lawsuit, regardless of its merit, could be substantial and could divert management's attention and result in reputational harm. In addition, if our business liability insurance coverage proves inadequate with respect to a claim or future coverage is unavailable on acceptable terms or at all, we may be liable for payment of substantial damages. Any or all of these potential consequences could have an adverse impact on our business, results of operations and financial condition.

Our businesses expose us to risks of claims and losses that could be significant and damage our reputation and business prospects.

Our proprietary applications and related consulting and other services include the processing or clearing of financial and healthcare transactions for our clients and their customers and the design of benefit plans and compliance programs. The dollar amount of transactions processed or cleared is vastly in excess than the revenues we derive from providing these services. In the event we make transaction processing or operational errors, or mismanage any process, we could be exposed to claims for any resulting processing delays, disclosure of protected information, miscalculations, mishandling of pass-through disbursements or other processes, and failure to follow a client's instructions or meet specifications. Additionally, we may be subject to claims or liability resulting from a failure of third parties (including regulatory authorities) to recognize the limitations of our role as our clients' agent or consultant, and we may be subject to claims or liability resulting from fraud committed by third parties. We may be exposed to the risk of counterparty breaches or failure to perform. We may be subject to claims, including class actions, for reimbursements, losses or damages arising from any transaction processing or operational error, or from process mismanagement. Because of the sensitive nature of the financial and healthcare transactions we process, our liability and any alleged damages may significantly exceed the fees we receive for performing the service at issue. Litigation could include class action claims based upon, among other theories, various regulatory requirements and consumer protection and privacy laws that class action plaintiffs may attempt to use to assert private rights of action. Any of these claims and related settlements or judgments could affect our operating results, damage our reputation, decrease demand for our products and services, or cause us to make costly operating changes.

Investment decisions with respect to cash balances, market returns or losses on investments, and limits on insurance applicable to cash balances held in bank and brokerage accounts, including those held by us and as agent on behalf of our clients, could expose us to losses of such cash balances and adversely affect revenues attributable to cash balance deposit investments.

As part of our transaction processing and other services, we maintain and manage large bank and investment accounts containing client funds, which we hold as agent, as well as operational funds. Our revenues include investment earnings related to client fund cash balances. Our choices in selecting investments, or market conditions that affect the rate of return on or the availability of investments, could have an adverse effect on the level of such revenues. The amounts held in our operational and client deposit accounts could exceed the limits of government insurance programs of organizations such as the Federal Deposit Insurance Corporation and the Securities Investors Protection Corporation, exposing us to the risk of loss. Any substantial loss would have a material adverse impact on our business, results of operations and our financial condition.

Our business is subject to evolving regulations and increased scrutiny from regulators.

Our business is subject to evolving and increasing U.S. and foreign regulation, including privacy, licensing, processing, recordkeeping, investment adviser, broker/dealer, retirement, data protection, reporting and related regulations. New products and services we plan to offer may also be subject to regulation, either directly or as a downstream provider to customers or clients. Such regulations cover all aspects of our business including, but not limited to, sales and trading methods, trade practices among broker/dealers, use and safekeeping of clients' funds and securities, use of client and employee data, capital structure of securities firms, net capital, anti-money laundering efforts, healthcare, recordkeeping and the conduct of directors, officers and employees. Any violation of applicable regulations could expose us or those businesses to civil or criminal liability, significant fines or sanctions, damage our reputation, the revocation of licenses, censures, or a temporary suspension or permanent bar from conducting business, which could adversely affect our business, results of operations and our financial condition.

Our clients are subject to extensive regulation, including investment adviser, broker/dealer and privacy regulations applicable to products and services we provide to the financial services industry and insurance, privacy and other regulations applicable to services we provide to the healthcare industry. As a result, our relationships with our clients may subject us to increased scrutiny from a number of regulators, including the Federal Financial Institutions Examination Council (and its constituent members, the Board of Governors of the Federal Reserve System, the Federal Deposit Insurance Corporation, the National Credit Union Administration, the Office of the Comptroller of the Currency and the Consumer Financial Protection Bureau), the Bermuda Monetary Authority, British Virgin Islands Financial Services Commission, Centrale Bank van Curacao en Sint Maarten, Commodity Futures Trading Commission, FTC, Cayman Islands Monetary Authority, Commission de Surveillance du Secteur Financier, Financial Industry Regulatory Authority, Financial Conduct Authority, Central Bank of Ireland, National Futures Association, Ontario Securities Commission, SEC, Securities Commission of the Bahamas, U.S. Treasury Department and other government entities that regulate the financial services, hedge fund and hedge fund services industry in the U.S., the United Kingdom ("U.K.") and the other jurisdictions in which we operate. As a result of the changes in the global economy and the turmoil in global financial markets in recent years, the risk of additional government regulation has increased. In addition, the final outcome of negotiations between the U.K. and the E.U. relating to Brexit remains uncertain. While the U.K. withdrew from the E.U. on January 31, 2020, negotiations regarding future arrangements will continue during a transition period scheduled to end on December 31, 2020. As a result, the impact of the U.K. regulatory regime is unknown, but it is possible that we will become subject to more onerous regulations in the U.K. Moreover, our healthcare business is subject to evolving and increasing federal and state regulation. Such federal regulation is developed, interpreted or enforced by regulators including, the Centers for Medicare and Medicaid Services, the U.S. Dept. of Health and Human Services, the Office for Civil Rights and the Office of the Inspector General. Typically a state's department of insurance regulates much of our healthcare business; however, each state's statutes dictate such authority. Any of these regulations may limit or curtail our activities, including activities that might be profitable, and changes to existing regulations, or the interpretations thereof, may affect our ability to continue to offer our existing products and services, or to offer products and services we may wish to offer in the future.

The European Union's AIFMD and the U.S. Dodd-Frank Act, among other initiatives, pose significant changes to the regulatory environment in which we and our clients operate. The impact of these regulatory changes remains uncertain. If we fail to comply with any applicable laws, rules or regulations, we may be subject to censure, fines or other sanctions, including revocation of our licenses and/or registrations with various regulatory agencies, criminal penalties and civil lawsuits.

The U.S. Foreign Corrupt Practices Act ("FCPA") and anti-bribery laws in other jurisdictions, including the U.K. Bribery Act ("Bribery Act"), generally prohibit companies and their intermediaries from making improper payments for the purpose of obtaining or retaining business or other commercial advantage. The FCPA also imposes accounting standards and requirements on publicly traded U.S. corporations and their foreign affiliates which are intended to prevent the diversion of corporate funds to the payment of bribes and other improper payments, and to prevent the establishment of "off books" slush funds from which such improper payments can be made. We and our clients operate in a number of jurisdictions that may pose a risk of potential FCPA or Bribery Act violations.

Changes in, and any violation by our clients of, applicable laws and regulations (whether related to the products and services we provide or otherwise) could diminish their business or financial condition and thus their demand for our products and services or could increase our cost of continuing to provide our products and services to such industries. Demand could also decrease if we do not

continue to offer products and services that help our clients comply with regulations. For example, our accounts in the healthcare industry are impacted by the Patient Protection and Affordable Care Act of 2010 (the “Affordable Care Act”), including the Health Insurance Marketplace. Changes to the Affordable Care Act have been enacted by Congress in response to the current administration’s stated agenda.

In addition, we cannot predict the nature, scope or effect of future regulatory requirements to which our internal operations might be subject or the manner in which existing laws might be administered or interpreted. While our policies mandate compliance with these laws, there can be no assurance that we will be completely effective in ensuring our compliance with all applicable anti-corruption laws. A failure to comply with these laws, rules or regulations, or allegations of such noncompliance, could adversely affect our business, reputation, results of operations and financial condition.

A substantial portion of our revenues are derived, and a substantial portion of our operations are conducted, outside the U.S.

For the years ended December 31, 2019, 2018 and 2017 international revenues accounted for 27%, 28% and 27%, respectively, of our total revenues. We sell certain of our products primarily outside the U.S. In addition, Brexit and international trade tensions have created political and economic uncertainty and instability in global financial and foreign currency markets. The current uncertainty over the final outcome of the negotiations between the U.K. and the E.U., with respect to the terms of Brexit, may adversely affect our operations and financial results, as we generated approximately \$652.9 million, \$503.9 million and \$115.8 million in revenues from the U.K. in the years ended December 31, 2019, 2018 and 2017, respectively. Our international business is also subject to a variety of other risks, including:

- potential changes in a specific country’s or region’s political or economic climate;
- the need to comply with a variety of local regulations and laws, U.S. export controls, the FCPA and the Bribery Act;
- potential expropriation of assets by foreign governments;
- difficulty repatriating any international profits;
- fluctuations in foreign currency exchange rates;
- application of discriminatory fiscal policies;
- potential changes in tax laws and the interpretation of such laws; and
- potential difficulty enforcing third-party contractual obligations and intellectual property rights.

Such factors could adversely affect our business, results of operations and financial condition.

We are exposed to fluctuations in currency exchange rates that could negatively impact our operating results and financial condition.

Because a significant portion of our business is conducted outside the U.S. and significant revenues are generated outside the U.S., we face exposure to adverse movements in foreign currency exchange rates. Fluctuations in currencies relative to currencies in which our earnings are generated also make it more difficult to perform period-to-period comparisons of our reported results of operations. Because our Consolidated Financial Statements are reported in U.S. dollars, translation of sales or earnings generated in other currencies into U.S. dollars can result in a significant increase or decrease in the reported amount of those sales or earnings. In addition, we incur currency transaction risk whenever we enter into either a purchase or a sales transaction using a currency other than the local currency of the transacting entity. Given the volatility of exchange rates, we cannot be assured we will be able to effectively manage our currency translation or transaction risk, and significant changes in the value of foreign currencies relative to the U.S. dollar could adversely affect our financial statements. See “Management’s Discussion and Analysis of Financial Condition and Results of Operations” for further discussion on the foreign currency translation impact on operating results and financial condition.

We do not currently engage in material hedging activities. Changes in economic or political conditions globally and in any of the countries in which we operate could result in exchange rate movements, new currency or exchange controls or other restrictions being imposed on our operations.

Our investments in funds and our joint ventures could decline in value.

From time to time we add new investment strategies to our investment product offerings by providing the initial cash investments as “seed capital.” The seed capital investments may decline in value. A significant decline in their value could have a material adverse effect on our financial condition or operating results. We are a limited partner in various private equity funds and have future capital commitments related to certain private equity fund investments. These investments are illiquid. Generally, private

equity fund securities are non-transferable or are subject to long holding periods, and withdrawals from the private equity firm partnerships are typically not permitted. Even when transfer restrictions do not apply, there is generally no public market for the securities. Therefore, we may not be able to sell the securities at a time when we desire to do so. We may not always be able to sell those investments at the same or higher prices than we paid for them. We also participate in joint ventures with other companies. These joint venture investments could require further capital contributions.

We do not control certain businesses in which we have significant ownership.

We invest in joint ventures and other unconsolidated affiliates as part of our business strategy, and part of our net income is derived from our pro rata share of the earnings of those businesses. Despite owning significant equity interests in those companies and having directors on their boards, we do not control their operations, strategies or financial decisions. The other owners may have economic, business or legal interests or goals that are inconsistent with our goals or the goals of the businesses we co-own. Our pro rata share of any losses due to unfavorable performance of those companies could negatively impact our financial results.

Some of our joint venture investments are subject to buy-sell agreements, which could, among other things, restrict us from selling our interests even if we were to determine it would be prudent to do so.

We own interests in unconsolidated entities and various real estate joint ventures. Our interests in such unconsolidated entities are subject to buy/sell arrangements, which could restrict our ability to sell our interests even if we were to determine it would be prudent to do so. These arrangements could also allow us to purchase the other owners' interests to prevent someone else from acquiring them and we cannot control the timing of occasions to do so. The businesses or other owners may encourage us to increase our investment in or make contributions to the businesses at an inopportune time.

In addition, some of the agreements governing our joint venture arrangements include buy/sell provisions that provide a party to the arrangement with the option to purchase the other party's interests upon such other party's change of control at a purchase price that may be less than fair market value. For instance, under the partnership agreement of IFDS L.P., in the event of a change of control of the Company, the other partner would have the option to purchase our interests in IFDS L.P. at a price equal to book value, unless another purchase provision in the partnership agreement was triggered prior to the change of control. Book value may be substantially less than fair market value at the time of any sale of our interests upon a change of control.

A material weakness in our internal controls could have a material adverse effect on us.

Effective internal controls are necessary for us to provide reasonable assurance with respect to our financial reports and to effectively prevent fraud. If we cannot do so, our reputation and operating results could be harmed. A material weakness in our internal control over financial reporting could adversely impact our ability to provide timely and accurate financial information. Even effective internal controls can provide only reasonable assurance with respect to the preparation and fair presentation of financial statements. In addition, controls can be circumvented by individual acts of some persons, by collusion of two or more people, or by management override of the controls. Over time, controls may become inadequate because changes in conditions or deterioration in the degree of compliance with policies or procedures may occur. Because of the inherent limitations in a cost-effective control system, misstatements due to error or fraud may occur and not be detected. If we are unable to report financial information timely and accurately or to maintain effective disclosure controls and procedures, our stock price could be negatively impacted and we could be subject to, among other things, regulatory or enforcement actions by the SEC, which could have a material adverse effect on our business, results of operations and financial condition.

Risks Relating to Our Indebtedness

Our substantial indebtedness could adversely affect our financial health and operations.

We currently have a substantial amount of indebtedness. As of December 31, 2019, we had total indebtedness of \$7,224.3 million and an additional \$245.4 million available for borrowings under our revolving credit facility. This indebtedness could have adverse consequences. For example, it may:

- require us to dedicate a substantial portion of our cash flow from operations to payments on our indebtedness, thereby reducing the availability of our cash flow to fund acquisitions, working capital, capital expenditures, research and development efforts and other general corporate purposes;
- increase our vulnerability to and limit our flexibility in planning for, or reacting to, change in our business and the industry in which we operate;
- restrict our ability to make certain distributions with respect to our capital stock due to restricted payment and other financial covenants in our credit facilities and other financing agreements;

- expose us to the risk of increased interest rates as borrowings under our senior credit facility are subject to variable rates of interest;
- place us at a competitive disadvantage compared to our competitors that have less debt; and
- limit our ability to borrow additional funds.

In addition, the agreement governing our senior credit facility contains financial and other restrictive covenants that limit our ability to engage in activities that may be in our long-term best interests, and any additional indebtedness may incur may also contain restrictive covenants. Our failure to comply with those covenants could result in an event of default which, if not cured or waived, could result in the acceleration of all of our debts.

To service our indebtedness, we require a significant amount of cash. Our ability to generate cash depends on many factors beyond our control.

We estimate that our current levels of indebtedness as of December 31, 2019 will result in annual interest payments of approximately \$324.0 million. Our ability to make payments on and to refinance our indebtedness and to fund planned capital expenditures will depend on our ability to generate cash in the future. This, to a certain extent, is subject to general economic, financial, competitive, legislative, regulatory and other factors that are beyond our control.

If our business fails to generate sufficient cash flow from operations and future borrowings are not available to us, we may not be able to pay our indebtedness or fund our other liquidity needs. We may need to refinance all or a portion of our indebtedness on or before maturity. We may not be able to refinance any of our indebtedness on commercially reasonable terms or at all. If we cannot service our indebtedness, we may have to take actions such as selling assets, seeking additional equity or reducing or delaying capital expenditures, strategic acquisitions, investments and joint ventures. We may not be able to effect such actions, if necessary, on commercially reasonable terms or at all.

Restrictive covenants in the agreements governing our indebtedness may restrict our ability to pursue our business strategies.

The Credit Agreement limits our ability, among other things, to:

- incur additional indebtedness;
- make certain investments;
- sell assets, including capital stock of certain subsidiaries;
- declare or pay dividends, repurchase or redeem stock or make other distributions to stockholders;
- consolidate, merge, liquidate or dissolve;
- enter into transactions with our affiliates; and
- incur liens.

In addition, the Credit Agreement also requires us, in certain instances, to maintain compliance with specified leverage ratios. Our ability to comply with these provisions may be affected by events beyond our control, and these provisions could limit our ability to plan for or react to market conditions, meet capital needs or otherwise conduct our business activities and plans.

Our inability to comply with any of these provisions could result in a default under one or more of the agreements governing our indebtedness. If such a default occurs under one such agreement, the creditors under another debt agreement may elect to declare all borrowings outstanding, together with accrued interest and other fees, to be immediately due and payable. In addition, the lenders under our Credit Agreement would have the right to terminate any commitments they have to provide further borrowings.

If we are unable to repay outstanding borrowings when due, the lenders under our Credit Agreement also have the right to proceed against the collateral, including substantially all of our domestic assets and the assets of our domestic subsidiaries, granted to them to secure the indebtedness under that facility. If the indebtedness under our Credit Agreement were to be accelerated, we cannot assure you that our assets would be sufficient to repay in full that indebtedness and our other indebtedness.

Changes in the method of determining London Interbank Offered Rate (“LIBOR”), or the replacement of LIBOR with an alternative reference rate, may adversely affect interest expense related to our outstanding debt.

Changes in the method of determining London Interbank Offered Rate (“LIBOR”), or the replacement of LIBOR with an alternative reference rate, may adversely affect interest expense related to outstanding debt. At December 31, 2019, we had total debt of \$7,224.3 million, including \$5,198.7 million of variable interest rate debt and which may bear interest rates in relation to LIBOR,

depending on our selection of repayment options. On July 27, 2017, the Financial Conduct Authority in the United Kingdom announced that it intends to stop persuading or compelling banks to submit rates for the calculation of LIBOR to the administrator of LIBOR after 2021. The announcement indicates that the continuation of LIBOR on the current basis cannot and will not be guaranteed after 2021. It is unclear whether new methods of calculating LIBOR will be established such that it continues to exist after 2021 and although alternative reference rates have been proposed, it is unknown whether they will attain market acceptance as replacements of LIBOR. If LIBOR ceases to exist, we may need to renegotiate our Credit Agreement and may not be able to do so with terms that are favorable to us. In particular, the method and rate used to calculate our interest rates and/or payments under the Credit Agreement in the future may result in interest rates and/or payments that are higher than, lower than, or that do not otherwise correlate over time with the interest rates and/or payments that would have been made on our obligations if LIBOR was available in its current form. See “Management’s Discussion and Analysis of Financial Condition and Results of Operations – Contractual Obligations – Senior Secured Credit Facilities” for additional information. The overall financial market may be disrupted as a result of the discontinuation, reform or replacement of LIBOR or any other benchmark rate, or any uncertainty in respect thereof. Disruption in the financial market or the inability to renegotiate our Credit Agreement with favorable terms could have a material adverse effect on our business, results of operations and financial condition.

Risks Relating to Ownership of Our Common Stock

If equity research analysts do not publish or cease publishing research or reports about our business or if they issue unfavorable commentary or downgrade our common stock, the price and trading volume of our common stock could decline.

The trading market for our common stock is influenced by the research and reports that equity research analysts publish about us and our business. We do not control these analysts. The price of our stock or trading volume in our stock could decline if one or more equity analysts downgrade our stock or if those analysts issue other unfavorable commentary or cease publishing regular reports about us or our business.

The market price of our common stock may be volatile, which could result in substantial losses for investors in our common stock.

Shares of our common stock were sold in our initial public offering at a price of \$7.50 per share on March 31, 2010, and through December 31, 2019, our common stock has traded as high as \$67.73 and as low as \$6.64. An active, liquid and orderly market for our common stock may not be sustained, which could depress the trading price of our common stock. In addition, the market price of our common stock may fluctuate significantly. Some of the factors that may cause the market price of our common stock to fluctuate include:

- fluctuations in our quarterly financial results or the quarterly financial results of companies perceived to be similar to us;
- changes in estimates of our financial results or recommendations by securities analysts;
- failure of any of our products to achieve or maintain market acceptance;
- changes in market valuations of similar companies;
- success of competitive products;
- changes in our capital structure, such as future issuances of securities or the incurrence of additional debt;
- announcements by us or our competitors of significant products, contracts, acquisitions or strategic alliances;
- regulatory developments in any of our markets;
- litigation involving our Company, our general industry or both;
- additions or departures of key personnel;
- investors’ general perception of us; and
- changes in general economic, industry and market conditions.

In addition, if the market for technology stocks, financial services stocks or the stock market in general experiences a loss of investor confidence, the trading price of our common stock could decline for reasons unrelated to our business, financial condition or results of operations. If any of the foregoing occurs, it could cause our stock price to fall and may expose us to class action lawsuits that, even if unsuccessful, could be costly to defend and a distraction to management.

William C. Stone, our Chairman of the Board and Chief Executive Officer, exerts significant control over our Company.

As of February 20, 2020, William C. Stone, our Chairman of the Board and Chief Executive Officer, beneficially owned approximately 13.3% of the outstanding shares of our common stock. We are party to a stockholders' agreement with Mr. Stone, pursuant to which Mr. Stone has the right to nominate two members of our board of directors, one of which will be Mr. Stone for so long as he is our Chief Executive Officer. As a result, Mr. Stone has significant influence over our policy and affairs and matters requiring stockholder approval.

SS&C Holdings is a holding company with no operations or assets of its own and its ability to pay dividends is limited or otherwise restricted.

As of December 31, 2019, SS&C Holdings has no direct operations and no significant assets other than the stock of SS&C and Advent Software, Inc. The ability of SS&C Holdings to pay dividends is limited by its status as a holding company and by the terms of the agreement governing our indebtedness. See "Risk factors - Risks relating to our indebtedness - Restrictive covenants in the agreements governing our indebtedness may restrict our ability to pursue our business strategies." Moreover, none of the subsidiaries of SS&C Holdings are obligated to make funds available to SS&C Holdings for the payment of dividends or otherwise. In addition, Delaware law imposes requirements that may restrict the ability of our subsidiaries, including SS&C, to pay dividends to SS&C Holdings. These limitations could reduce our attractiveness to investors.

Our management has broad discretion in the use of our existing cash resources and may not use such funds effectively.

Our management has broad discretion in the application of our cash resources. Accordingly, our stockholders will have to rely upon the judgment of our management with respect to our existing cash resources, with only limited information concerning management's specific intentions. Our management may spend our cash resources in ways that our stockholders may not desire or that may not yield a favorable return. The failure by our management to apply these funds effectively could harm our business.

Provisions in our certificate of incorporation and bylaws might discourage, delay or prevent a change of control of our Company or changes in our management and, therefore, depress the trading price of our common stock.

Provisions of our certificate of incorporation and bylaws and Delaware law may discourage, delay or prevent a merger, acquisition or other change in control that stockholders may consider favorable, including transactions in which stockholders might otherwise receive a premium for their shares of our common stock. These provisions may also prevent or frustrate attempts by our stockholders to replace or remove our management. These provisions include:

- limitations on the removal of directors;
- a classified board of directors so that not all members of our board are elected at one time;
- advance notice requirements for stockholder proposals and nominations;
- the inability of stockholders to call special meetings;
- the ability of our board of directors to make, alter or repeal our bylaws;
- the ability of our board of directors to designate the terms of and issue new series of preferred stock without stockholder approval, which could be used to institute a rights plan, or a poison pill, that would work to dilute the stock ownership of a potential hostile acquirer, likely preventing acquisitions that have not been approved by our board of directors; and
- a prohibition on stockholders from acting by written consent.

The existence of the foregoing provisions and anti-takeover measures could limit the price that investors might be willing to pay in the future for shares of our common stock. They could also deter potential acquirers of our Company, thereby reducing the likelihood that our stockholders could receive a premium for their shares of common stock in an acquisition.

ITEM 1B. UNRESOLVED STAFF COMMENTS

None.

ITEM 2. PROPERTIES

We lease our corporate offices, which consist of approximately 93,500 square feet of office space located at 80 Lamberton Road, Windsor, CT 06095. In 2013, we extended the lease term through October 2022. We utilize facilities and offices in approximately 150 other locations in North America, South America, Europe, Asia, Australia and Africa. We lease approximately 61% of our office space as compared to owning 39% of our office space. We believe that our facilities are in good condition and

generally suitable to meet our needs for the foreseeable future; however, we will continue to seek additional space as needed to satisfy our growth.

ITEM 3. LEGAL PROCEEDINGS

From time to time, we are subject to legal proceedings and claims. Certain legal proceedings in which we are involved are discussed in Note 17 to the Consolidated Financial Statements, which is included elsewhere in this annual report on Form 10-K and incorporated by reference herein. In the opinion of our management, we are not involved in any litigation or proceedings that would have a material adverse effect on us or our business.

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 common stock trades on The Nasdaq Global Select Market under the symbol "SSNC". As of February 14, 2020, we had approximately 97,000 beneficial shareholders of our common stock.

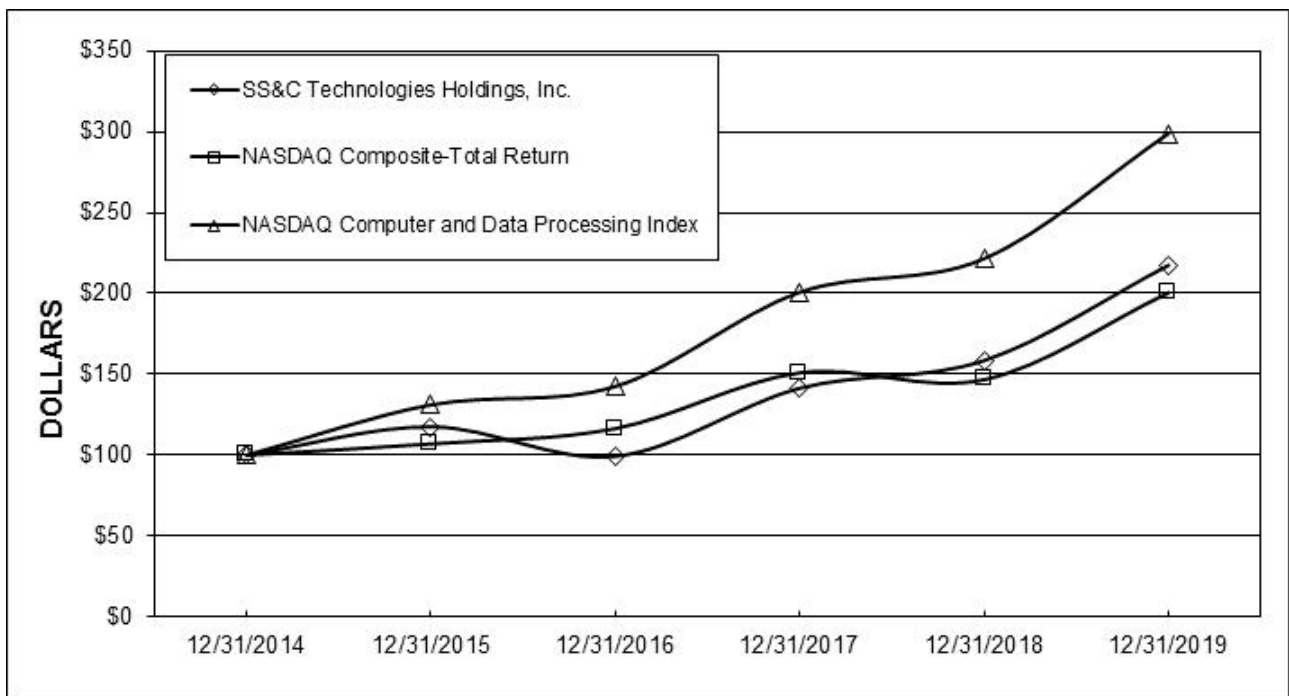
Our equity plan information required by this item is incorporated by reference to the information in Part III, Item 12 of this annual report on Form 10-K.

Performance graph

This performance graph shall not be deemed "soliciting material" or to be "filed" with the SEC for purposes of Section 18 of the Securities Exchange Act of 1934, as amended, or the Exchange Act, or otherwise subject to the liabilities under that Section, and shall not be deemed to be incorporated by reference into any filing of SS&C Technologies Holdings, Inc. under the Exchange Act.

The following graph shows a comparison from December 31, 2014 through December 31, 2019 of cumulative total return for our common stock, the Nasdaq Composite Index and the Nasdaq Computer and Data Processing Index. Such returns are based on historical results and are not intended to suggest future performance. Data for the Nasdaq Composite Index and the Nasdaq Computer and Data Processing Index assume reinvestment of dividends.

**COMPARISON OF CUMULATIVE TOTAL RETURN*
Among SS&C Technologies Holdings, Inc., the Nasdaq Composite Index
And the Nasdaq Computer and Data Processing Index**



* \$100 invested in stock on 12/31/2014. Return calculations of indices assume the reinvestment of dividends.

	12/31/2014	12/31/2015	12/31/2016	12/31/2017	12/31/2018	12/31/2019
SS&C Technologies Holdings, Inc.	100	118	99	141	159	217
Nasdaq Composite - Total Returns	100	107	116	151	147	200
Nasdaq Computer & Data Processing Index	100	131	143	201	222	299

ITEM 6. SELECTED FINANCIAL DATA

The five-year selected financial data set forth below should be read in conjunction with our Consolidated Financial Statements and related notes and “Management’s Discussion and Analysis of Financial Condition and Results of Operations” appearing elsewhere in this annual report on Form 10-K.

	For the Year Ended December 31,				
	2019 (5)	2018 (4)	2017 (3)	2016 (2)	2015 (1)
CONSOLIDATED STATEMENTS OF COMPREHENSIVE INCOME (LOSS) DATA					
	(\$ in millions, except per share data)				
Revenues	\$ 4,632.9	\$ 3,421.1	\$ 1,675.3	\$ 1,481.4	\$ 1,000.3
Operating income	914.4	429.1	396.9	288.6	164.7
Other income (expense), net	25.7	8.2	(4.5)	3.4	3.9
Net income	438.5	103.2	328.9	131.0	42.9
Earnings per share - Basic	\$ 1.73	\$ 0.44	\$ 1.60	\$ 0.65	\$ 0.24
Earnings per share - Diluted	\$ 1.66	\$ 0.42	\$ 1.55	\$ 0.64	\$ 0.22
Weighted average shares outstanding - Basic	252.9	232.5	204.9	200.3	182.2
Weighted average shares outstanding - Diluted	264.2	243.7	211.6	205.8	190.9
Cash dividends declared and paid per common share (6)	\$ 0.425	\$ 0.30	\$ 0.265	\$ 0.25	\$ 0.25

	As of December 31,				
	2019 (5)	2018 (4)	2017 (3)	2016 (2)	2015 (1)
CONSOLIDATED BALANCE SHEET DATA					
	(\$ in millions)				
Total assets	\$ 16,741.1	\$ 16,107.5	\$ 5,539.5	\$ 5,707.0	\$ 5,802.2
Total long-term debt, including current portion	7,154.1	8,256.0	2,045.2	2,501.1	2,751.4
Stockholders’ equity	5,116.1	4,580.0	2,686.4	2,258.6	2,105.4

- (1) On July 8, 2015, we acquired all of the outstanding stock of Advent. On September 1, 2015, we acquired the assets and business of Varden Technologies. On November 16, 2015, we acquired all of the outstanding stock of Primatics Financial.
- (2) On March 11, 2016, we acquired the assets and business associated with Citigroup AIS. On October 20, 2016, we acquired all of the outstanding stock of Salentica. On December 1, 2016, we acquired the assets and business associated with GFS. On December 15, 2016, we acquired all of the outstanding stock of Conifer.
- (3) On October 13, 2017, we acquired all of the outstanding stock of CommonWealth. On October 31, 2017, we acquired all of the outstanding stock of Modestspark.
- (4) On April 16, 2018, we acquired all of the outstanding stock of DST. On June 1, 2018, we acquired the assets and business associated with CACEIS. On October 1, 2018, we acquired all of the outstanding stock of Eze. On November 16, 2018, we acquired all of the outstanding stock of Intralinks. See Note 8 to our Consolidated Financial Statements.
- (5) On October 1, 2019, we acquired the assets and business associated with Investrack. On November 29, 2019, we acquired the assets and business associated with Algorithmics. See Note 8 to our Consolidated Financial Statements.
- (6) On June 24, 2016, SS&C Technologies Holdings, Inc. completed a two-for-one stock split, effected in the form of a stock dividend. All share and per share amounts have been retroactively restated for all periods presented to reflect the stock split.

ITEM 7. MANAGEMENT'S DISCUSSION AND ANALYSIS OF FINANCIAL CONDITION AND RESULTS OF OPERATIONS

Overview

Business. We are a leading provider of mission-critical, sophisticated software-enabled services that allow financial services providers to automate complex business processes. Our portfolio of software products and rapidly deployable software-enabled services allows our clients to automate and integrate front-office functions such as trading and modeling, middle-office functions such as portfolio management and reporting, and back-office functions such as accounting, transfer agency, compliance, regulatory services, performance measurement, reconciliation, reporting, processing and clearing. We provide our solutions globally to thousands of clients, principally within the institutional asset and wealth management, alternative investment management, brokerage, retirement, financial advisory and financial institutions vertical markets. In addition, we provide solutions to the healthcare industry including pharmacy, healthcare administration and health outcomes optimization solutions to satisfy their information processing, quality of care, cost management and payment integrity needs. Our healthcare solutions include claims adjudication, benefit management, care management, and business intelligence services.

Acquisitions. To supplement our growth, we evaluate and execute acquisitions that provide complementary products or services, add proven technology and an established client base and expand our intellectual property portfolio or address a highly specialized problem or a market niche. Since the beginning of 2017, we have spent approximately \$8.5 billion on our six most significant acquisitions, using a combination of cash on hand, equity and debt financing (as discussed in Notes 8, 10 and 11 to our Consolidated Financial Statements).

The following table lists the significant businesses we have acquired since January 1, 2017:

<u>Acquired Business</u>	<u>Acquisition Date</u>	<u>Acquired Capabilities, Products and Services</u>
Algorithmics	November 2019	Added cloud-based risk analytics and additional regulatory solutions
Intralinks Holdings, Inc.	November 2018	Increased key account footprint and adds cloud-based virtual data rooms and secure collaboration solutions for SS&C's banking and alternative clients
Eze Software	October 2018	Strengthened SS&C's front to back office technology
CACEIS North America	June 2018	Expanded fund administration services in hedge fund and private equity sectors
DST Systems, Inc.	April 2018	Provided additional scale and breadth across institutional and retail asset management, alternatives, wealth management, and healthcare sectors
CommonWealth Fund Services Ltd.	October 2017	Expanded fund administration services in hedge fund and private equity sectors

The discussion in this Part II, Item 7 of this Annual Report on Form 10-K includes the operations of the businesses listed in the table above for the respective time periods each was owned by SS&C.

Revenues. As we have expanded our business, we have focused on increasing our software-enabled services. Since 2017, we have seen increased demand in the financial services industry for these services from existing and new customers. We have taken a number of steps to support that demand, such as automating our software-enabled services delivery methods, expanded our service offerings and providing our employees with sales incentives. We have also acquired businesses that offer software-enabled services or have a large base of term license or maintenance clients. Our software-enabled services revenues increased from \$1,114.0 million and 66% of total revenues in 2017 to \$3,869.2 million and 84% of revenues in 2019. We believe that our high level of these contractually recurring revenues provides us with the ability to better manage our costs and capital investments. To support the growth in our software-enabled services revenues and maintain our level of customer service, we have added personnel, expanded our facilities and invested in information technology.

Liquidity. In connection with the acquisition of DST in the second quarter of 2018, we entered into a new credit agreement ("Credit Agreement"), which is described in *Contractual Obligations*, to fund a large portion of the purchase price, refinance amounts outstanding including our previously issued Senior Notes and our prior credit facility ("Prior Facility") and refinance all of DST's existing indebtedness. We also raised cash through the sale and issuance of approximately 30.3 million shares of our common stock for total net proceeds of \$1.4 billion. In the fourth quarter of 2018, we funded our acquisitions of Eze and Intralinks with a combination of cash on-hand and \$1,875.0 million in incremental term loan debt and the issuance of 9.9 million shares of our common stock. In March of 2019, we issued \$2.0 billion aggregate principal amount of 5.5% Senior Notes due 2027 ("Senior Notes"), the proceeds of which were used to repay a portion of the outstanding Term B-3 Loan under our existing senior secured credit facilities. In January 2020, we entered into an amendment to our senior secured credit agreement, whereby the interest rate margin applicable to

the term loans was reduced from LIBOR plus 2.25% to LIBOR plus 1.75%. No changes were made to the financial covenants, outstanding principal amounts or the scheduled amortization.

We generated \$1,328.3 million in cash from operating activities in 2019, compared to \$640.1 million and \$471.8 million in 2018 and 2017, respectively. In 2019, we used our operating cash flow, \$125.7 million in proceeds from the exercise of stock options and existing cash to repay \$1.1 billion of net debt, pay \$107.7 million in dividends, fund business acquisitions of \$94.1 million, purchase \$60.3 million of common stock for treasury and invest in capital expenditures in our business.

Results of Operations

Revenues

We derive our revenues from two sources: software-enabled services revenues and license, maintenance and related revenues. As a general matter, fluctuations in our software-enabled services revenues are attributable to the number of new software-enabled services clients as well as total assets under management in our clients' portfolios and the number of outsourced transactions provided to our existing clients. Software-enabled services revenues also fluctuate as a result of reimbursements received for "out-of-pocket" expenses, such as postage and telecommunications charges, which are recorded as revenues on an accrual basis. Because these additional revenues are offset by the reimbursable expenses incurred, there is no impact on gross profit, operating income and net income, however the reimbursements billed and expenses incurred can lead to fluctuations in revenues, cost of revenues and gross margin percentage each period. License, maintenance and related revenues consist primarily of term and perpetual license fees, maintenance fees and professional services. Maintenance revenues vary based on customer retention and on the annual increases in fees, which are generally tied to the consumer price index. License and professional services revenues tend to fluctuate based on the number of new licensing clients, the timing and terms of contract renewals and demand for consulting services.

The following table sets forth the percentage of our total revenues represented by each of the following sources of revenues for the periods indicated:

	Year Ended December 31,		
	2019	2018	2017
Software-enabled services	83.5%	81.8%	66.5%
License, maintenance and related	16.5%	18.2%	33.5%
Total revenues	100.0%	100.0%	100.0%

The following table sets forth revenues (dollars in millions) and percent change in revenues for the periods indicated:

	Year Ended December 31,			Percent Change From Prior Period	
	2019	2018	2017	2019	2018
Software-enabled services	\$ 3,869.2	\$ 2,798.9	\$ 1,114.0	38.2%	151.2%
License, maintenance and related	763.7	622.2	561.3	22.7%	10.8%
Total revenues	\$ 4,632.9	\$ 3,421.1	\$ 1,675.3	35.4%	104.2%

Fiscal 2019 versus Fiscal 2018. Our revenues increased \$1,211.8 million, or 35.4%, primarily due to our acquisitions, which included DST and CACEIS in the second quarter of 2018 and Eze and Intralinks in the fourth quarter of 2018, along with our acquisitions of Investrack and Algorithmics in the fourth quarter of 2019, which, combined, contributed \$1,140.5 million to the increase in revenues. Excluding the impact of acquisitions, revenues increased primarily due to an increase in revenues for institutional and investment management products and advisory and wealth management products. The unfavorable impact from foreign currency translation reduced revenues by \$22.2 million. Software-enabled services revenues increased \$1,070.3 million, or 38.2%, primarily due to the acquisitions, which contributed \$1,095.5 million to the increase in revenues, as well as from a continued increase in demand for services for advisory and wealth managers. These increases were partially offset by the unfavorable impact from foreign currency translation of \$17.0 million. License, maintenance and related revenues increased \$141.5 million, or 22.7%, primarily due to increased license revenues for institutional and investment management products and advisory and wealth management products, as well as the acquisitions, which contributed \$45.0 million to the increase in revenues. These increases were partially offset by the unfavorable impact from foreign currency translation of \$5.2 million.

Fiscal 2018 versus Fiscal 2017. Our revenues increased \$1,745.8 million, primarily due to revenues related to our acquisitions of Intralinks and Eze in the fourth quarter of 2018, CACEIS and DST in the second quarter of 2018 and Commonwealth Fund Services in the fourth quarter of 2017, which contributed \$1,709.9 million in revenues. Additionally, revenues increased due to

increased demand for our software-enabled services and the favorable impact from foreign currency translation, which added \$1.2 million. Software-enabled services revenues increased \$1,684.9 million or 151.2%, primarily due to the acquisitions, which added revenues of \$1,629.6 million, as well as from a continued increase in demand for our fund administration services and services for advisory and wealth managers. The favorable impact from foreign currency translation was \$1.6 million. License, maintenance and related revenues increased \$60.9 million, or 10.8%, primarily due to the acquisitions, which added revenues of \$80.3 million. The unfavorable impact from foreign currency translation was \$0.4 million and the remaining decrease in license, maintenance and related revenues was primarily due to a decline in professional services revenues and the impact on term licenses as a result of the adoption of a new revenue recognition standard, ASC 606, on January 1, 2018.

Cost of Revenues

Cost of software-enabled services revenues consists primarily of costs related to personnel utilized in servicing our software-enabled services and amortization of intangible assets. Cost of license, maintenance and other related revenues consists primarily of the costs related to personnel utilized in servicing our maintenance contracts and to provide implementation, conversion and training services to our software licensees, as well as system integration and custom programming consulting services and amortization of intangible assets.

The following tables set forth each of the following cost of revenues as a percentage of their respective revenue source for the periods indicated:

	Year Ended December 31,		
	2019	2018	2017
Cost of software-enabled services	59.6%	62.6%	56.4%
Cost of license, maintenance and related	40.1%	47.9%	46.0%
Total cost of revenues	56.4%	60.0%	52.9%
Gross margin percentage	43.6%	40.0%	47.1%

The following table sets forth cost of revenues (dollars in millions) and percent change in cost of revenues for the periods indicated:

	Year Ended December 31,			Percent Change From Prior Period	
	2019	2018	2017	2019	2018
Cost of software-enabled services	\$ 2,305.7	\$ 1,753.0	\$ 628.1	31.5%	179.1%
Cost of license, maintenance and related	306.0	298.1	258.3	2.7%	15.4%
Total cost of revenues	\$ 2,611.7	\$ 2,051.1	\$ 886.4	27.3%	131.4%

Fiscal 2019 versus Fiscal 2018. Our total cost of revenues increased \$560.6 million, or 27.3%, primarily due to our acquisitions, which contributed \$635.0 million to the increase in costs, partially offset by a decrease in cost of revenues as a result of the elimination of redundant positions and other cost saving measures enacted during 2018 and 2019. The favorable impact from foreign currency translation reduced costs by \$16.9 million. Cost of software-enabled services revenues increased \$552.7 million, or 31.5%, primarily due to our acquisitions, which contributed \$615.4 million to the increase in costs, partially offset by a decrease in costs of software-enabled services revenues as a result of the elimination of redundant positions and other cost saving measures enacted during 2018 and 2019. The favorable impact from foreign currency translation reduced costs by \$14.9 million. Costs of license, maintenance and related revenues increased \$7.9 million or 2.7%, primarily due to our acquisitions, which contributed \$19.6 million in costs, partially offset by decreases in amortization expense of intangible assets acquired. The favorable impact from foreign currency translation reduced costs by \$2.0 million in costs.

Fiscal 2018 versus Fiscal 2017. Our total cost of revenues increased \$1,164.7 million, or 131.4%, primarily due to our acquisitions, which contributed \$1,136.7 million to the increase. Included in these costs are severance charges of \$38.8 million in 2018 related to the elimination of redundant positions within the acquired businesses. The unfavorable impact from foreign currency translation added \$0.7 million in costs. Cost of software-enabled services revenues increased \$1,124.9 million, or 179.1%, primarily due to our acquisitions, which added \$1,088.6 million in costs, as well as increased costs to support the growth in software-enabled services revenues. The unfavorable impact from foreign currency translation added \$0.2 million in costs. Costs of license, maintenance and related revenues increased \$39.8 million or 15.4%, primarily due to our acquisitions, which added \$48.0 million in costs, partially offset by decreases in personnel-related costs and independent contractors. The unfavorable impact from foreign currency translation added \$0.5 million in costs.

Operating Expenses

Selling and marketing expenses consist primarily of the personnel costs associated with the selling and marketing of our products, including salaries, commissions, travel and entertainment. Such expenses also include amortization of intangible assets, the cost of branch sales offices, trade shows and marketing and promotional materials. Research and development expenses consist primarily of personnel costs attributable to the enhancement of existing products and the development of new software products. General and administrative expenses consist primarily of personnel costs related to management, accounting and finance, information management, human resources and administration and associated overhead costs, as well as fees for professional services. Transaction expenses consist of certain costs associated with our acquisition of DST, including costs to enter into our Credit Agreement, investment banker advisory fees, legal and other professional fees.

The following table sets forth operating expenses as a percentage of our total revenues for the periods indicated:

	Year Ended December 31,		
	2019	2018	2017
Selling and marketing	7.6%	6.1%	7.1%
Research and development	8.3%	9.3%	9.2%
General and administrative	8.0%	9.2%	7.1%
Transaction expenses	—	2.9%	—
Total operating expenses	23.9%	27.5%	23.4%

The following table sets forth operating expenses (dollars in millions) and percent change in operating expenses for the periods indicated:

	Year Ended December 31,			Percent Change From Prior Period	
	2019	2018	2017	2019	2018
Selling and marketing	\$ 353.9	\$ 211.0	\$ 118.5	67.7%	78.1%
Research and development	383.7	318.2	153.3	20.6%	107.6%
General and administrative	369.2	313.9	119.6	17.6%	162.5%
Transaction expenses	—	97.8	0.6	(100.0)%	16200.0%
Total operating expenses	\$ 1,106.8	\$ 940.9	\$ 392.0	17.6%	140.0%

Fiscal 2019 versus 2018. Operating expenses increased \$165.9 million, or 17.6%, primarily due to our acquisitions, which contributed \$353.6 million to the increase in expenses, and increases in personnel-related and legal costs. These increases were partially offset by a decrease in stock-based compensation expense, the absence of Transaction expenses in 2019 and a decrease in expenses as a result of the elimination of redundant positions and other cost saving measures enacted during 2018 and 2019. The favorable impact from foreign currency translation reduced costs by \$5.8 million.

Fiscal 2018 versus 2017. The increase in total operating expenses in 2018 was primarily due to our acquisitions, which added expenses of \$522.6 million. Included in these costs are severance charges of \$23.8 million in 2018, related to the elimination of redundant positions within the acquired businesses. The impact from foreign currency translation increased costs by \$0.5 million in 2018. Total operating expenses in 2018 also increased due to higher personnel-related costs, higher non-income based taxes, higher professional fees and increased stock-based compensation expense partially offset by lower software maintenance costs, legal settlements paid and lower rent and occupancy costs.

Comparison of Fiscal 2019, 2018 and 2017 for Interest, Taxes and Other

Interest income. We had interest income of \$4.7 million in 2019 compared to \$9.1 million in 2018 and \$1.2 million in 2017. The decrease in interest income in 2019 primarily resulted from lower average cash balances relative to the prior year. The increase in interest income in 2018 primarily resulted from higher average cash balances relative to the prior year.

Interest expense. We had interest expense of \$409.6 million in 2019 compared to \$280.1 million in 2018 and \$108.6 million in 2017. The increase in interest expense in 2019 reflects the full year effect of our borrowings under our Credit Agreement in connection with the acquisitions of DST, Eze and Intralinks during 2018 and, to a lesser extent, higher average interest rates associated with the issuance of our 5.5% Senior Notes. The increase in interest expense in 2018 was primarily due to increased borrowings in connection with our acquisitions of DST, Eze and Intralinks and, to a lesser extent, higher average interest rates. These

increases were partially offset by the impact of repayments of the Prior Credit Agreement. These facilities are discussed further in “Liquidity and Capital Resources”.

Other income (expense), net. Other income (expense), net for 2019 consisted primarily of investment gains, partially offset by foreign currency transaction losses. Other income (expense), net for 2018 consisted primarily of dividend income and foreign currency transaction gains partially offset by investment losses.

Equity in earnings of unconsolidated affiliates, net. We had equity in earnings of unconsolidated affiliates, net of \$3.6 million for 2019 and \$2.1 million for 2018, respectively. This is primarily related to our proportionate share of IFDS L.P.’s net income, offset by amortization of basis differences.

Loss on extinguishment of debt, net. We recorded a \$7.1 million loss on extinguishment of debt in 2019 in connection with the repayment of a portion of our Term Loans with the proceeds from the issuance of our Senior Notes. The loss on extinguishment of debt includes costs incurred by us which did not meet the criteria for capitalization. The Senior Notes are discussed further in “Liquidity and Capital Resources.” We recorded a \$43.3 million loss on extinguishment of debt in 2018 related to the amendment and restatement of our credit agreement. The loss on extinguishment of debt includes the write-off of a portion of the unamortized capitalized financing fees and unamortized original issue discount related to the Prior Credit Agreement and Senior Notes for amounts accounted for as a debt extinguishment and a make-whole premium paid in connection with the redemption of the Senior Notes. We recorded a \$2.3 million loss on extinguishment of debt in 2017 in connection with the amendment of our senior secured credit facility. The loss on extinguishment of debt includes the write-off of a portion of the unamortized capitalized financing fees related to the senior secured credit facility for amounts accounted for as a debt extinguishment, as well as the new financing fees related to the senior secured credit facility for amounts accounted for as a debt modification.

Provision (benefit) for income taxes. The following table sets forth the provision (benefit) for income taxes (dollars in millions) and effective tax rates for the periods indicated:

	Year Ended December 31,			Percent Change From Prior Period	
	2019	2018	2017	2019	2018
Provision (benefit) for income taxes	\$ 93.2	\$ 21.9	\$ (46.2)	325.6%	(147.4)%
Effective tax rate	17.5%	17.5%	(16.3)%		

Our 2019, 2018 and 2017 effective tax rates differ from the statutory rate primarily due to the effect of our foreign operations, permanent book to tax differences and the effect of the Tax Act. Our effective tax rate for 2019 includes benefits related to stock-based awards, the utilization of foreign net operating losses against which valuation allowances were previously recorded and releases of uncertain tax positions due to closed audits and statute of limitation expirations. The increase in the effective tax rate from 2017 to 2018 was due primarily to the unfavorable impact of certain provisions in the U.S. federal tax legislation enacted in 2017, commonly referred to as the Tax Cuts and Jobs Act (“Tax Act”), as well as the absence of the net favorable impact of the Tax Act in 2017. These increases were partially offset by the relative favorable impact of excess tax benefits from stock-based awards compared to the prior year and the favorable impact of a revaluation on existing state deferred tax liabilities due to acquisitions. In 2017, we recorded a provisional tax benefit for the impact of the Tax Act of \$88.0 million. We did not make any material adjustments as a result of completing our accounting related to the Tax Act. See Notes 2 and 16 to the Consolidated Financial Statements for additional information.

Our effective tax rate includes the effect of operations outside the U.S., which historically have been taxed at rates lower than the U.S. statutory rate. While we have income from multiple foreign sources, the majority of our non-U.S. operations are in India and the U.K., where the statutory rates were 29.1% and 19.0%, respectively, in 2019, 30.5% and 19.0%, respectively, in 2018, and 34.6% and 19.3%, respectively, in 2017. A future proportionate change in the composition of income before income taxes from foreign and domestic tax jurisdictions could impact our periodic effective tax rate.

Liquidity and Capital Resources

Our principal cash requirements are to finance the costs of our operations pending the billing and collection of client receivables, to fund payments with respect to our indebtedness, to invest in research and development, to acquire complementary businesses or assets and to pay dividends on our common stock. We expect our cash on hand, cash flows from operations, and cash available under our Credit Agreement to provide sufficient liquidity to fund our current obligations, projected working capital requirements and capital spending for at least the next twelve months.

In November 2019, we purchased Algorithmics for approximately \$89.6 million, plus the costs of effecting the transaction and the assumption of certain liabilities. We funded this purchase with cash on hand.

In 2019, we paid quarterly cash dividends totaling \$107.7 million.

Our cash, cash equivalents and restricted cash and cash equivalents, including amounts held on behalf of clients, at December 31, 2019 were \$1,789.4 million, an increase of \$676.1 million from \$1,113.3 million at December 31, 2018. The increase in cash was primarily due to the increase in cash and cash equivalents associated with funds held on behalf of clients. See Notes 8, 10 and 11 to our Consolidated Financial Statements for further discussion of acquisitions, debt and equity, respectively.

Client funds obligations include our transfer agency client balances invested overnight as well as our contractual obligations to remit funds to satisfy client pharmacy claim obligations and are recorded on the Condensed Consolidated Balance Sheet when incurred, generally after a claim has been processed by us. Our contractual obligations to remit funds to satisfy client obligations are primarily sourced by funds held on behalf of clients. We had \$1,729.9 million and \$1,014.7 million of client funds obligations at December 31, 2019 and 2018, respectively.

Cash flows from operating, investing and financing activities, as reflected in our Consolidated Statements of Cash Flows, are summarized in the following table (in millions):

Net cash, cash equivalents and restricted cash provided by (used in):	Year Ended December 31,			Change From Prior Period	
	2019	2018	2017	2019	2018
Operating activities	\$ 1,328.3	\$ 640.1	\$ 471.8	\$ 688.2	\$ 168.3
Investing activities	(140.5)	(7,102.6)	(63.3)	6,962.1	(7,039.3)
Financing activities	(513.4)	7,517.0	(468.0)	(8,030.4)	7,985.0
Effect of exchange rate changes on cash, cash equivalents and restricted cash	1.7	(5.9)	4.5	7.6	(10.4)
Net increase (decrease) in cash, cash equivalents and restricted cash	\$ 676.1	\$ 1,048.6	\$ (55.0)	\$ (372.5)	\$ 1,103.6

Operating activities: Cash provided by operating activities primarily resulted from net income of \$438.5 million adjusted for non-cash items of \$761.5 million and by changes in our working capital accounts (excluding the effect of acquisitions) totaling \$128.3 million. The changes in our working capital accounts were driven by increases in deferred revenue, decreases in prepaid expenses and other assets and decreases in accounts receivable, partially offset by increases in contract assets, decreases in accrued expenses and other liabilities and an increase in prepaid income taxes. The increase in deferred revenues is related to a multi-year \$250.0 million license agreement signed in the third quarter of 2019 with an up-front payment, which we received in 2019. The license revenue is expected to be recognized over approximately four years. The decrease in prepaid expenses and other assets was primarily due to the timing of payments. The decrease in accounts receivable was primarily due to a decrease in days' sales outstanding. The increase in contract assets was primarily due to new term license deals. The decrease in accrued expenses and other liabilities was primarily due to lower professional fee accruals and lower compensation accruals offset by higher accrued interest on our Senior Notes as the interest is paid semi-annually.

Investing activities: We used net cash of \$140.5 million primarily related to cash paid for business acquisitions (net of cash acquired) of \$94.1 million, \$67.4 million in capitalized software development costs and \$63.0 million in capital expenditures, partially offset by proceeds from sales and maturities of investments of \$65.1 million, receipts from the collection of other non-current receivables of \$10.2 million, proceeds from the sale of property and equipment of \$6.2 million and distributions received from our unconsolidated affiliates of \$2.8 million.

Financing activities: Cash used in financing activities of \$513.4 million primarily resulted from the net repayments of debt totaling \$1,123.8 million, \$107.7 million in quarterly dividends paid, \$60.3 million in treasury stock repurchases, \$22.8 million in withholding taxes paid related to equity award net share settlements and the payment of \$6.1 million in fees related to debt extinguishment and refinancing activities. These payments were partially offset by the net increase in client funds obligations of \$681.6 million and \$125.7 million in cash received from stock option exercises.

Fiscal 2018 versus 2017

Our cash, cash equivalents and restricted cash and cash equivalents, including amounts held on behalf of clients, at December 31, 2018 were \$1,113.3 million, an increase of \$1,048.6 million from \$64.7 million at December 31, 2017. The increase in cash was primarily due to the inclusion of cash and cash equivalents associated with funds held on behalf of clients of \$940.2 million. See Notes 8, 10 and 11 to our Consolidated Financial Statements for further discussion of acquisitions, debt and equity, respectively.

Client funds obligations represent our contractual obligations within the DST business to remit funds to satisfy client pharmacy claim obligations and are recorded on the Consolidated Balance Sheet when incurred, generally after a claim has been processed by us. In addition, client funds obligations include transfer agency client balances invested overnight. Our contractual obligations to remit funds to satisfy client obligations are primarily sourced by funds held on behalf of clients. We had \$1,014.7 million of client funds obligations at December 31, 2018.

Operating activities: Cash provided by operating activities primarily resulted from net income of \$103.2 million adjusted for non-cash items of \$572.0 million, slightly offset by changes in our working capital accounts (excluding the effect of acquisitions) totaling \$35.1 million. The changes in our working capital accounts were driven by decreases in accounts payable and accrued expenses, increases in contract assets and changes in income taxes prepaid and payable, partially offset by decreases in accounts receivable and prepaid expenses and other assets and increase in deferred revenue. Cash provided by operating activities was negatively affected by approximately \$244.0 million of costs related to the DST acquisition, including transaction, severance and other such items. The decrease in accounts payable was primarily due to the timing of payments. The decrease in accounts receivable was primarily due to an overall decrease in days' sales outstanding, excluding the effect of acquisitions, as well as an improvement in the average days' sales outstanding associated with businesses acquired in 2018 since the date of those acquisitions. The decrease in prepaid expenses and other assets was primarily due to the timing of payments, particularly as a result of the mid-month acquisition of DST. The increase in contract asset and deferred revenue was primarily due to the adoption of ASC 606.

Investing activities: We used net cash of \$7,102.6 million primarily related to cash paid for business acquisitions (net of cash acquired) of \$7,066.7 million, \$55.5 million in capitalized software development costs, \$33.6 million in capital expenditures and \$16.4 million in investments in securities, partially offset by proceeds from sales and maturities of investments of \$45.1 million, proceeds from the sale of property and equipment of \$9.7 million, distributions received from our unconsolidated affiliates of \$7.8 million and receipts from the collection of other non-current receivables of \$7.0 million.

Financing activities: Cash provided by financing activities of \$7,517.0 million primarily resulted from \$5,603.0 million received from debt borrowings, net of original issue discount and repayments of debt, net proceeds of \$1,399.1 million from common stock issuance, net increase in client funds obligations of \$604.8 million and \$84.9 million in cash received from stock option exercises. These proceeds were partially offset by the payment of \$86.4 million in fees related to debt extinguishment and refinancing activities, \$70.9 million in quarterly dividends paid and \$17.5 million in withholding taxes paid related to equity award net share settlements.

We have made a permanent reinvestment determination in certain non-U.S. operations that have historically generated positive operating cash flows. At December 31, 2019, we held approximately \$94.4 million in cash and cash equivalents at non-U.S. subsidiaries where we had made such a determination and in turn no provision for income taxes had been made. At December 31, 2019, we held approximately \$75.4 million in cash that was available to our foreign borrowers under our senior secured credit facility and will be used to facilitate debt servicing of those entities.

Off-Balance Sheet Arrangements

We have no off-balance sheet arrangements that have or are reasonably likely to have a current or future effect on our financial condition, changes in financial condition, revenues or expenses, results of operations, liquidity, capital expenditures or capital resources that is material to investors.

Contractual Obligations

The following table summarizes our contractual obligations as of December 31, 2019 that require us to make future cash payments (in millions):

Contractual Obligations and Other Commitments	Payments Due by Period				
	Total	Less than 1 Year	1-3 Years	3-5 Years	More than 5 Years
Short-term and long-term debt	\$ 7,224.3	\$ 76.3	\$ 107.6	\$ 106.8	\$ 6,933.6
Interest payments (1)	1,982.2	324.0	638.8	630.6	388.8
Operating lease obligations (2)	513.4	79.4	143.5	104.5	186.0
Tax payable (3)	24.2	—	—	11.9	12.3
Purchase obligations (4)	194.7	103.6	86.5	4.6	—
Total contractual obligations	<u>\$ 9,938.8</u>	<u>\$ 583.3</u>	<u>\$ 976.4</u>	<u>\$ 858.4</u>	<u>\$ 7,520.7</u>

- (1) Reflects interest payments on our Credit Agreement at an assumed interest rate of one-month LIBOR of 1.80% plus 2.25% for U.S. dollar loans on our Term B-3, B-4 and B-5 facilities and 5.5% on our Senior Notes.
- (2) We are obligated under noncancelable operating leases for office space and office equipment.
- (3) Represents our obligation under the Tax Act to pay the deemed repatriation tax on certain non-US earnings over eight years.
- (4) Purchase obligations include the minimum amounts committed under contracts for goods and services.

As of December 31, 2019, our liability for uncertain tax positions and related interest and penalties payable was \$111.4 million and \$27.2 million, respectively. We are unable to reasonably estimate the timing of such liability and interest payments in individual years beyond 12 months due to uncertainties in the timing of the effective settlement of tax positions. As a result, these amounts are not included in the above contractual obligations table.

Senior Secured Credit Facilities

On April 16, 2018, in connection with our acquisition of DST, we entered into an amended and restated credit agreement with SS&C Technologies, Inc. (“SS&C”), SS&C European Holdings SARL, an indirect wholly-owned subsidiary of SS&C (“SS&C SARL”) and SS&C Technologies Holdings Europe SARL, an indirect wholly-owned subsidiary of SS&C (“SS&C Tech SARL”) as the borrowers (“Credit Agreement”).

The Credit Agreement includes four tranches of term loans (together the “Initial Term Loans”): (i) a \$518.6 million term B-1 facility which matures on July 8, 2022 for SS&C (“Term B-1 Loan”); (ii) a \$5.9 million term B-2 facility which matures on July 8, 2022 for SS&C SARL (“Term B-2 Loan”); (iii) a new \$5.046 billion term B-3 facility, which matures on April 16, 2025 for SS&C (the “Term B-3 Loan”); and (iv) a new \$1.8 billion term B-4 facility, which matures on April 16, 2025 for SS&C SARL (the “Term B-4 Loan”). In addition, the Credit Agreement has a revolving credit facility with a five-year term available for borrowings by SS&C with \$250 million in available commitments (“Revolving Credit Facility”), of which \$245.4 million was available as of December 31, 2019. The Revolving Credit Facility also contains a \$25 million letter of credit sub-facility, of which \$4.6 million was utilized as of December 31, 2019.

The majority of the initial proceeds from the Initial Term Loans was used to fund the acquisition of DST, repay certain amounts outstanding under our then-existing credit agreement (“Prior Credit Agreement”), repay all of the outstanding principal amount of our 5.875% Senior Notes due 2023 (“Prior Senior Notes”) and repay acquired debt associated with DST.

The refinancing of the Prior Credit Agreement was evaluated in accordance with FASB Accounting Standards Codification 470-50, *Debt-Modifications and Extinguishments*, for modification and extinguishment accounting. We accounted for the refinancing as a debt modification with respect to amounts that remained obligations of the same lender in the syndicate with minor changes in cash flows and as a debt extinguishment with respect to amounts that were obligations of lenders that exited the syndicate or remained in the syndicate but experienced a change in cash flows of greater than 10%. See Note 10 to our Consolidated Financial Statements for further discussion of debt.

On October 1, 2018, in connection with our acquisition of Eze, we entered into an amendment (the “Commitment Increase Amendment”) to the Credit Agreement. Pursuant to the Commitment Increase Amendment, a new \$875.0 million senior secured term B-5 facility (“Term B-5 Loan”, and together with the Initial Term Loans, the “Term Loans”) was made available to us, the proceeds of which were used to finance, in part, the Eze acquisition.

On November 16, 2018, in connection with our acquisition of Intralinks, we entered into an amendment (the “Incremental Term Loan Amendment”) to the Credit Agreement. Pursuant to the Incremental Term Loan Amendment, an additional \$1.0 billion senior secured term B-5 facility (“Term B-5 Loan”, and together with the Initial Term Loans, the “Term Loans”) was made available to us, the proceeds of which were used to finance, in part, the Intralinks acquisition.

The Term Loans and Revolving Credit Facility bear interest, at the election of the borrowers, at the base rate (as defined in the Credit Agreement) or LIBOR, plus the applicable interest rate margin for the credit facility. Amounts drawn on the Revolving Credit Facility initially bear interest at either LIBOR plus 2.25% or at the base rate plus 1.25%, and is subject to a step-down at any time our consolidated net secured leverage ratio is less than 4.75 times, to 2.0% in the case of the LIBOR margin and 1.0% in the case of the base rate margin. The Term B-1 Loan and Term B-2 Loan bear interest at either LIBOR plus 2.25% or at the base rate plus 1.25%. The Term B-3 Loan, Term B-4 Loan and Term B-5 Loan initially bear interest at either LIBOR plus 2.50% or at the base rate plus 1.50%, and are subject to a step-down at any time our consolidated net secured leverage ratio is less than 4.75 times, to 2.25% in the case of the LIBOR margin and 1.25% in the case of the base rate margin. In January 2020, we entered into an amendment to our Credit Agreement, whereby the interest rate margin applicable to the term loans was reduced from LIBOR plus 2.25% to LIBOR plus 1.75%. No changes were made to the financial covenants, outstanding principal amounts or the scheduled amortization.

As of December 31, 2019, there was \$1,982.6 million in principal amount outstanding under the Term B-3 Loan, \$1,374.7 million in principal amount outstanding under the Term B-4 Loan and \$1,841.4 million in principal amount outstanding under the Term B-5 Loan. There were no principal amounts outstanding under the Term B-1 Loan and Term B-2 Loan.

SS&C and SS&C SARL are required to make scheduled quarterly payments of 0.25% of the original principal amount of the Term B-3 Loan, Term B-4 Loan and Term B-5 Loan, with the balance due and payable on April 16, 2025. No amortization is required under the Revolving Credit Facility. We may also, from time to time in our sole discretion, purchase, redeem, or retire our existing senior notes, through tender offers, in privately negotiated or open market transactions, or otherwise.

SS&C’s and SS&C SARL’s obligations under the Term Loans are guaranteed by (i) our existing and future U.S. wholly-owned restricted subsidiaries, in the case of the Term B-3 Loan, Term B-5 Loan and the Revolving Credit Facility and (ii) our existing and future wholly-owned restricted subsidiaries, in the case of the Term B-4 Loan.

The obligations of the U.S. loan parties under the Credit Agreement are secured by substantially all of the assets of such persons (subject to customary exceptions and limitations), including a pledge of all of the capital stock of substantially all of the U.S. wholly-owned restricted subsidiaries of such persons (with customary exceptions and limitations) and 65% of the capital stock of certain foreign restricted subsidiaries of such persons (with customary exceptions and limitations). All obligations of the non-U.S. loan parties under the Credit Agreement are secured by substantially all of our and the other guarantors’ assets (subject to customary exceptions and limitations), including a pledge of all of the capital stock of substantially all of our wholly-owned restricted subsidiaries (with customary exceptions and limitations).

The Credit Agreement includes negative covenants that, among other things and subject to certain thresholds and exceptions, limit our ability and the ability of our restricted subsidiaries to incur debt or liens, make investments (including in the form of loans and acquisitions), merge, liquidate or dissolve, sell property and assets, including capital stock of our subsidiaries, pay dividends on our capital stock or redeem, repurchase or retire our capital stock, alter the business we conduct, amend, prepay, redeem or purchase subordinated debt, or engage in transactions with our affiliates. The Credit Agreement also contains customary representations and warranties, affirmative covenants and events of default, subject to customary thresholds and exceptions. In addition, the Credit Agreement contains a financial covenant for the benefit of the Revolving Credit Facility requiring us to maintain a minimum consolidated net secured leverage ratio. In addition, under the Credit Agreement, certain defaults under agreements governing other material indebtedness could result in an event of default under the Credit Agreement, in which case the lenders could elect to accelerate payments under the Credit Agreement and terminate any commitments they have to provide future borrowings.

Senior Notes

On March 28, 2019, we issued \$2.0 billion aggregate principal amount of 5.5% Senior Notes due 2027 (“Senior Notes”), the proceeds of which were used to repay a portion of the outstanding Term B-3 Loan under our existing senior secured credit facilities. The Senior Notes are guaranteed, jointly and severally, by SS&C Holdings and all of its existing and future domestic restricted subsidiaries that guarantee our existing senior secured credit facilities or certain other indebtedness. The Senior Notes are unsecured senior obligations that are equal in right of payment to all of our existing and future senior unsecured indebtedness. Interest on the Senior Notes is payable on March 30 and September 30 of each year.

At any time prior to March 30, 2022, we may, at our option, redeem the Senior Notes, in whole or in part, at a price equal to 100% of the principal amount of the Senior Notes, plus an applicable “make-whole” premium, plus accrued and unpaid interest to the redemption date. At any time on or after March 30, 2022, we may redeem some or all of the Senior Notes, in whole or in part, at the redemption prices set forth in the indenture governing the Senior Notes plus accrued and unpaid interest to the redemption date. In addition, at any time on or before March 30, 2022, we may to redeem up to 40% of the aggregate principal amount of the Senior Notes at a redemption price equal to 105.5% of the principal amount thereof, plus accrued and unpaid interest to the redemption date, with the net proceeds of one or more equity offerings.

The indenture governing the Senior Notes contains a number of covenants that restrict, subject to certain thresholds and exceptions, our ability and the ability of our domestic restricted subsidiaries to incur debt or liens, make certain investments, pay dividends, dispose of certain assets, or enter into transactions with its affiliates. Any event of default under the Credit Agreement that leads to an acceleration of those amounts due also results in a default under the indenture governing the Senior Notes.

As of December 31, 2019, there was \$2.0 billion in principal amount of Senior Notes outstanding.

On April 16, 2018, we redeemed all of the outstanding principal amount of our Prior Senior Notes utilizing a portion of the proceeds from the Initial Term Loans described above. The redemption of the Prior Senior Notes required the payment of a “make whole” premium calculated pursuant to the indenture governing the Prior Senior Notes. See Loss on extinguishment of debt within Note 10 to our Consolidated Financial Statements for further discussion. In addition, on May 1, 2018, we redeemed senior notes of DST that were acquired as a part of the acquisition of DST utilizing a portion of the proceeds of the Initial Term Loans described above. The redemption of DST’s senior notes totaled \$600.4 million, which included a “make whole” premium.

Other Indebtedness

In connection with the acquisition of DST, we assumed a mortgage, which matures in October 2020 (“U.K. Mortgage”). The outstanding amount under the U.K. Mortgage was \$22.5 million at December 31, 2019 with a fixed interest rate of 3.1%.

Covenant Compliance

Under the Revolving Credit Facility portion of the Credit Agreement, we are required to satisfy and maintain a specified financial ratio at the end of each fiscal quarter if the sum of (i) outstanding amount of all loans under the Revolving Credit Facility and (ii) all non-cash collateralized letters of credit issued under the Revolving Credit Facility in excess of \$20 million is equal to or greater than 30% of the total commitments under the Revolving Credit Facility. Our financial ratio became effective with the period ended September 30, 2018. Our ability to meet this financial ratio can be affected by events beyond our control, and we cannot assure you that we will meet this ratio. Any breach of this covenant could result in an event of default under the Credit Agreement. Upon the occurrence of any event of default under the Credit Agreement, the lenders could elect to declare all amounts outstanding under the Credit Agreement to be immediately due and payable and terminate all commitments to extend further credit. Any default and subsequent acceleration of payments under the Credit Agreement would have a material adverse effect on our results of operations, financial position and cash flows. Additionally, under the Credit Agreement, our ability to engage in activities such as incurring additional indebtedness, making investments and paying dividends is also tied to baskets and ratios based on Consolidated EBITDA.

Consolidated EBITDA is a non-GAAP financial measure used in key financial covenants contained in the Credit Agreement, which is the material facility supporting our capital structure and providing liquidity to our business. Consolidated EBITDA is defined as earnings before interest, taxes, depreciation and amortization (“EBITDA”), further adjusted to exclude unusual items and other adjustments permitted in calculating covenant compliance under the Credit Agreement. We believe that the inclusion of supplementary adjustments to EBITDA applied in presenting Consolidated EBITDA is appropriate to provide additional information to investors to demonstrate compliance with the specified financial ratio and other financial condition tests contained in the Credit Agreement.

Management uses Consolidated EBITDA to gauge the costs of our capital structure on a day-to-day basis when full financial statements are unavailable. Management further believes that providing this information allows our investors greater transparency and a better understanding of our ability to meet our debt service obligations and make capital expenditures.

Consolidated EBITDA does not represent net income or cash flow from operations as those terms are defined by generally accepted accounting principles, or GAAP, and does not necessarily indicate whether cash flows will be sufficient to fund cash needs. Further, the Credit Agreement requires that Consolidated EBITDA be calculated for the most recent four fiscal quarters. As a result,

the measure can be disproportionately affected by a particularly strong or weak quarter. Further, it may not be comparable to the measure for any subsequent four-quarter period or any complete fiscal year.

Consolidated EBITDA is not a recognized measurement under GAAP and investors should not consider Consolidated EBITDA as a substitute for measures of our financial performance and liquidity as determined in accordance with GAAP, such as net (loss) income, operating (loss) income or net cash provided by operating activities. Because other companies may calculate Consolidated EBITDA differently than we do, Consolidated EBITDA may not be comparable to similarly titled measures reported by other companies. Consolidated EBITDA has other limitations as an analytical tool, when compared to the use of net income, which is the most directly comparable GAAP financial measure, including:

- Consolidated EBITDA does not reflect the significant interest expense we incur as a result of our debt leverage;
- Consolidated EBITDA does not reflect the provision (benefit) of income tax expense in our various jurisdictions;
- Consolidated EBITDA does not reflect any attribution of costs to our operations related to our investments and capital expenditures through depreciation and amortization charges;
- Consolidated EBITDA does not reflect the cost of compensation we provide to our employees in the form of stock-based awards;
- Consolidated EBITDA does not reflect the equity in earnings of unconsolidated affiliates; and
- Consolidated EBITDA excludes expenses and income that are permitted to be excluded per the terms of our Credit Agreement, but which others may believe are normal expenses for the operation of a business.

The following is a reconciliation of net income to Consolidated EBITDA as defined in our Credit Agreement.

(in millions)	Year Ended December 31,		
	2019	2018	2017
Net income	\$ 438.5	\$ 103.2	\$ 328.9
Interest expense, net	404.9	271.0	107.4
Provision (benefit) for income taxes	93.2	21.9	(46.2)
Depreciation and amortization	775.2	518.5	237.2
EBITDA	1,711.8	914.6	627.3
Stock-based compensation	72.4	96.9	41.5
Capital-based taxes	—	—	0.3
Acquired EBITDA and cost savings (1)	49.6	523.5	4.5
Non-cash portion of straight-line rent expense	0.1	—	4.4
Loss on extinguishment of debt, net	7.1	43.3	2.3
Equity in earnings of unconsolidated affiliates, net	(3.6)	(2.1)	—
Purchase accounting adjustments (2)	14.0	17.8	4.4
ASC 606 adoption impact	19.0	40.2	—
Other (3)	7.1	170.5	15.3
Consolidated EBITDA, as defined	\$ 1,877.5	\$ 1,804.7	\$ 700.0

- (1) Acquired EBITDA reflects the EBITDA impact of significant businesses that were acquired during the period as if the acquisition occurred at the beginning of the period, as well as cost savings enacted in connection with acquisitions.
- (2) Purchase accounting adjustments include (a) an adjustment to increase revenues by the amount that would have been recognized if deferred revenue were not adjusted to fair value at the date of acquisitions and (b) an adjustment to increase personnel and commissions expense by the amount that would have been recognized if prepaid commissions and deferred personnel costs were not adjusted to fair value at the date of the acquisitions, and (c) an adjustment to increase rent expense by the amount that would have been recognized if lease obligations were not adjusted to fair value at the date of acquisitions.
- (3) Other includes expenses and income that are permitted to be excluded per the terms of our Credit Agreement from Consolidated EBITDA, a financial measure used in calculating our covenant compliance. These include expenses and income related to foreign currency transactions, investment gains and losses, facilities and workforce restructuring, legal settlements, business combinations and other items.

Our covenant requirement for net senior secured leverage ratio and the actual ratio for the year ended December 31, 2019 are as follows:

	Covenant Requirement	Actual Ratio
Maximum consolidated net secured leverage to Consolidated EBITDA ratio ⁽¹⁾	6.75x	2.70x

(1) Calculated as the ratio of consolidated net secured funded indebtedness, net of cash and cash equivalents, to Consolidated EBITDA, as defined by the Credit Agreement, for the period of four consecutive fiscal quarters ended on the measurement date. Consolidated net secured funded indebtedness is comprised of indebtedness for borrowed money, letters of credit, deferred purchase price obligations and capital lease obligations, all of which is secured by liens on our property.

Critical Accounting Policies

A number of our accounting policies require the application of significant judgment by our management, and such judgments are reflected in the amounts reported in our Consolidated Financial Statements. In applying these policies, our management uses its judgment to determine the appropriate assumptions to be used in the determination of estimates. Those estimates are based on our historical experience, terms of existing contracts, management's observation of trends in the industry, information provided by our clients and information available from other outside sources, as appropriate. On an ongoing basis, we evaluate our estimates and judgments, including those related to revenue recognition, goodwill and other intangible assets and other contingent liabilities. Actual results may differ significantly from the estimates contained in our Consolidated Financial Statements. Information about recently adopted accounting pronouncements and accounting pronouncements not yet effective is included in Note 2 to our Consolidated Financial Statements. We believe that the following are our critical accounting policies.

Accounting for investments

We have five significant types of investments: 1) investments in unconsolidated affiliates; 2) partnership interests in private equity funds; 3) investments in marketable equity securities related to our deferred compensation agreements; 4) non-marketable equity securities; and 5) seed capital investments.

The equity method of accounting is used for investments in entities, partnerships and similar interests (including investments in private equity funds for which we are a limited partner and hold a greater than 5% partnership interest in the fund) in which we have significant influence but do not control. Under the equity method, we recognize income or losses from our pro-rata share of these unconsolidated affiliates' net income or loss, which changes the carrying value of the investment of the unconsolidated affiliate.

Our investments in unconsolidated affiliates, which were recorded at fair value through the allocation of the purchase price for the acquisition of DST, are accounted for under the equity method of accounting. The carrying value of our investments in unconsolidated affiliates exceeds the proportionate share of net assets of the unconsolidated affiliates, resulting in basis differences. We recognize our proportionate share of the results of the unconsolidated affiliates and amortization expense related to basis differences in equity in earnings of unconsolidated affiliates, net on our Consolidated Statements of Comprehensive Income (Loss).

Our partnership interests in private equity funds, marketable equity securities and seed capital investments, other than those accounted for under the equity method of accounting or those that result in consolidation of the investee, are recorded at fair value, with changes in the fair value recognized in other income (expense), net on our Consolidated Statements of Comprehensive Income (Loss). Our marketable equity securities and seed capital investments have readily determinable fair values in the market. We use net asset value as a practical expedient for the fair value of partnership interests in private equity funds that are not accounted for under the equity method of accounting.

Investments in non-marketable equity securities that do not have readily determinable fair values and do not qualify for the practical expedient to measure the investment using a net asset value per share are recorded using the measurement alternative in ASU 2016-01. These investments are recorded at cost, less impairment, adjusted for observable price changes in orderly transactions for an identical or similar investment of the same issuer. At each reporting period, we assess if these investments continue to qualify for this measurement alternative. Impairment is recorded when there is evidence that the expected fair value of the investment has declined to below the recorded cost. Future adverse changes in market conditions or poor operating results of underlying investments could result in losses or an inability to recover the carrying value of the investments that may not be reflected in an investment's current carrying value, thereby possibly requiring an impairment charge in the future, which could have a material effect on our financial position.

Long-lived Assets, Intangible Assets and Goodwill

We must test goodwill annually for impairment (and in interim periods if certain events occur indicating that the carrying value of goodwill or indefinite-lived intangible assets may be impaired) by comparing the fair value of a reporting unit to its carrying value.

Judgement is required in the determination of goodwill reporting units. During the year ended December 31, 2018, our reporting unit structure changed as a result of acquisitions which we completed during the year. As of December 31, 2019 and 2018, we had two reporting units, one which includes the DST business, and one which includes the rest of our operations. To the extent that we do not achieve our revenue or operating cash flow plans or other measures of fair value decline, including external valuation assumptions, our current goodwill carrying value could be impaired. In 2017, we adopted Accounting Standards Update (“ASU”) 2017-04, *Goodwill and Other (Topic 350) – Simplifying the Test for Goodwill Impairment*, for our annual goodwill impairment test. The new guidance removed the second step of the goodwill impairment test requiring a hypothetical purchase price allocation. The first step of the impairment analysis indicated that the fair values of our reporting units significantly exceeded their carrying values at December 31, 2019.

We assess the impairment of identifiable intangibles, long-lived assets and goodwill whenever events or changes in circumstances indicate that the carrying value may not be recoverable. Factors we consider important which could trigger an impairment review include the following:

- significant underperformance relative to historical or projected future operating results;
- significant changes in the manner of our use of the acquired assets or the strategy for our overall business; and
- significant negative industry or economic trends.

When we determine that the carrying value of intangibles and long-lived assets may not be recoverable based upon the existence of one or more of the above indicators of potential impairment, we assess whether an impairment has occurred based on whether net book value of the assets exceeds related projected undiscounted cash flows from these assets. We consider a number of factors, including past operating results, budgets, economic projections, market trends and product development cycles in estimating future cash flows. Differing estimates and assumptions as to any of the factors described above could result in a materially different impairment charge, if any, and thus materially different results of operations.

Software Capitalization

Significant management judgement is required in determining which projects and costs associated with software development will be capitalized and in assigning estimated economic lives to the completed projects. Management specifically evaluates software development projects, milestones achieved and the commitments to continue funding the projects. Significant changes in any of these items may result in discontinuing capitalization of development costs, as well as immediately expensing previously capitalized costs. We review, on a quarterly basis, our capitalized software for possible impairment.

Acquisition Accounting

In connection with our acquisitions, we allocate the purchase price to the assets and liabilities we acquire, such as net tangible assets, completed technology, customer relationships, other identifiable intangible assets, deferred revenue and goodwill. We apply significant judgments and estimates in determining the fair market value of the assets acquired and their useful lives. For example, we have determined the fair value of existing client contracts based on the discounted estimated net future cash flows from such client contracts existing at the date of acquisition and the fair value of the completed technology based on the cost savings method or the relief-from-royalties method on estimated future revenues of such completed technology and assumed obsolescence factors. While actual results during the years ended December 31, 2019, 2018 and 2017 were consistent with our estimated cash flows and we did not incur any impairment charges during those years, different estimates and assumptions in valuing acquired assets could yield materially different results.

Revenue Recognition

Our revenues consist of software-enabled services and license, maintenance and related revenues.

Software-enabled services revenues, which are based on a monthly fee or are transaction-based, are recognized as the services are performed. Software-enabled services are generally provided under contracts with initial terms of one to five years that require monthly or quarterly payments, and are subject to automatic annual renewal at the end of the initial term unless terminated by either party.

We recognize software-enabled services revenues on a monthly basis as the arrangement is a single performance obligation or a stand-ready performance obligation, which in either case is comprised of a series of distinct services that are substantially the same and have the same pattern of transfer to the customer (i.e. distinct days or months of service). We apply a measure of progress

(typically time-based) to any fixed consideration and allocate variable consideration to the distinct periods of service based on usage or summarization of account information. These variable payments relate specifically to our efforts to perform the services in the period in which the fee applies. This variability is solely attributed to and resolved as a result of the transfer of these services; these fees are independent of the transfer of past or future goods or services. These fees meet the allocation objective of ASC 606 because they represent the amount of consideration we are entitled to for these services. Revenue is generally recognized over the period the services are provided, which results in revenue recognition that corresponds with the value to the client of the services transferred to date relative to the remaining services promised.

We generate revenues in the form of software license fees and related maintenance and services fees. License fees include perpetual license fees and term license fees that differ mainly in the duration over which the customer benefits from the software. Maintenance and services primarily consist of fees for maintenance services (including support and unspecified upgrades and enhancements when and if they are available) and, in some cases, professional services which focus on both deployment and training our customers to fully leverage the use of our products.

Software license revenues are recognized at the point of time when the software license has been delivered. Term license fees are typically due in annual installments at the beginning of each annual period and we record a contract asset for amounts recognized as revenue in excess of amounts billed. We recognize revenues from maintenance ratably over the term of the underlying maintenance contract term because we transfer control evenly by providing a stand-ready service. The term of the maintenance contract is usually one year. Revenues from professional services consist mostly of services provided on a time and materials basis.

In contracts with multiple performance obligations, we account for individual performance obligations separately if they are distinct. We allocate the transaction price to each performance obligation based on our relative standalone selling price out of total consideration of the contract. Standalone selling price is determined utilizing observable prices to the extent available. If the standalone selling price for a performance obligation is not directly observable, we estimate it maximizing the use of observable inputs. For maintenance and support, we determine the standalone selling price based on the price at which we separately sell a renewal contract and the economic relationship between licenses and maintenance. We primarily determine the standalone selling price for sales of licenses using the residual approach. For professional services, we determine the standalone selling prices based on the price at which we separately sell those services.

We occasionally enter into license agreements requiring significant customization of our software that are not material to our results of operations. We account for the license and professional service fees under these agreements as a single performance obligation, recognized over time using an input method during the development of the license. This method requires estimates to be made for costs to complete the agreement utilizing an estimate of development man-hours remaining. Revenue is recognized each period based on the hours incurred to date compared to the total hours expected to complete the project. Due to uncertainties inherent in the estimation process, it is at least reasonably possible that completion costs will be revised. Such revisions are recognized in the period in which the revisions are determined. Provisions for estimated losses on uncompleted contracts are determined on a contract-by-contract basis, and are made in the period in which such losses are first estimated or determined.

Depreciation of Fixed Assets

For personal property, we generally prefer to own rather than lease the property when practicable. We believe this approach provides us with better flexibility for disposing or redeploying the asset as it nears the completion of its economic life. Management judgement is required in assigning economic lives to fixed assets. Management specifically analyzes fixed asset additions, remaining net book values and gain/loss upon disposition of fixed assets to determine the appropriateness of assigned economic lives. Significant changes in any of these items may result in changes in the economic life assigned and the resulting depreciation expense.

Stock-based Compensation

Using the fair value recognition provisions of relevant accounting literature, stock-based compensation cost is measured at the grant date based on the value of the award and is recognized as expense over the appropriate service period. Determining the fair value of stock-based awards requires considerable judgment, including estimating the expected term of stock options and the expected volatility of our stock price. A deferred income tax asset is recorded over the vesting period as stock compensation expense is recorded for non-qualified stock options. The realizability of the deferred tax asset is ultimately based on the actual value of the stock-based award upon exercise. If the actual value is lower than the fair value determined on the date of grant, then there would be an income tax expense for the portion of the deferred tax asset that is not realizable.

Income Taxes

The carrying value of our deferred tax assets assumes that we will be able to generate sufficient future taxable income in certain tax jurisdictions, based on estimates and assumptions. If these estimates and related assumptions change in the future, we may be required to record additional valuation allowances against our deferred tax assets resulting in additional income tax expense in our Consolidated Statements of Comprehensive Income (Loss). On a quarterly basis, we evaluate whether deferred tax assets are realizable and assess whether there is a need for additional valuation allowances. The carrying value of our deferred tax assets and liabilities is recorded based on the statutory rates that we expect our deferred tax assets and liabilities to reverse into income. We estimate the state rate at which our deferred tax assets and liabilities will reverse based on estimates of state income apportionment for future years. Each of these estimates requires significant judgment on the part of our management. In addition, we evaluate the need to provide additional tax provisions for adjustments proposed by taxing authorities.

As of December 31, 2019, we had \$111.4 million in liabilities associated with unrecognized tax benefits. All of the unrecognized tax benefits, if recognized, would decrease our effective tax rate and increase our net income. Additionally, we recognize accrued interest and penalties relating to unrecognized tax benefits as a component of the income tax provision.

Recently Adopted Accounting Pronouncements

In February 2016, the FASB issued ASU 2016-02, *Leases (Topic 842)*. ASU 2016-02 requires lessees to recognize the following for all leases (with the exception of short-term leases) at the commencement date: (i) a lease liability, which is a lessee's obligation to make lease payments arising from a lease, measured on a discounted basis; and (ii) a right-of-use asset, which is an asset that represents the lessee's right to use, or control the use of, a specified asset for the lease term. Lessor accounting is largely unchanged under the amendments of ASU 2016-02. Additional disclosures are required to allow the user to assess the amount, timing and uncertainty of cash flows arising from leasing activities. A modified retrospective transition approach is required for leases existing at the time of adoption. In July 2018, the FASB issued ASU 2018-11, *Leases (Topic 842): Targeted Improvements*, which provides another transition method no longer requiring application to previously reported periods.

We adopted ASU 2016-02 as of January 1, 2019 using the modified retrospective transition method. Prior period information was not restated and continues to be presented under ASC 840, *Leases*. We elected the package of practical expedients permitted under the transition guidance within the new standard, which among other things, allowed us to not reassess existing contracts to determine if they contain a lease and to carry forward their historical lease classification upon transition. In addition, we will not apply the guidance of ASC 842 to leases with an initial term of 12 months or less as allowed by the standard.

Our lease portfolio primarily consists of real estate office space with lease terms ranging from 1 to 15 years. Adoption of the new standard resulted in the recording of right-of-use assets and lease payment obligations for our real estate office leases of \$387.6 million and \$417.8 million, respectively, as of January 1, 2019. The standard did not materially impact our Consolidated Statement of Comprehensive Income (Loss) or Consolidated Statement of Cash Flows. See Note 5, "Leases" for further details.

Recent Accounting Pronouncements Not Yet Effective

In June 2016, the FASB issued ASU 2016-13, *Measurement of Credit Losses on Financial Instruments*. ASU 2016-13 requires companies to measure credit losses utilizing a methodology that reflects expected credit losses and requires a consideration of a broader range of reasonable and supportable information to inform credit loss estimates. ASU 2016-13 is effective for us for our first quarter of fiscal 2020. Application of the ASU is through a cumulative-effect adjustment to retained earnings as of the effective date. This ASU is not expected to have a material impact on our financial position, results of operations or cash flows.

In December 2019, the FASB issued ASU 2019-12, *Simplifying the Accounting for Income Taxes (Topic 740)*. ASU 2019-12 simplifies the accounting for income taxes by eliminating certain exceptions to the guidance in ASC 740 related to the approach for intraperiod tax allocation, the methodology for calculating income taxes in an interim period and the recognition of deferred tax liabilities for outside basis differences. The standard also simplifies aspects of the accounting for franchise taxes and enacted changes in tax laws or rates and clarifies the accounting for transactions that result in a step-up in the tax basis of goodwill. ASU 2019-12 is effective for us for our first quarter of fiscal 2021. Certain amendments in this update must be applied on a prospective basis, certain amendments must be applied on a retrospective basis and certain amendments must be applied on a modified retrospective basis through a cumulative-effect adjustment to retained earnings as of the effective date. Early adoption is permitted. We are currently evaluating the impact of the pending adoption of ASU 2019-12 on our Consolidated Financial Statements.

Item 7A. QUANTITATIVE AND QUALITATIVE DISCLOSURES ABOUT MARKET RISK

We do not use derivative financial instruments for trading or speculative purposes. We have invested our available cash in short-term, highly liquid financial instruments, having initial maturities of three months or less. When necessary, we have borrowed to fund acquisitions.

Interest rate risk

We derive service revenues from investment earnings related to cash balances maintained in bank accounts on which we are the agent for clients. The balances maintained in the bank accounts will fluctuate. For 2019, there were average daily cash balances of approximately \$2.3 billion maintained in such accounts. We estimate that a 1% change in interest rates would equate to approximately \$9.0 million of net income on an annual basis. The effect of changes in interest rates attributable to earnings derived from cash balances we hold for clients is partially offset by changes in interest rates on our variable debt.

At December 31, 2019, we had total debt of \$7,224.3 million, including \$5,198.7 million of variable interest rate debt. As of December 31, 2019, a 1% change in LIBOR would result in a change in interest expense of approximately \$52.0 million per year.

Equity price risk

We have exposure to equity price risk as a result of our investments in equity securities. Equity price risk results from changes in the level or volatility of equity prices which affect the value of equity securities or instruments that derive their value from such securities or indexes. The fair value of our investments that are subject to equity price risk as of December 31, 2019 was approximately \$93.9 million. The impact of a 10% change in fair value of these investments would have been approximately \$6.9 million to net income. Changes in equity values of our investments could have a material effect on our results of operations and our financial position.

Foreign currency exchange rate risk

During 2019, approximately 27% of our revenues were from clients located outside the United States. A portion of the revenues from clients located outside the U.S. is denominated in foreign currencies, primarily the British pound. While revenues and expenses of our foreign operations are primarily denominated in their respective local currencies, some subsidiaries do enter into certain transactions in currencies that are different from their local currency. These transactions consist primarily of cross-currency intercompany balances and trade receivables and payables. As a result of these transactions, we have exposure to changes in foreign currency exchange rates that result in foreign currency transaction gains and losses, which we report in other income (expense). These outstanding amounts were not material for the year ended December 31, 2019. The amount of these balances can fluctuate in the future as we bill customers and buy products or services in currencies other than our functional currency, which could increase our exposure to foreign currency exchange rates. We continue to monitor our exposure to foreign exchange rates as a result of our acquisitions and changes in our operations. We do not enter into any market risk sensitive instruments for trading purposes.

The foregoing risk management discussion and the effect thereof are forward-looking statements. Actual results in the future may differ materially from these projected results due to actual developments in global financial markets. The analytical methods used by us to assess and minimize risk discussed above should not be considered projections of future events or losses.

Item 8. FINANCIAL STATEMENTS AND SUPPLEMENTARY DATA

Index to Consolidated Financial Statements

	<u>Page</u>
Report of Independent Registered Public Accounting Firm	51
Consolidated Balance Sheets as of December 31, 2019 and 2018	54
Consolidated Statements of Comprehensive Income (Loss) for the years ended December 31, 2019, 2018 and 2017	55
Consolidated Statements of Cash Flows for the years ended December 31, 2019, 2018 and 2017	56
Consolidated Statements of Changes in Stockholders' Equity for the years ended December 31, 2019, 2018 and 2017	57
Notes to Consolidated Financial Statements	58

Financial statement schedules are not submitted because they are not applicable, not required or the information is included in our Consolidated Financial Statements.

REPORT OF INDEPENDENT REGISTERED PUBLIC ACCOUNTING FIRM

To the Board of Directors and Stockholders of SS&C Technologies Holdings, Inc.:

Opinions on the Financial Statements and Internal Control over Financial Reporting

We have audited the accompanying consolidated balance sheets of SS&C Technologies Holdings, Inc. and its subsidiaries (the "Company") as of December 31, 2019, and 2018, and the related consolidated statements of comprehensive income (loss), changes in stockholders' equity and cash flows for each of the three years in the period ended December 31, 2019, including the related notes (collectively referred to as the "consolidated financial statements"). We also have audited the Company's internal control over financial reporting as of December 31, 2019, based on criteria established in Internal Control - Integrated Framework (2013) issued by the Committee of Sponsoring Organizations of the Treadway Commission (COSO).

In our opinion, the consolidated financial statements referred to above present fairly, in all material respects, the financial position of the Company as of December 31, 2019 and 2018, and the results of its operations and its cash flows for each of the three years in the period ended December 31, 2019 in conformity with accounting principles generally accepted in the United States of America. Also in our opinion, the Company maintained, in all material respects, effective internal control over financial reporting as of December 31, 2019, based on criteria established in Internal Control - Integrated Framework (2013) issued by the COSO.

Changes in Accounting Principles

As discussed in Note 2 to the consolidated financial statements, the Company changed the manner in which it accounts for leases in 2019 and the manner in which it accounts for revenues from contracts with customers in 2018.

Basis for Opinions

The Company's management is responsible for these consolidated financial statements, for maintaining effective internal control over financial reporting, and for its assessment of the effectiveness of internal control over financial reporting, included in the Report of Management on Internal Control Over Financial Reporting appearing under Item 9A. Our responsibility is to express opinions on the Company's consolidated financial statements and on the Company's internal control over financial reporting based on our audits. We are a public accounting firm registered with the Public Company Accounting Oversight Board (United States) (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 audits to obtain reasonable assurance about whether the consolidated financial statements are free of material misstatement, whether due to error or fraud, and whether effective internal control over financial reporting was maintained in all material respects.

Our audits of the consolidated financial statements 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. 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 audits also included performing such other procedures as we considered necessary in the circumstances. We believe that our audits provide a reasonable basis for our opinions.

As described in the Report of Management on Internal Control Over Financial Reporting, management has excluded Algorithmics from its assessment of internal control over financial reporting as of December 31, 2019 because it was acquired by the Company in a purchase business combination during 2019. We have also excluded Algorithmics from our audit of internal control over financial reporting. Algorithmics is a wholly-owned subsidiary whose total assets and total revenues excluded from management's assessment and our audit of internal control over financial reporting each represent less than 1% of the related consolidated financial statement amounts as of and for the year ended December 31, 2019.

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 (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 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 (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. 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.

Critical Audit Matters

The critical audit matter communicated below is a matter arising from the current period audit of the consolidated financial statements that was communicated or required to be communicated to the audit committee and that (i) relates to accounts or disclosures that are material to the consolidated financial statements and (ii) involved our especially challenging, subjective, or complex judgments. The communication of critical audit matters does not alter in any way our opinion on the consolidated financial statements, taken as a whole, and we are not, by communicating the critical audit matter below, providing a separate opinion on the critical audit matter or on the accounts or disclosures to which it relates.

Goodwill Impairment Assessment – DST Reporting Unit

As described in Notes 2 and 9 to the consolidated financial statements, the Company's consolidated goodwill balance was \$7,959.9 million as of December 31, 2019. Management tests goodwill annually for impairment as of December 31 and in interim periods if certain events occur or circumstances change that would more likely than not reduce the fair value of a reporting unit below its carrying amount. Management measures the fair value of the Company's reporting units utilizing the income method. Significant judgments required to estimate the fair value of the Company's reporting units include determining appropriate discount rates and estimating the margin on the Company's earnings before income taxes, depreciation, amortization and stock-based compensation.

The principal considerations for our determination that performing procedures relating to the goodwill impairment assessment of the DST reporting unit is a critical audit matter are there was significant judgment by management when developing the fair value measurement of the reporting unit. This in turn led to a high degree of auditor judgment, subjectivity and effort in performing procedures and evaluating management's determination of future cash flows and significant assumptions, including the discount rate and the margin on the Company's earnings before income taxes, depreciation, amortization and stock-based compensation. In addition, the audit effort involved the use of professionals with specialized skill and knowledge to assist in performing these procedures and evaluating the audit evidence obtained.

Addressing the matter involved performing procedures and evaluating audit evidence in connection with forming our overall opinion on the consolidated financial statements. These procedures included testing the effectiveness of controls relating to management's quantitative goodwill impairment assessment, including controls over the determination of the fair value of the Company's reporting units. These procedures also included, among others, testing management's process for developing the fair value estimate of the DST reporting unit; evaluating the appropriateness of the income method; testing the completeness, accuracy, and relevance of underlying data used in the income method; and evaluating the significant assumptions used by management, including the discount rate and the margin on the Company's earnings before income taxes, depreciation, amortization and stock-based compensation. Professionals with specialized skill and knowledge were used to assist in the evaluation of the income method and the discount rate. Evaluating management's assumptions related to the margin on the Company's earnings before income taxes, depreciation, amortization and stock-based compensation involved evaluating whether the assumptions used by management were reasonable considering (i) the current and past performance of the reporting unit, (ii) the consistency with external market and industry data, and (iii) whether the assumptions were consistent with evidence obtained in other areas of the audit.

/s/ PricewaterhouseCoopers LLP

Hartford, Connecticut
February 28, 2020

We have served as the Company's auditor since 1995.

SS&C TECHNOLOGIES HOLDINGS, INC. AND SUBSIDIARIES
CONSOLIDATED BALANCE SHEETS
(in millions, except per share data)

	December 31, 2019	December 31, 2018
Assets		
Current assets:		
Cash and cash equivalents	\$ 152.8	\$ 166.7
Funds receivable and funds held on behalf of clients	1,729.9	1,014.7
Accounts receivable, net of allowance for doubtful accounts of \$13.2 and \$9.4, respectively (Note 3)	669.7	681.7
Contract asset	20.0	18.5
Prepaid expenses and other current assets	204.5	160.1
Restricted cash and cash equivalents	9.0	6.4
Total current assets	2,785.9	2,048.1
Property, plant and equipment, net (Note 4)	466.4	553.2
Operating lease right-of-use assets (Note 5)	375.3	—
Investments (Note 6)	160.1	190.5
Unconsolidated affiliates (Note 7)	234.8	239.3
Contract asset	78.6	31.5
Goodwill (Note 9)	7,959.9	7,858.0
Intangible and other assets, net of accumulated amortization of \$2,022.0 and \$1,360.2, respectively (Note 9)	4,680.1	5,186.9
Total assets	\$ 16,741.1	\$ 16,107.5
Liabilities and Stockholders' Equity		
Current liabilities:		
Current portion of long-term debt (Note 10)	\$ 76.3	\$ 87.5
Client funds obligations	1,729.9	1,014.7
Accounts payable	36.9	41.4
Income taxes payable	13.3	11.1
Accrued employee compensation and benefits	290.6	322.0
Interest payable	27.6	0.2
Other accrued expenses	268.4	199.2
Deferred revenue	333.2	245.7
Total current liabilities	2,776.2	1,921.8
Long-term debt, net of current portion (Note 10)	7,077.8	8,168.5
Operating lease liabilities (Note 5)	348.6	—
Other long-term liabilities	333.7	235.5
Deferred income taxes	1,088.7	1,201.7
Total liabilities	11,625.0	11,527.5
Commitments and contingencies (Note 17)		
Stockholders' equity (Note 11):		
Preferred stock, \$0.01 par value per share, 5.0 million shares authorized; no shares issued	—	—
Class A non-voting common stock, \$0.01 par value per share, 5.0 million shares authorized; no shares issued	—	—
Common stock, \$0.01 par value per share, 400.0 million shares authorized; 257.6 million shares and 252.4 million shares issued, respectively, and 254.6 million shares and 250.8 million shares outstanding, respectively	2.6	2.5
Additional paid-in capital	4,266.9	4,091.4
Accumulated other comprehensive loss	(253.0)	(343.0)
Retained earnings	1,177.9	847.1
	5,194.4	4,598.0
Less: cost of common stock in treasury, 2.9 and 1.6 million shares, respectively	(78.3)	(18.0)
Total stockholders' equity	5,116.1	4,580.0
Total liabilities and stockholders' equity	\$ 16,741.1	\$ 16,107.5

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

SS&C TECHNOLOGIES HOLDINGS, INC. AND SUBSIDIARIES
CONSOLIDATED STATEMENTS OF COMPREHENSIVE INCOME (LOSS)
(in millions, except per share data)

	Year Ended December 31,		
	2019	2018	2017
Revenues:			
Software-enabled services	\$ 3,869.2	\$ 2,798.9	\$ 1,114.0
License, maintenance and related	763.7	622.2	561.3
Total revenues	<u>4,632.9</u>	<u>3,421.1</u>	<u>1,675.3</u>
Cost of revenues:			
Software-enabled services	2,305.7	1,753.0	628.1
License, maintenance and related	306.0	298.1	258.3
Total cost of revenues	<u>2,611.7</u>	<u>2,051.1</u>	<u>886.4</u>
Gross profit	<u>2,021.2</u>	<u>1,370.0</u>	<u>788.9</u>
Operating expenses:			
Selling and marketing	353.9	211.0	118.5
Research and development	383.7	318.2	153.3
General and administrative	369.2	313.9	119.6
Transaction expenses	—	97.8	0.6
Total operating expenses	<u>1,106.8</u>	<u>940.9</u>	<u>392.0</u>
Operating income	914.4	429.1	396.9
Interest income	4.7	9.1	1.2
Interest expense	(409.6)	(280.1)	(108.6)
Other income (expense), net	25.7	8.2	(4.5)
Equity in earnings of unconsolidated affiliates, net	3.6	2.1	—
Loss on extinguishment of debt, net	(7.1)	(43.3)	(2.3)
Income before income taxes	531.7	125.1	282.7
Provision (benefit) for income taxes (Note 16)	93.2	21.9	(46.2)
Net income	<u>\$ 438.5</u>	<u>\$ 103.2</u>	<u>\$ 328.9</u>
Basic earnings per share			
Basic earnings per share	\$ 1.73	\$ 0.44	\$ 1.60
Diluted earnings per share			
Diluted earnings per share	\$ 1.66	\$ 0.42	\$ 1.55
Basic weighted average number of common shares outstanding			
Basic weighted average number of common shares outstanding	252.9	232.5	204.9
Diluted weighted average number of common and common equivalent shares outstanding			
Diluted weighted average number of common and common equivalent shares outstanding	264.2	243.7	211.6
Net income	\$ 438.5	\$ 103.2	\$ 328.9
Other comprehensive income (loss), net of tax:			
Change in unrealized loss on interest rate swaps	(2.8)	—	—
Foreign currency exchange translation adjustment	92.8	(260.3)	56.4
Total comprehensive income (loss), net of tax	<u>90.0</u>	<u>(260.3)</u>	<u>56.4</u>
Comprehensive income (loss)	<u>\$ 528.5</u>	<u>\$ (157.1)</u>	<u>\$ 385.3</u>

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

SS&C TECHNOLOGIES HOLDINGS, INC. AND SUBSIDIARIES
CONSOLIDATED STATEMENTS OF CASH FLOWS
(in millions)

	Year Ended December 31,		
	2019	2018	2017
Cash flow from operating activities:			
Net income	\$ 438.5	\$ 103.2	\$ 328.9
Adjustments to reconcile net income to net cash provided by operating activities:			
Depreciation and amortization	775.2	518.5	237.2
Equity in earnings of unconsolidated affiliates, net	(3.6)	(2.1)	—
Cash distributions received from unconsolidated affiliates	2.5	4.2	—
Stock-based compensation expense	72.4	96.9	41.5
Net gains on investments	(35.1)	(0.9)	—
Amortization and write-offs of loan origination costs and original issue discounts	28.4	13.6	10.5
Loss on extinguishment of debt, net	—	43.3	2.3
Loss on sale or disposition of property and equipment	2.6	0.3	0.9
Deferred income taxes	(87.1)	(105.8)	(152.0)
Provision for doubtful accounts	6.2	4.0	2.4
Changes in operating assets and liabilities, excluding effects from acquisitions:			
Accounts receivable	9.9	50.4	(1.8)
Prepaid expenses and other assets	49.1	31.9	(7.3)
Contract assets	(48.1)	(22.3)	—
Accounts payable	(0.7)	(91.0)	13.8
Accrued expenses and other liabilities	(43.2)	(2.9)	(14.8)
Income taxes prepaid and payable	(35.0)	(17.4)	45.6
Deferred revenue	196.3	16.2	(35.4)
Net cash provided by operating activities	<u>1,328.3</u>	<u>640.1</u>	<u>471.8</u>
Cash flow from investing activities:			
Cash paid for business acquisitions, net of cash acquired	(94.1)	(7,066.7)	(17.4)
Additions to property and equipment	(63.0)	(33.6)	(35.5)
Proceeds from sale of property and equipment	6.2	9.7	—
Additions to capitalized software	(67.4)	(55.5)	(10.4)
Investments in securities	(0.3)	(16.4)	—
Proceeds from sales / maturities of investments	65.1	45.1	—
Distributions received from unconsolidated affiliates	2.8	7.8	—
Collection of other non-current receivables	10.2	7.0	—
Net cash used in investing activities	<u>(140.5)</u>	<u>(7,102.6)</u>	<u>(63.3)</u>
Cash flow from financing activities:			
Cash received from debt borrowings, net of original issue discount	2,241.0	8,744.0	45.0
Repayments of debt and acquired debt	(3,364.8)	(3,141.0)	(512.5)
Fees paid for debt extinguishment and refinancing activities	(6.1)	(86.4)	(1.5)
Net increase in client funds obligations	681.6	604.8	—
Proceeds from exercise of stock options	125.7	84.9	60.2
Withholding taxes paid related to equity award net share settlement	(22.8)	(17.5)	(4.8)
Proceeds from common stock issuance, net	—	1,399.1	—
Purchase of common stock for treasury	(60.3)	—	—
Dividends paid on common stock	(107.7)	(70.9)	(54.4)
Net cash (used in) provided by financing activities	<u>(513.4)</u>	<u>7,517.0</u>	<u>(468.0)</u>
Effect of exchange rate changes on cash, cash equivalents and restricted cash	1.7	(5.9)	4.5
Net increase (decrease) in cash, cash equivalents and restricted cash	676.1	1,048.6	(55.0)
Cash, cash equivalents and restricted cash, beginning of period	<u>1,113.3</u>	<u>64.7</u>	<u>119.7</u>
Cash, cash equivalents and restricted cash and cash equivalents, end of period	<u>\$ 1,789.4</u>	<u>\$ 1,113.3</u>	<u>\$ 64.7</u>
Reconciliation of cash, cash equivalents and restricted cash and cash equivalents:			
Cash and cash equivalents	\$ 152.8	\$ 166.7	\$ 64.1
Restricted cash and cash equivalents	9.0	6.4	0.6
Funds receivable and funds held on behalf of clients	1,627.6	940.2	—
	<u>\$ 1,789.4</u>	<u>\$ 1,113.3</u>	<u>\$ 64.7</u>
Supplemental disclosure of cash paid for:			
Interest	\$ 353.7	\$ 249.8	\$ 102.7
Income taxes, net of refunds	\$ 222.7	\$ 143.4	\$ 67.6
Supplemental disclosure of non-cash investing activities:			
Property and equipment acquired through tenant improvement allowances	\$ 2.8	\$ 0.7	\$ 10.3

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

SS&C TECHNOLOGIES HOLDINGS, INC. AND SUBSIDIARIES
CONSOLIDATED STATEMENTS OF CHANGES IN STOCKHOLDERS' EQUITY
FOR THE YEARS ENDED DECEMBER 31, 2019, 2018 AND 2017
(in millions, except per share data)

	Common Stock		Additional Paid-in Capital	Retained Earnings	Accumulated Other Comprehensive (Loss) Income	Treasury Stock	Total Stockholders' Equity
	Number of Issued Shares	Amount					
Balance, at December 31, 2016	204.6	\$ 2.1	\$ 1,921.3	\$ 492.4	\$ (139.1)	\$ (18.0)	\$ 2,258.7
Net income	—	—	—	328.9	—	—	328.9
Foreign exchange translation adjustment (Note 11)	—	—	—	—	56.4	—	56.4
Stock-based compensation expense (Note 13)	—	—	41.4	—	—	—	41.4
Exercise of options, net of withholding taxes (Note 13)	3.5	—	55.4	—	—	—	55.4
Dividends declared - \$0.265 per share (Note 11)	—	—	—	(54.4)	—	—	(54.4)
Balance, at December 31, 2017	208.1	\$ 2.1	\$ 2,018.1	\$ 766.9	\$ (82.7)	\$ (18.0)	\$ 2,686.4
Net income	—	—	—	103.2	—	—	103.2
Foreign exchange translation adjustment (Note 11)	—	—	—	—	(260.3)	—	(260.3)
Stock-based compensation expense (Note 13)	—	—	91.1	—	—	—	91.1
Exercise of options, net of withholding taxes (Note 13)	4.1	—	67.4	—	—	—	67.4
Non-cash purchase price consideration (Note 8)	—	—	48.1	—	—	—	48.1
Cumulative effect of accounting change (Note 12)	—	—	—	47.9	—	—	47.9
Issuance of common stock (Note 11)	40.2	0.4	1,866.7	—	—	—	1,867.1
Dividends declared - \$0.30 per share (Note 11)	—	—	—	(70.9)	—	—	(70.9)
Balance, at December 31, 2018	252.4	\$ 2.5	\$ 4,091.4	\$ 847.1	\$ (343.0)	\$ (18.0)	\$ 4,580.0
Net income	—	—	—	438.5	—	—	438.5
Foreign exchange translation adjustment (Note 11)	—	—	—	—	92.8	—	92.8
Net change in interest rate swaps (Note 11)	—	—	—	—	(2.8)	—	(2.8)
Stock-based compensation expense (Note 13)	—	—	72.4	—	—	—	72.4
Exercise of options, net of withholding taxes (Note 13)	5.2	0.1	102.8	—	—	—	102.9
Dividends declared - \$0.425 per share (Note 11)	—	—	0.3	(107.7)	—	—	(107.4)
Purchase of common stock (Note 11)	—	—	—	—	—	(60.3)	(60.3)
Balance, at December 31, 2019	257.6	\$ 2.6	\$ 4,266.9	\$ 1,177.9	\$ (253.0)	\$ (78.3)	\$ 5,116.1

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

SS&C Technologies Holdings, Inc., or “Holdings”, is our top-level holding company. SS&C Technologies, Inc., or “SS&C,” is our primary operating company and a wholly-owned subsidiary of SS&C Technologies Holdings, Inc. “We,” “us,” “our,” and the “Company” means SS&C Technologies Holdings, Inc. and its consolidated subsidiaries, including SS&C.

Note 1—Organization

We provide software products and software-enabled services to the financial services and healthcare industries, primarily in North America. We also have operations in Europe, Asia, Australia, South America and Africa. Our portfolio of products and software-enabled services allows our financial services clients to automate and integrate front-office functions such as trading and modeling, middle-office functions such as portfolio management and reporting and back-office functions such as accounting, performance measurement, reconciliation, reporting, processing and clearing. Our products and software-enabled services in the healthcare industry support claims adjudication, benefit management, care management and business intelligence services.

Note 2—Summary of Significant Accounting Policies

Use of Estimates

The preparation of the Consolidated Financial Statements in conformity with generally accepted accounting principles (“GAAP”) requires management to make estimates and assumptions that affect the reported amounts of assets and liabilities and 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. Estimates are used for, but not limited to, collectability of accounts receivable, valuation of non-marketable securities, costs to complete certain contracts, valuation of acquired assets and liabilities, valuation of stock options, income tax accruals and the value of deferred tax assets and liabilities. Estimates are also used to determine the remaining economic lives and carrying value of fixed assets, goodwill and intangible assets. Actual results could differ from those estimates.

Principles of Consolidation

The Consolidated Financial Statements include the accounts of us and our subsidiaries. All significant accounts, transactions and profits between the consolidated companies have been eliminated in consolidation. Certain prior year balances have been reclassified to conform to the current year presentation. Such reclassifications did not affect total revenues, operating income or net income. We consolidate any entity in which we have a controlling financial interest. Under the voting interest model, generally the investor that has voting control (usually more than 50% of an entity’s voting interests) consolidates the entity. Under the variable interest entity (“VIE”) model, the party that has the power to direct the entity’s most significant economic activities and the ability to participate in the entity’s economics consolidates the entity. An entity is considered a VIE if it possesses one of the following characteristics: 1) the entity is thinly capitalized; 2) residual equity holders do not control the entity; 3) equity holders are shielded from economic losses; 4) equity holders do not participate fully in an entity’s residual economics; and 5) the entity was established with non-substantive voting interests. Our investments in private equity funds meet the definition of a VIE; however, the private equity fund investments are not consolidated as we do not have the power to direct the entities’ most significant economic activities.

We are the lessee in a series of operating leases covering a large portion of our Kansas City, Missouri-based leased office facilities. The lessors are generally joint ventures (in which we have 50% ownership) that have been established specifically to purchase, finance and engage in leasing activities with the joint venture partners and unrelated third parties. Our analysis of our real estate joint ventures for all periods presented indicate that none qualified as a VIE and, accordingly, they have not been consolidated.

Unconsolidated investments in entities over which we do not have control but have the ability to exercise influence over operating and financial policies, if any, are accounted for under the equity method of accounting. Earnings and losses from such investments are recorded on a pre-tax basis, if any.

Revenue Recognition

We account for the recognition of our revenue in accordance with the relevant accounting literature, primarily Accounting Standards Update 2014-09, *Revenue from Contracts with Customers (ASC 606)*. Our sources of revenue are described below.

Software-enabled Services Revenue

We primarily offer software-enabled outsourcing services in which we utilize our own software to offer comprehensive fund administration services for alternative investment managers, including fund manager services, transfer agency services, funds-of-funds services, tax processing and accounting. We also use our own software applications to provide healthcare organizations a variety of

medical and pharmacy benefit solutions to satisfy their information processing, quality of care, cost management concerns and payment integrity programs. Our healthcare solutions include claims adjudication, benefit management, care management, business intelligence and other ancillary services. We also offer subscription-based on-demand software applications that are managed and hosted at our facilities. The software-enabled services arrangements provide an alternative for clients who do not wish to install, run and maintain complicated financial software. Under these arrangements, the client does not have the right to take possession of the software, rather, we agree to provide access to our applications, remote use of our equipment to process transactions, access to client's data stored on our equipment and connectivity between our environment and the client's computing systems.

Software-enabled services are generally provided under contracts with initial terms of one to five years that require monthly or quarterly payments, and are subject to automatic annual renewal at the end of the initial term unless terminated by either party.

In software-enabled services arrangements, the arrangement is a single performance obligation or a stand-ready performance obligation, which in either case is comprised of a series of distinct services that are substantially the same and have the same pattern of transfer to the customer (i.e. distinct days or months of service). We apply a measure of progress (typically time-based) to any fixed consideration and allocate variable consideration to the distinct periods of service based on usage or summarization of account information. These variable payments relate specifically to our efforts to perform the services in the period in which the fee applies. This variability is solely attributed to and resolved as a result of the transfer of these services; these fees are independent of the transfer of past or future goods or services. These fees meet the allocation objective of ASC 606 because they represent the amount of consideration we are entitled to for these services. Revenue is generally recognized over the period the services are provided, which results in revenue recognition that corresponds with the value to the client of the services transferred to date relative to the remaining services promised.

For our software-enabled services contracts, which are cancelable with 90 days' notice or meet the allocation objective for a series of performance obligations under ASC 606, we have not disclosed the transaction price for the remaining performance obligations as of the end of each reporting period or when we expect to recognize this revenue.

License, Maintenance and Related Revenue Agreements

We generate revenues in the form of software license fees and related maintenance and services fees. License fees include perpetual license fees and term license fees that differ mainly in the duration over which the customer benefits from the software. Maintenance and services primarily consist of fees for maintenance services (including support and unspecified upgrades and enhancements when and if they are available) and, in some cases, professional services which focus on both deployment and training our customers to fully leverage the use of our products.

Under ASC 606, we identify a contract with a customer, we identify the performance obligations in the contract, we determine the transaction price, we allocate the transaction price to each performance obligation in the contract and recognize revenues when (or as) we satisfy a performance obligation.

Software license performance obligations are functional intellectual property that are distinct as the user can benefit from the software on its own as defined under ASC 606. Software license revenues are recognized at the point of time when the software license has been delivered. Term license fees are typically due in annual installments at the beginning of each annual period and we record a contract asset for amounts recognized as revenue in excess of amounts billed.

We recognize revenues from maintenance ratably over the term of the underlying maintenance contract term because we transfer control evenly by providing a stand-ready service. The term of the maintenance contract is usually one year. Renewals of maintenance contracts create new performance obligations that are satisfied over the term with the revenues recognized ratably over the term.

Revenues from professional services consist mostly of services provided on a time and materials basis. The performance obligations are satisfied, and revenues are recognized, over time as the services are provided.

In contracts with multiple performance obligations, we account for individual performance obligations separately if they are distinct. We allocate the transaction price to each performance obligation based on our relative standalone selling price out of total consideration of the contract. Standalone selling price is determined utilizing observable prices to the extent available. If the standalone selling price for a performance obligation is not directly observable, we estimate it maximizing the use of observable inputs. For maintenance and support, we determine the standalone selling price based on the price at which we separately sell a renewal contract and the economic relationship between licenses and maintenance. We primarily determine the standalone selling

price for sales of licenses using the residual approach. For professional services, we determine the standalone selling prices based on the price at which we separately sell those services.

We occasionally enter into license agreements requiring significant customization of our software that are not material to our results of operations. We account for the license and professional service fees under these agreements as a single performance obligation, recognized over time using an input method during the development of the license. This method requires estimates to be made for costs to complete the agreement utilizing an estimate of development man-hours remaining. Revenue is recognized each period based on the hours incurred to date compared to the total hours expected to complete the project. Due to uncertainties inherent in the estimation process, it is at least reasonably possible that completion costs will be revised. Such revisions are recognized in the period in which the revisions are determined. Provisions for estimated losses on uncompleted contracts are determined on a contract-by-contract basis, and are made in the period in which such losses are first estimated or determined.

We do not account for significant financing components if the period between when we transfer the promised product or service to the client and when the client pays for that product or service will be one year or less. We record revenue net of any taxes assessed by governmental authorities.

Accounts Receivable, net is primarily comprised of billed and unbilled receivables for which we have an unconditional right to consideration, net of an allowance for doubtful accounts.

Pre-adoption of ASC 606

We adopted ASC 606 using the modified retrospective method and as such, comparative results for the year ended December 31, 2017 were not retrospectively adjusted. For the year ended December 31, 2017, we recognized revenue under ASC 605 and ASC 985. Specifically, the software-enabled services revenues were recognized on a monthly basis as the services were provided, when persuasive evidence of an arrangement existed, the price was fixed or determinable and collectability was reasonably assured. Maintenance revenues were recognized ratably over the term of the maintenance agreement. Term license arrangements, many of which included bundled maintenance services, did not have vendor-specific objective evidence for the maintenance element and therefore the total term license fee was recognized ratably over the contractual term of the arrangement. We also recognized perpetual license revenues generally upon delivery of each of the related products and receipt of a signed contract, provided that collection was probable and all other revenue recognition criteria was met. Professional services revenues were generally recognized over the period during which the services were performed.

Costs of Revenues

Costs of revenues include all costs, including depreciation and amortization, incurred to produce revenues. Incremental costs of obtaining a contract (e.g., sales commissions) are capitalized and amortized on a basis consistent with the pattern of transfer of goods or services to the customer to which the asset relates over the expected customer relationship period if we expect to recover those costs. Prior to the adoption of ASC 606, we expensed these costs over the length of the initial contract excluding any renewals. The expected customer relationship period is determined based on average historical customer relationship periods, including expected renewals. Expected renewal periods are only included in the expected customer relationship period if commission amounts paid upon renewal are not commensurate with amounts paid on the initial contract. Incremental costs of obtaining a contract include only those costs we incur to obtain a contract that we would not have incurred if the contract had not been obtained. We have determined that certain commissions programs meet the requirements to be capitalized. Certain sales commissions associated with multi-year contracts are subject to an employee service requirement. As an action other than each party approving the contract is required to trigger payment of these sales commissions, they are not considered incremental costs to obtain a contract and are expensed as incurred. These costs are included in selling and marketing and general and administrative expenses. We expense sales commissions as incurred when the amortization period would have been one year or less.

Research and Development

Research and development costs associated with computer software are charged to expense as incurred. Capitalization of internally developed computer software costs in the case of software to be sold begins upon the establishment of technological feasibility based on a working model. Capitalization of internally developed computer software costs in the case of internal use software begins when management authorizes and commits funding to a project and the preliminary design stage has been completed.

Our policy is to amortize these costs upon a product's general release to the client. Amortization of capitalized software costs is calculated by the greater of (a) the ratio that current gross revenues for a product bear to the total of current and anticipated future

gross revenues for that product or (b) the straight-line method over the remaining estimated economic life of the product, including the period being reported on, typically two to five years. It is reasonably possible that those estimates of anticipated future gross revenues, the remaining estimated economic life of the product, or both could be reduced significantly due to competitive pressures.

Stock-based Compensation

Using the fair value recognition provisions of relevant accounting literature, stock-based compensation cost is measured at the grant date based on the estimated fair value of the award and is recognized as expense over the appropriate service period. Determining the fair value of stock-based awards requires considerable judgment, including estimating the expected term of stock options and the expected volatility of our stock price. Differences between actual results and these estimates could have a material effect on our financial results. Forfeitures are accounted for as they occur. A deferred income tax asset is recorded over the vesting period as stock compensation expense is recorded for non-qualified option awards. The realizability of the deferred tax asset is ultimately based on the actual value of the stock-based award upon exercise. If the actual value is lower than the fair value determined on the date of grant, then there would be an income tax expense for the portion of the deferred tax asset that is not realizable.

Transaction Expenses

Transaction expenses are those costs that are directly related to our acquisition of DST Systems, Inc. (“DST”), as described in Note 8, “Acquisitions.” Transaction expenses consist primarily of certain costs associated with the amendment and restatement of our Credit Agreement, as described in Note 10, “Debt”, investment banker advisory fees, legal fees and other fees.

Income Taxes

We account for income taxes in accordance with the relevant accounting literature. An asset and liability approach is used to recognize deferred tax assets and liabilities for the future tax consequences of items that are recognized in our financial statements and tax returns in different years. A valuation allowance is established against net deferred tax assets if, based on the weight of available evidence, it is more likely than not that some or all of the net deferred tax assets will not be realized.

We account for uncertain tax positions using a two-step approach. The first step is to evaluate the tax position for recognition by determining if the weight of available evidence indicates it is more likely than not that the position will be sustained on audit, including resolution of related appeals or litigation processes, if any. The second step is to measure the tax benefit as the largest amount which is more than 50% likely of being realized upon ultimate settlement. We consider many factors when evaluating and estimating tax positions and tax benefits, which may require periodic adjustments and which may not accurately forecast actual outcomes.

Cash and Cash Equivalents

We consider all highly liquid marketable securities with original maturities of three months or less at the date of acquisition to be cash equivalents.

Funds Receivable and Funds Held on Behalf of Clients

We hold client funds on behalf of transfer agency clients and pharmacy processing clients in connection with providing our data processing services. End-of-day available client bank balances for full service mutual fund transfer agency clients are invested overnight in credit quality money market funds. Invested balances are returned to the full service mutual fund transfer agency clients’ accounts the following business day. Funds received from clients for the payment of pharmacy claims incurred by its members are invested in credit quality money market funds and certificates of deposit until the claims are paid. Client funding receivables represent amounts due to us for pharmacy claims paid in advance of receiving client funding and for pharmacy claims processed for which client funding requests have not been made.

Funds held on behalf of clients in the form of cash, cash equivalents and certificates of deposit with a maturity of less than twelve months are included in funds receivable and funds held on behalf of clients in the Consolidated Balance Sheet. Funds held on behalf of clients in the form of certificates of deposit with a maturity of greater than twelve months are classified as investments on the Consolidated Balance Sheets. All funds held on behalf of clients represent assets that are restricted for use.

We have included funds held on behalf of clients that meet the definition of restricted cash and restricted cash equivalents in the beginning and end of period balances in the Consolidated Statements of Cash Flows. Cash inflows and outflows related to investment of funds held on behalf of clients are reported on a gross basis as “Investments in securities” and “Proceeds from sales / maturities of investments” in the investing section of the Consolidated Statements of Cash Flows.

Client Funds Obligations

Client funds obligations represent funds owed to full service mutual fund transfer agency clients for cash balances invested overnight, and our contractual obligations to satisfy client pharmacy claim obligations that are recorded on the balance sheet when incurred, generally after we have processed a claim on behalf of its pharmacy clients.

Restricted Cash

Restricted cash primarily includes monies held by a bank as security for letters of credit issued due to lease requirements for office space. The letters of credit are expected to be renewed within the next twelve months, and as such, the restricted cash is classified as a current asset on the Consolidated Balance Sheets.

Investments and Unconsolidated Affiliates

We hold various investments, including investments in marketable securities, non-marketable securities and partnership interests in private equity funds, joint ventures and other similar entities.

The equity method of accounting is used for investments in entities, partnerships and similar interests (including investments in private equity funds where we are a limited partner and hold a greater than 5% partnership interest in the fund) in which we have significant influence but do not control. Under the equity method, we recognize income or losses from our pro-rata share of these unconsolidated affiliates' net income or loss, which changes the carrying value of the investment of the unconsolidated affiliate.

We measure equity investments in marketable securities, seed capital investments and other investments, other than those accounted for under the equity method of accounting or those that result in consolidation of the investee, at fair value, with changes in the fair value recognized in earnings. We use net asset value as a practical expedient for the fair value of partnership interests in private equity funds that are not accounted for under the equity method of accounting.

Investments in non-marketable equity securities that do not have readily determinable fair values and do not qualify for the practical expedient to measure the investment using a net asset value per share are recorded using the measurement alternative in ASU 2016-01, *Recognition and Measurement of Financial Assets and Financial Liabilities*. These investments are recorded at cost, less impairment, adjusted for observable price changes in orderly transactions for an identical or similar investment of the same issuer. At each reporting period, we assess if these investments continue to qualify for this measurement alternative. Impairment is recorded when there is evidence that the expected fair value of the investment has declined to below the recorded cost.

We have certain investments in unconsolidated affiliates accounted for under the equity method of accounting in which our carrying value exceeds our proportionate share of net assets of the unconsolidated affiliate. The total investment in unconsolidated affiliates, including basis differences, is included in unconsolidated affiliates on the Consolidated Balance Sheet. We record our proportionate share of the results of the unconsolidated affiliates and amortization expense related to basis differences in equity in earnings of unconsolidated affiliates, net on the Consolidated Statements of Comprehensive Income (Loss).

Property, Plant and Equipment

Property, plant and equipment are stated at cost. Depreciation of property, plant and equipment is calculated using a combination of straight-line and accelerated methods over the estimated useful lives of the assets as follows:

<u>Description</u>	<u>Useful Life</u>
Land	—
Buildings and improvements	40 years
Equipment and software	3-5 years
Furniture and fixtures	7-10 years
Leasehold improvements	Shorter of lease term or estimated useful life

Maintenance and repairs are expensed as incurred. The costs of sold or retired assets are removed from the related asset and accumulated depreciation accounts and any gain or loss is included in the Consolidated Statements of Comprehensive Income (Loss).

Leases

We determine if our contractual agreements contain a lease at inception. A lease is identified when a contract allows us the right to control an identified asset for a period of time in exchange for consideration. Our lease agreements consist primarily of operating leases for office space.

As of December 31, 2019, our operating leases are included on the Consolidated Balance Sheets as operating lease assets and operating lease liabilities, under ASC 842. An operating lease asset represents our right to use an underlying asset over the term of a lease while an operating lease liability represents our obligation to make lease payments arising from the lease. Operating lease liabilities are recognized at the commencement date at the present value of the base minimum rent payments. Operating lease assets are also recognized at the commencement date as the total operating lease liability adjusted for prepaid rents, deferred rent liabilities and lease fair value adjustments that existed under ASC 840. As most of our leases do not provide an implicit rate, we use our estimated secured incremental borrowing rate within each of the significant geographic regions in which we operate based on the information available at lease commencement date in determining the present value of lease payments.

Our lease agreements typically do not contain variable lease payments, residual value guarantees or restrictive covenants. Many of our leases include the option to renew, however we do not believe it is reasonably certain that we will exercise the options as each individual lease is evaluated and further negotiated prior to the end of the current lease terms.

Generally, our lease agreements include required separate payments for non-lease components (e.g. payments for common area maintenance, real estate taxes and/or utilities) which are expensed as incurred. We do have certain lease agreements that contain bundled minimum payments for lease components (e.g. payments for rent) and non-lease components. In these situations, we have applied the practical expedient available under ASC 842 to not separate the lease and non-lease components for purposes of the right-of-use asset and lease payment obligation calculations.

Goodwill and Intangible Assets

We test goodwill annually for impairment as of December 31st (and in interim periods if certain events occur or circumstances change that would more likely than not reduce the fair value of a reporting unit below its carrying amount). We have completed the required impairment tests for goodwill and have determined that no impairment existed as of December 31, 2019 or 2018. During the year ended December 31, 2018, our reporting unit structure changed as a result of acquisitions that we completed during the year. As of December 31, 2019 and 2018, we had two reporting units, one which includes the DST business, and one which includes the rest of our operations. Our impairment analysis indicated that the fair value significantly exceeded the carrying value of each of our reporting units at December 31, 2019 and 2018. We measure the fair value of our reporting units utilizing the income method. Significant judgments required to estimate the fair value of our reporting units include determining appropriate discount rates and estimating the margin on our earnings before income taxes, depreciation, amortization and stock-based compensation. There were no other indefinite-lived intangible assets as of December 31, 2019 or 2018.

Customer relationships, completed technology, trade names and other identifiable intangible assets are amortized over lives ranging from two to 17 years based on the ratio that cash flows for the intangible asset bear to the total of expected future cash flows for the intangible asset.

Impairment of Long-Lived Assets

We evaluate the recoverability of our long-lived assets when there is evidence that events or changes in circumstances have made recovery of the carrying value of the asset or asset group unlikely. An impairment loss would be recognized when the sum of the expected future undiscounted net cash flows is less than the carrying amount of the asset or asset group. We have identified no such impairment losses in the years ended December 31, 2019 and 2018.

Concentration of Credit Risk

Financial instruments, which potentially subject us to concentrations of credit risk, consist principally of cash, cash equivalents, marketable securities and trade receivables. We have cash investment policies that limit investments to investment grade securities. Concentrations of credit risk, with respect to trade receivables, are limited due to the fact that our client base is highly diversified. As of December 31, 2019 and 2018, we had no significant concentrations of credit.

International Operations and Foreign Currency

The functional currency of each foreign subsidiary is generally the local currency. Accordingly, assets and liabilities of foreign subsidiaries are translated to U.S. dollars at period-end exchange rates, and capital stock accounts are translated at historical rates. Revenues and expenses are translated using the average rates during the period. The resulting translation adjustments are excluded from net earnings and accumulated as a separate component of stockholders' equity. Foreign currency transaction gains and losses are

included within other income (expense) in the Consolidated Statements of Comprehensive Income (Loss) in the periods in which they occur.

Comprehensive Income (Loss)

Our comprehensive income (loss) consists of net income, foreign currency translation adjustments and our proportionate share of the change in value of an interest rate swap agreement that one of our unconsolidated affiliates is a party to, which are presented in the Consolidated Statements of Comprehensive Income (Loss), net of tax and reclassifications to earnings. The accumulated balance of other comprehensive income (loss) is reported separately from retained earnings and additional paid-in capital in the stockholders' equity section of the Consolidated Balance Sheets. Total comprehensive income (loss) consists of net income and other accumulated comprehensive income (loss) disclosed in the equity section of the Consolidated Balance Sheets.

Treasury Stock

Treasury stock purchases are accounted for under the cost method and are included as a deduction from equity in the stockholders' equity section of the Consolidated Balance Sheets. Under the cost method, the price paid for the stock is charged to the treasury stock account.

Contingencies

Loss contingencies from legal proceedings and claims may occur from government investigations, shareholder lawsuits, contractual claims, tax and other matters. Accruals are recognized when it is probable that a liability will be incurred and the amount of loss can be reasonably estimated. Gain contingencies are not recognized until realized. Legal fees are expensed as incurred.

Recently Adopted Accounting Pronouncements

In February 2016, the FASB issued ASU 2016-02, *Leases (Topic 842)*. ASU 2016-02 requires lessees to recognize the following for all leases (with the exception of short-term leases) at the commencement date: (i) a lease liability, which is a lessee's obligation to make lease payments arising from a lease, measured on a discounted basis; and (ii) a right-of-use asset, which is an asset that represents the lessee's right to use, or control the use of, a specified asset for the lease term. Lessor accounting is largely unchanged under the amendments of ASU 2016-02. Additional disclosures are required to allow the user to assess the amount, timing and uncertainty of cash flows arising from leasing activities. In July 2018, the FASB issued ASU 2018-11, *Leases (Topic 842): Targeted Improvements*, which provides another transition method no longer requiring application to previously reported periods.

We adopted ASU 2016-02 as of January 1, 2019 using the modified retrospective transition method. Prior period information was not restated and continues to be presented under ASC 840, *Leases*. We elected the package of practical expedients permitted under the transition guidance within the new standard, which among other things, allowed us to not reassess existing contracts to determine if they contain a lease and to carry forward their historical lease classification upon transition. In addition, we will not apply the guidance of ASC 842 to leases with an initial term of 12 months or less as allowed by the standard.

Our lease portfolio primarily consists of real estate office space with lease terms ranging from 1 to 15 years. Adoption of the new standard resulted in the recording of right-of-use assets and lease payment obligations for our real estate office leases of \$387.6 million and \$417.8 million, respectively, as of January 1, 2019. The standard did not materially impact our Consolidated Statements of Comprehensive Income (Loss) or Consolidated Statements of Cash Flows. See Note 5, "Leases" for further details.

Recent Accounting Pronouncements Not Yet Effective

In June 2016, the FASB issued ASU 2016-13, *Measurement of Credit Losses on Financial Instruments*. ASU 2016-13 requires companies to measure credit losses utilizing a methodology that reflects expected credit losses and requires a consideration of a broader range of reasonable and supportable information to inform credit loss estimates. ASU 2016-13 is effective for us for our first quarter of fiscal 2020. Application of the ASU is through a cumulative-effect adjustment to retained earnings as of the effective date. This ASU is not expected to have a material impact on our financial position, results of operations or cash flows.

In December 2019, the FASB issued ASU 2019-12, *Simplifying the Accounting for Income Taxes (Topic 740)*. ASU 2019-12 simplifies the accounting for income taxes by eliminating certain exceptions to the guidance in ASC 740 related to the approach for intraperiod tax allocation, the methodology for calculating income taxes in an interim period and the recognition of deferred tax liabilities for outside basis differences. The standard also simplifies aspects of the accounting for franchise taxes and enacted changes

in tax laws or rates and clarifies the accounting for transactions that result in a step-up in the tax basis of goodwill. ASU 2019-12 is effective for us for our first quarter of fiscal 2021. Certain amendments in this update must be applied on a prospective basis, certain amendments must be applied on a retrospective basis and certain amendments must be applied on a modified retrospective basis through a cumulative-effect adjustment to retained earnings as of the effective date. Early adoption is permitted. We are currently evaluating the impact of the pending adoption of ASU 2019-12 on our Consolidated Financial Statements.

Note 3—Accounts Receivable, net

Accounts receivable are as follows (in millions):

	December 31,	
	2019	2018
Accounts receivable	\$ 488.5	\$ 516.4
Unbilled accounts receivable	194.4	174.7
Allowance for doubtful accounts	(13.2)	(9.4)
Total accounts receivable, net	<u>\$ 669.7</u>	<u>\$ 681.7</u>

The following table represents the activity for the allowance for doubtful accounts (in millions):

	Year Ended December 31,		
	2019	2018	2017
Balance at beginning of period	\$ 9.4	\$ 6.7	\$ 5.9
Charge to costs and expenses	6.2	4.0	2.4
Write-offs, net of recoveries	(2.4)	(1.3)	(1.8)
Other adjustments	—	—	0.2
Balance at end of period	<u>\$ 13.2</u>	<u>\$ 9.4</u>	<u>\$ 6.7</u>

Management establishes the allowance for doubtful accounts based on historical bad debt experience. In addition, management analyzes client accounts, client concentrations, client creditworthiness, current economic trends and changes in client payment terms when evaluating the adequacy of the allowance for doubtful accounts.

Note 4—Property, Plant and Equipment, net

Property, plant and equipment and the related accumulated depreciation are as follows (in millions):

	December 31,	
	2019	2018
Land	\$ 47.5	\$ 54.8
Building and improvements	302.2	309.5
Equipment, furniture, and fixtures	427.1	384.7
	776.8	749.0
Less: accumulated depreciation and amortization	(310.4)	(195.8)
Total property, plant and equipment, net	<u>\$ 466.4</u>	<u>\$ 553.2</u>

Depreciation expense for the years ended December 31, 2019, 2018 and 2017 was \$123.2 million, \$100.1 million and \$25.9 million, respectively.

Note 5—Leases

Our total operating lease costs were \$79.0 million during the year ended December 31, 2019. Cash paid for amounts included in operating lease liabilities was \$73.8 million during the year ended December 31, 2019 and is included in operating cash flows. Total right-of-use assets obtained in exchange for operating lease liabilities was \$41.5 million for the year ended December 31, 2019. Our weighted average remaining lease term and weighted average discount rates as of December 31, 2019 were 8.2 years and 5.0%, respectively.

Lease liabilities as of December 31, 2019 are as follows (in millions):

Maturity of Lease Liabilities		
2020	\$	79.4
2021		77.1
2022		66.4
2023		55.9
2024		48.6
Thereafter		186.0
Total lease payments	\$	513.4
Less: interest		(105.1)
Present value of lease liabilities	\$	408.3

Future minimum rental payments under our non-cancelable operating leases as of December 31, 2018, as measured under ASC 840, Leases, were as follows (in millions):

Future Minimum Lease Payments		
2019	\$	83.8
2020		76.5
2021		71.2
2022		61.6
2023		53.5
Thereafter		204.3
Total lease payments	\$	550.9

We have certain lease agreements with our unconsolidated real estate joint ventures. We recognized operating lease expense of \$2.9 million and \$2.0 million for the years ended December 31, 2019 and 2018, respectively, related to these lease agreements.

We have certain sublease agreements in place with third parties to lease portions of our office space. In addition, we serve as a lessor in other lease agreements for real estate and storage facilities. Total gross sublease and other rental income recognized for the years ended December 31, 2019, 2018 and 2017 was approximately \$9.1 million, \$5.4 million and \$5.4 million, respectively.

Lease payments to be received as of December 31, 2019 are as follows (in millions):

Lease Payments to be Received		
2020	\$	10.3
2021		8.5
2022		6.1
2023		5.8
2024		3.0
Thereafter		10.1
Total lease payments	\$	43.8

Note 6—Investments

Investments are as follows (in millions):

	December 31,	
	2019	2018
Partnership interests in private equity funds	\$ 76.7	\$ 102.1
Marketable equity securities	37.9	32.6
Non-marketable equity securities	45.5	45.0
Seed capital investments	—	10.3
Other investments	—	0.5
Total investments	<u>\$ 160.1</u>	<u>\$ 190.5</u>

Realized and unrealized gains and losses for our equity securities are as follows (in millions):

	Year Ended December 31,	
	2019	2018
Unrealized gains (losses) on equity securities held as of the end of the period	\$ 22.0	\$ (4.5)
Realized gains for equity securities sold during the period	11.3	0.9
Total gains (losses) recognized in other income (expense), net	<u>\$ 33.3</u>	<u>\$ (3.6)</u>

Fair Value Measurement

Authoritative accounting guidance on fair value measurements establishes a three-tier fair value hierarchy, which prioritizes the inputs used in measuring fair value. These tiers include: Level 1, defined as observable inputs such as quoted prices in active markets; Level 2, defined as inputs other than quoted prices in active markets that are either directly or indirectly observable; and Level 3, defined as unobservable inputs for which little or no market data exists, therefore requiring an entity to develop its own assumptions.

As of December 31, 2019 and 2018, we held certain investment assets and certain liabilities that are required to be measured at fair value on a recurring basis. These investments include money market funds, marketable equity securities and seed capital investments, each of which determines fair value using quoted prices in active markets. Accordingly, the fair value measurements of these investments have been classified as Level 1 in the tables below. Investments for which we elected net asset value as a practical expedient for fair value and investments measured using the fair value measurement alternative are excluded from the table below. Fair value for deferred compensation liabilities that are credited with deemed gains or losses of the underlying hypothetical investments, primarily equity securities, have been classified as Level 1 in the tables below. We have foreign currency derivative instruments that are required to be reported at fair value. Fair value for the derivative instruments was determined using inputs from quoted prices for similar assets and liabilities in active markets that are directly or indirectly observable. Accordingly, the derivative instruments have been classified as Level 2 in the tables below.

The following tables present assets and liabilities measured at fair value on a recurring basis (in millions):

	December 31, 2019	Fair Value Measurements at Reporting Date Using		
		Quoted prices in Active Markets for Identical Assets (Level 1)	Significant Other Observable Inputs (Level 2)	Significant Unobservable Inputs (Level 3)
Money market funds (1)	\$ 1,051.1	\$ 1,051.1	\$ —	\$ —
Marketable equity securities (2)	37.9	37.9	—	—
Deferred compensation liabilities (3)	(20.8)	(20.8)	—	—
Total	<u>\$ 1,068.2</u>	<u>\$ 1,068.2</u>	<u>\$ —</u>	<u>\$ —</u>

- (1) Included in cash and cash equivalents and funds receivable and funds held on behalf of clients on the Consolidated Balance Sheet.
- (2) Included in investments on the Consolidated Balance Sheet.
- (3) Included in other long-term liabilities on the Consolidated Balance Sheet.

	December 31, 2018	Fair Value Measurements at Reporting Date Using		
		Quoted prices in Active Markets for Identical Assets (Level 1)	Significant Other Observable Inputs (Level 2)	Significant Unobservable Inputs (Level 3)
Money market funds (1)	\$ 558.0	\$ 558.0	\$ —	\$ —
Marketable equity securities (2)	32.6	32.6	—	—
Seed capital investments (2)	10.3	10.3	—	—
Deferred compensation liabilities (3)	(23.3)	(23.3)	—	—
Derivative instruments (4)	(0.3)	—	(0.3)	—
Total	\$ 577.3	\$ 577.6	\$ (0.3)	\$ —

(1) Included in cash and cash equivalents and funds receivable and funds held on behalf of clients on the Consolidated Balance Sheet.

(2) Included in investments on the Consolidated Balance Sheet.

(3) Included in other long-term liabilities on the Consolidated Balance Sheet.

(4) Included in other accrued expenses on the Consolidated Balance Sheet.

During the year ended December 31, 2019, the fair value of our non-marketable equity securities was adjusted upward by \$0.5 million.

We have partnership interests in various private equity funds that are not included in the table above. Our investments in private equity funds were \$76.7 million and \$102.1 million at December 31, 2019 and 2018, respectively, of which \$72.1 million and \$95.2 million, respectively, were measured using net asset value as a practical expedient for fair value and \$4.6 million and \$6.9 million, respectively, were accounted for under the equity method of accounting. The investments in private equity funds represent underlying investments in domestic and international markets across various industry sectors. At December 31, 2019 and 2018, one of our investments in private equity funds, representing 75% and 77%, respectively, of the total value of the private equity fund investments, was primarily invested in the energy sector and real estate. We have no management rights associated with our partnership interests in this fund and withdrawals from this fund are subject to general partner consent. This fund has a termination date in 2020 with an optional one-year extension at the discretion of the general partner. We expect to receive distributions from this fund upon liquidation of the underlying investments over the next several years, however the exact timing of the distributions is unknown. We have no unfunded commitments related to this fund. Future capital commitments related to our other private equity fund investments were approximately \$1.6 million and \$1.9 million as of December 31, 2019 and 2018, respectively.

Generally, our investments in private equity funds are non-transferable or are subject to long holding periods, and withdrawals from the private equity firm partnerships are typically not permitted. Even when transfer restrictions do not apply, there is generally no public market for the securities. Therefore, we may not be able to sell the securities at a time when we desire to do so. We may not always be able to sell those investments at the same or higher prices than we paid for them. As of December 31, 2019, we did not have plans to sell any of these investments. The maximum risk of loss related to our private equity fund investments is limited to the carrying value of our investments in the entities plus any future capital commitments, which include future commitments that we believe are unlikely to be called by the general partner.

Note 7—Unconsolidated Affiliates

Investments in unconsolidated affiliates are as follows (in millions):

	Ownership Percentage	Carrying Value December 31, 2019	Excess carrying value of investment over proportionate share of net assets December 31, 2019
International Financial Data Services L.P.	50%	\$ 97.4	\$ 44.9
Pershing Road Development Company, LLC	50%	77.0	75.2
Broadway Square Partners, LLP	50%	51.0	32.8
Other unconsolidated affiliates		9.4	—
Total		\$ 234.8	\$ 152.9

Investments in unconsolidated affiliates are accounted for under the equity method of accounting. The total investment in unconsolidated affiliates, including basis differences, is included in unconsolidated affiliates on the Consolidated Balance Sheets. We record our proportionate share of the results of the unconsolidated affiliates and amortization expense related to basis differences in equity in earnings of unconsolidated affiliates, net on the Consolidated Statements of Comprehensive Income (Loss).

Equity in earnings of unconsolidated affiliates is as follows (in millions):

	Year Ended December 31,			
	2019		2018	
International Financial Data Services L.P.	\$	3.6	\$	2.9
Pershing Road Development Company, LLC		1.7		0.2
Broadway Square Partners, LLP		1.3		(1.5)
Other unconsolidated affiliates		(3.0)		0.5
Total	\$	3.6	\$	2.1

International Financial Data Services L.P. (“IFDS L.P.”) is a 50% owned joint venture with State Street Corporation with operations in Canada, Ireland and Luxembourg. Pershing Road Development Company, LLC (“PRDC LLC”) is a 50% owned special-purpose entity formed to develop and lease office space to the U.S. government. Broadway Square Partners, LLP (“Broadway Square Partners”) is a 50% owned real estate joint venture formed to purchase, finance and engage in leasing activities with us and unrelated third parties. The difference between the amount at which each of IFDS L.P., PRDC LLC and Broadway Square Partners is carried and the amount of underlying equity in net assets, will be amortized as a component of equity in earnings of unconsolidated affiliates over approximately 15 years, 28 years and 40 years, respectively.

The following tables summarize related party transactions and balances outstanding with our related parties, which is entirely comprised of transactions with our unconsolidated affiliates (in millions):

	Year Ended December 31,			
	2019		2018	
Operating revenues from related parties	\$	3.7	\$	5.6
Amounts paid to related parties (1)		20.4		14.4
Distributions received from related parties		3.3		11.8

	December 31,			
	2019		2018	
Outstanding advances/loans to related parties	\$	1.9	\$	6.1
Trade accounts receivable from related parties		1.1		1.2
Total amounts receivable from related parties	\$	3.0	\$	7.3

Amounts payable to related parties	\$	0.4	\$	—
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(1) Excludes amounts paid to our unconsolidated joint ventures related to loans, advancements and other capital investments.

Operating revenues from related parties were primarily generated from services provided for the use of our proprietary software and software development services. Payments to our related parties primarily included payments for rent and other facility and maintenance costs pursuant to the properties we lease from our unconsolidated real estate joint ventures. Distributions received include \$2.5 million and \$4.2 million return on investment and \$3.1 million and \$7.8 million return of investment for the years ended December 31, 2019 and 2018, respectively, primarily related to our investments in IFDS L.P., Broadway Square Partners and PRDC LLC.

Note 8—Acquisitions

2019 Acquisitions

Algorithmics

On November 29, 2019, we purchased the Algorithmics business (“Algorithmics”) for approximately \$89.6 million in cash, plus the costs of effecting the transaction and the assumption of certain liabilities. Algorithmics provides cloud-based risk analytics and regulatory offerings. Algorithmics’ solutions and technology address market, credit and liquidity risk, as well as capital management.

The net assets and results of operations of Algorithmics have been included in our Consolidated Financial Statements from November 29, 2019. The fair value of the intangible assets, consisting of customer relationships, completed technology and trade names, was determined using the income approach. Specifically, the relief from-royalty method was utilized for the completed technology and trade names and the excess earnings method was utilized for the customer relationships. The intangible assets are amortized each year based on the ratio that the projected cash flows for the intangible assets bear to the total of current and expected future cash flows for the intangible assets. The completed technology is amortized over approximately eight years, customer relationships are amortized over approximately 12 years, the trade names are amortized over approximately ten years, in each case the estimated lives of the assets. The fair value of deferred revenue was determined using the market approach. The remainder of the purchase price was allocated to goodwill and is tax deductible.

There are \$4.8 million in revenues from Algorithmics’ operations included in the Consolidated Statements of Comprehensive Income (Loss) for the year ended December 31, 2019.

2018 Acquisitions

Intralinks Holdings Inc.

On November 16, 2018, we purchased all of the outstanding stock of Intralinks Holdings, Inc. (“Intralinks”) for approximately \$1.0 billion in cash, which was funded with incremental term loan debt and 9.9 million shares of our common stock, plus the costs of effecting the transaction and the assumption of certain liabilities. Intralinks provides financial technology for the global banking, deal making and capital markets communities. Intralinks enables and secures the flow of information through its virtual data room offerings, facilitating strategic initiatives such as mergers and acquisitions, capital raising and investor reporting.

The net assets and results of operations of Intralinks have been included in our Consolidated Financial Statements from November 16, 2018. The fair value of the intangible assets, consisting of customer relationships, completed technology and trade names, was determined using the income approach. Specifically, the relief from-royalty method was utilized for the completed technology and trade names and the excess earnings method was utilized for the customer relationships. The completed technology and customer relationships are amortized each year based on the ratio that the projected cash flows for the intangible assets bear to the total of current and expected future cash flows for the intangible assets. The trade names are amortized on a straight-line basis. The completed technology is amortized over approximately seven years, customer relationships are amortized over approximately 12 years, the trade names are amortized over approximately 13 years, in each case the estimated lives of the assets. The fair value of deferred revenue was determined using the market approach. The remainder of the purchase price was allocated to goodwill and is not tax deductible.

Eze Software

On October 1, 2018, we purchased all of the outstanding stock of Eze Software (“Eze”) for approximately \$1.45 billion in cash, plus the costs of effecting the transaction and the assumption of certain liabilities. We funded the acquisition with a combination of cash and \$875.0 million in incremental term loan debt. Eze provides investment management solutions designed to optimize operational and investment alpha throughout the entire investment process.

The net assets and results of operations of Eze have been included in our Consolidated Financial Statements from October 1, 2018. The fair value of the intangible assets, consisting of customer relationships, completed technology, and trade names, was determined using the income approach. Specifically, the relief from-royalty method was utilized for the completed technology and trade names and the excess earnings method was utilized for the customer relationships. The intangible assets are amortized each year based on the ratio that the projected cash flows for the intangible assets bear to the total of current and expected future cash flows for the intangible assets. The completed technology is amortized over approximately seven years, customer relationships are amortized over approximately 16 years and the trade names are amortized over approximately ten years, in each case the estimated lives of the assets. The remainder of the purchase price was allocated to goodwill and a portion is tax deductible.

CACEIS North America

On June 1, 2018, we purchased all of the outstanding stock of CACEIS North America (“CACEIS”) for approximately \$20.0 million in cash, plus the costs of effecting the transaction and the assumption of certain liabilities. CACEIS provides fund administration services and support for complex investment strategies.

The net assets and results of operations of CACEIS have been included in our Consolidated Financial Statements from June 1, 2018. The fair value of the intangible assets, consisting of customer relationships, was determined using the income approach, specifically, the excess earnings method. The customer relationships are amortized each year based on the ratio that the projected cash flows for the intangible assets bear to the total of current and expected future cash flows for the intangible assets. The customer relationships are amortized over approximately 16 years, which is the estimated life of the asset. The remainder of the purchase price was allocated to goodwill and is not tax deductible.

DST Systems, Inc.

On April 16, 2018, we purchased all of the outstanding stock of DST Systems, Inc. (“DST”) for approximately \$5.1 billion in cash, plus the costs of effecting the transaction. In connection with this acquisition, we entered into the Credit Agreement pursuant to which our subsidiaries SS&C and SS&C SARL borrowed an aggregate of approximately \$7.4 billion (approximately \$524.5 million of which was rolled over from our existing credit facility). DST is a global provider of specialized technology, strategic advisory and business operations outsourcing to the financial services and healthcare industries.

The net assets and results of operations of DST have been included in our Consolidated Financial Statements from April 16, 2018. The fair value of the intangible assets, consisting of customer relationships, completed technology, trade names and a non-compete agreement, was determined using the income approach. Specifically, the relief from-royalty method was utilized for the completed technology and trade names, the excess earnings method was utilized for the customer relationships and the lost profits method was utilized for the non-compete agreements. The intangible assets are amortized each year based on the ratio that the projected cash flows for the intangible assets bear to the total of current and expected future cash flows for the intangible assets. The completed technology is amortized over approximately 12 years, customer relationships are amortized over approximately 14 years, the trade names are amortized over approximately 12 years and the non-compete agreement is amortized over approximately two years, in each case the estimated lives of the assets. The fair value of the fixed assets was determined using a combination of income, market and cost approaches, dependent on the type of fixed asset that was valued. The fair value of investments was determined based on the nature of the underlying investment. The fair value of investments in marketable equity securities and seed capital investments were determined using quoted prices in active markets for identical assets. The fair value of investment in partnership interests in private equity funds was primarily determined using the net asset value of the fund. The fair value of investments in non-marketable equity securities was determined based on recent observable transactions of similar equity securities of the investee. The fair value of the investments in unconsolidated affiliates was determined using a combination of income and market approaches. The remainder of the purchase price was allocated to goodwill and is not tax deductible.

The following summarizes the preliminary allocation of the purchase price for the 2019 acquisition of Algorithmics. The assets and liabilities pending finalization include the valuation of acquired tangible and intangible assets and the evaluation of taxes. The following also summarizes the final allocation of the purchase price for the 2018 acquisitions of Intralinks, Eze, CACEIS and DST (in millions):

	Algorithmics	Intralinks	Eze	CACEIS	DST
Accounts receivable	\$ —	\$ 58.3	\$ 45.0	\$ 1.5	\$ 406.8
Fixed assets	0.2	8.6	15.9	0.4	500.5
Other assets	2.1	33.8	8.4	0.4	385.7
Investments	—	—	—	—	474.0
Acquired client relationships and contracts	27.2	646.1	463.8	9.8	1,889.1
Completed technology	20.3	123.2	168.1	—	550.0
Trade names	2.3	43.1	13.0	—	139.0
Non-compete agreements	—	—	—	—	43.0
Goodwill	57.1	825.0	814.6	9.7	2,641.9
Current portion of long-term debt	—	—	—	—	(605.8)
Accounts payable	—	(5.9)	(3.3)	(0.1)	(98.3)
Accrued employee compensation and benefits	(0.5)	(45.8)	(16.5)	(0.3)	(174.6)
Deferred revenue	(19.1)	(35.4)	(0.9)	(0.1)	(34.1)
Deferred income taxes	—	(179.0)	(56.6)	(1.3)	(751.9)
Long-term debt	—	—	—	—	(29.4)
Client funds obligations	—	—	—	—	(376.2)
Other liabilities assumed	—	(19.7)	(5.7)	(0.3)	(297.9)
Consideration paid, net of cash acquired	<u>\$ 89.6</u>	<u>\$ 1,452.3</u>	<u>\$ 1,445.8</u>	<u>\$ 19.7</u>	<u>\$ 4,661.8</u>

Additionally, we acquired Investrack in October 2019 for approximately \$7.7 million.

The consideration paid, net of cash acquired for DST above includes \$48.1 million of non-cash consideration related to the fair value of unvested acquired equity awards with a pre-acquisition service period. This amount is excluded from “Cash paid for business acquisitions, net of cash acquired” for 2018 on our Consolidated Statements of Cash Flows. Cash acquired for DST includes \$347.0 million of restricted cash and cash equivalents classified as funds held on behalf of clients.

We recorded severance expense related to reductions in headcount in connection with the integration efforts associated with the acquisitions of DST, Eze and Intralinks. The majority of the positions eliminated in the reduction in force were effective in June 2018 for DST. The amount of severance expense recognized in our Consolidated Statements of Comprehensive Income (Loss) for 2019 and 2018 was as follows (in millions):

Consolidated Statements of Comprehensive Income (Loss) Classification	For the Year Ended December 31,	
	2019	2018
Cost of software-enabled services	\$ 4.4	\$ 38.3
Cost of license, maintenance and other related	—	0.5
Total cost of revenues	4.4	38.8
Selling and marketing	6.8	3.5
Research and development	1.5	12.7
General and administrative	3.2	7.6
Total operating expenses	11.5	23.8
Total severance expense	<u>\$ 15.9</u>	<u>\$ 62.6</u>

The fair value of acquired accounts receivable balances approximates the contractual amounts due from acquired customers, except for approximately \$7.9 million, \$7.5 million and \$6.1 million of contractual amounts that are not expected to be collected as of the acquisition date and that were also reserved by the companies we acquired – Intralinks, Eze and DST, respectively.

The goodwill associated with each of the transactions above is a result of expected synergies from combining the operations of businesses acquired with us and intangible assets that do not qualify for separate recognition, such as an assembled workforce.

The following unaudited pro forma condensed consolidated results of operations are provided for illustrative purposes only and assume that the acquisitions of Algorithmics and Investrack occurred on January 1, 2018 and Intralinks, Eze, CACEIS and DST occurred on January 1, 2017, after giving effect to certain adjustments, including amortization of intangibles, interest, transaction costs and tax effects. This unaudited pro forma information (in millions) should not be relied upon as being indicative of the historical

results that would have been obtained if the acquisitions had actually occurred on those dates, nor of the results that may be obtained in the future.

	Year Ended December 31,		
	2019	2018	2017
Revenues	\$ 4,726.5	\$ 4,719.4	\$ 4,501.6
Net income	\$ 455.8	\$ 109.1	\$ 121.4

Note 9—Goodwill and Intangible Assets

The following table summarizes changes in goodwill (in millions):

Balance at December 31, 2017	\$ 3,707.8
2018 acquisitions	4,315.4
Adjustments to prior acquisitions	0.2
Effect of foreign currency translation	(165.4)
Balance at December 31, 2018	\$ 7,858.0
2019 acquisitions	62.4
Adjustments to prior acquisitions	(24.2)
Effect of foreign currency translation	63.7
Balance at December 31, 2019	<u>\$ 7,959.9</u>

A summary of the components of intangible assets is as follows (in millions):

	December 31,	
	2019	2018
Customer relationships	\$ 4,666.8	\$ 4,618.4
Completed technology	1,406.8	1,379.6
Trade names	258.3	255.6
Other	45.8	45.7
Total intangible assets	6,377.7	6,299.3
Less: accumulated amortization	(1,980.5)	(1,338.0)
Total intangible assets, net	<u>\$ 4,397.2</u>	<u>\$ 4,961.3</u>

Total estimated amortization expense, related to intangible assets, for each of the next five years and thereafter, as of December 31, 2019, is expected to approximate (in millions):

<u>Year Ending December 31,</u>	
2020	\$ 582.4
2021	520.6
2022	486.6
2023	451.5
2024	412.6
Thereafter	1,943.5
Total	<u>\$ 4,397.2</u>

Amortization expense associated with customer relationships, completed technology and other amortizable intangible assets was \$633.0 million, \$410.7 million and \$205.9 million for the years ended December 31, 2019, 2018 and 2017, respectively.

Net capitalized software costs of \$98.3 million and \$42.6 million are included in the December 31, 2019 and 2018 Consolidated Balance Sheets, respectively, under "Intangible and other assets".

Amortization expense related to capitalized software development costs was \$19.0 million, \$7.7 million and \$5.4 million for each of the years ended December 31, 2019, 2018, and 2017, respectively.

Note 10—Debt

At December 31, 2019 and 2018, debt consisted of the following (in millions):

	December 31,	
	2019	2018
Senior secured credit facilities, weighted-average interest rate of 4.05% and 4.77%, respectively	\$ 5,198.7	\$ 8,319.1
5.5% senior notes due 2027	2,000.0	—
Other indebtedness	25.6	28.2
Unamortized original issue discount and debt issuance costs	(70.2)	(91.3)
	7,154.1	8,256.0
Less: current portion of long-term debt	76.3	87.5
Long-term debt	<u>\$ 7,077.8</u>	<u>\$ 8,168.5</u>

Senior Secured Credit Facilities

On April 16, 2018, in connection with our acquisition of DST, we entered into an amended and restated credit agreement with SS&C Technologies, Inc. (“SS&C”), SS&C European Holdings SARL, an indirect wholly-owned subsidiary of SS&C (“SS&C SARL”) and SS&C Technologies Holdings Europe SARL, an indirect wholly-owned subsidiary of SS&C (“SS&C Tech SARL”) as the borrowers (“Credit Agreement”).

The Credit Agreement includes four tranches of term loans (together the “Initial Term Loans”): (i) a \$518.6 million term B-1 facility which matures on July 8, 2022 for SS&C (“Term B-1 Loan”); (ii) a \$5.9 million term B-2 facility which matures on July 8, 2022 for SS&C SARL (“Term B-2 Loan”) (iii) a new \$5.046 billion term B-3 facility, which matures on April 16, 2025 for SS&C (“Term B-3 Loan”); and (iv) a new \$1.8 billion term B-4 facility, which matures on April 16, 2025 for SS&C SARL (“Term B-4 Loan”). In addition, the Credit Agreement has a revolving credit facility with a five-year term available for borrowings by SS&C with \$250.0 million in available commitments (“Revolving Credit Facility”), of which \$245.4 million was available as of December 31, 2019. The Revolving Credit Facility also contains a \$25 million letter of credit sub-facility, of which \$4.6 million was utilized as of December 31, 2019.

The majority of the initial proceeds from the Initial Term Loans was used to satisfy the consideration required to fund the acquisition of DST, repay certain amounts outstanding under our then-existing credit agreement (“Prior Credit Agreement”), repay all of the outstanding principal amount of our 5.875% Senior Notes due 2023 (“Prior Senior Notes”) and to repay acquired debt associated with DST.

The refinancing of the Prior Credit Agreement was evaluated in accordance with FASB ASC 470-50, *Debt-Modifications and Extinguishments*, for modification and extinguishment accounting. We accounted for the refinancing as a debt modification with respect to amounts that remained obligations of the same lender in the syndicate with minor changes in cash flows and as a debt extinguishment with respect to amounts that were obligations of lenders that exited the syndicate or remained in the syndicate but experienced a change in cash flows of greater than 10%. See *Loss on extinguishment of debt* section below.

On October 1, 2018, in connection with our acquisition of Eze, we entered into an amendment (the “Commitment Increase Amendment”) to the Credit Agreement. Pursuant to the Commitment Increase Amendment, a new \$875.0 million senior secured term B-5 facility (“Term B-5 Loan”, and together with the Initial Term Loans, the “Term Loans”) was made available to us, the proceeds of which were used to finance, in part, the Eze acquisition.

On November 16, 2018, in connection with our acquisition of Intralinks, we entered into an amendment (the “Incremental Term Loan Amendment”) to the Credit Agreement. Pursuant to the Incremental Term Loan Amendment, an additional \$1.0 billion senior secured term B-5 facility (“Term B-5 Loan”, and together with the Initial Term Loans, the “Term Loans”) was made available to us, the proceeds of which were used to finance, in part, the Intralinks acquisition.

The Term Loans and Revolving Credit Facility bear interest, at the election of the borrowers, at the base rate (as defined in the Credit Agreement) or LIBOR, plus the applicable interest rate margin for the credit facility. Amounts drawn on the Revolving Credit Facility initially bear interest at either LIBOR plus 2.25% or at the base rate plus 1.25%, and is subject to a step-down at any time our consolidated net secured leverage ratio is less than 4.75 times, to 2.00% in the case of the LIBOR margin and 1.00% in the case of the base rate margin. The Term B-1 Loan and Term B-2 Loan bear interest at either LIBOR plus 2.25% or at the base rate plus 1.25%. The Term B-3 Loan, Term B-4 Loan and Term B-5 Loan initially bear interest at either LIBOR plus 2.50% or at the base rate plus

1.50%, and are subject to a step-down at any time our consolidated net secured leverage ratio is less than 4.75 times, to 2.25% in the case of the LIBOR margin and 1.25% in the case of the base rate margin.

As of December 31, 2019, there was \$1,982.6 million in principal amount outstanding under the Term B-3 Loan, \$1,374.7 million in principal amount outstanding under the Term B-4 Loan and \$1,841.4 million in principal amount outstanding under the Term B-5 Loan. There were no principal amounts outstanding under the Term B-1 Loan and Term B-2 Loan.

SS&C and SS&C SARL are required to make scheduled quarterly payments of 0.25% of the original principal amount of the Term B-3 Loan, Term B-4 Loan and Term B-5 Loan, with the balance due and payable on April 16, 2025. No amortization is required under the Revolving Credit Facility. We may also, from time to time in our sole discretion, purchase, redeem, or retire our existing senior notes, through tender offers, in privately negotiated or open market transactions, or otherwise.

SS&C's and SS&C SARL's obligations under the Term Loans are guaranteed by (i) our existing and future U.S. wholly-owned restricted subsidiaries, in the case of the Term B-3 Loan, Term B-5 Loan and the Revolving Credit Facility and (ii) our existing and future wholly-owned restricted subsidiaries, in the case of the Term B-4 Loan.

The obligations of the U.S. loan parties under the Credit Agreement are secured by substantially all of the assets of such persons (subject to customary exceptions and limitations), including a pledge of all of the capital stock of substantially all of the U.S. wholly-owned restricted subsidiaries of such persons (with customary exceptions and limitations) and 65% of the capital stock of certain foreign restricted subsidiaries of such persons (with customary exceptions and limitations). All obligations of the non-U.S. loan parties under the Credit Agreement are secured by substantially all of our and the other guarantors' assets (subject to customary exceptions and limitations), including a pledge of all of the capital stock of substantially all of our wholly-owned restricted subsidiaries (with customary exceptions and limitations).

The Credit Agreement includes negative covenants that, among other things and subject to certain thresholds and exceptions, limit our ability and the ability of its restricted subsidiaries to incur debt or liens, make investments (including in the form of loans and acquisitions), merge, liquidate or dissolve, sell property and assets, including capital stock of its subsidiaries, pay dividends on its capital stock or redeem, repurchase or retire its capital stock, alter the business we conduct, amend, prepay, redeem or purchase subordinated debt, or engage in transactions with its affiliates. The Credit Agreement also contains customary representations and warranties, affirmative covenants and events of default, subject to customary thresholds and exceptions. In addition, the Credit Agreement contains a financial covenant for the benefit of the Revolving Credit Facility requiring us to maintain a minimum consolidated net secured leverage ratio. In addition, under the Credit Agreement, certain defaults under agreements governing other material indebtedness could result in an event of default under the Credit Agreement, in which case the lenders could elect to accelerate payments under the Credit Agreement and terminate any commitments they have to provide future borrowings.

Senior Notes

On March 28, 2019, we issued \$2.0 billion aggregate principal amount of 5.5% Senior Notes due 2027 ("Senior Notes"), the proceeds of which were used to repay a portion of the outstanding Term B-3 Loan under our Credit Agreement. The Senior Notes are guaranteed, jointly and severally, by Holdings and all of its existing and future domestic restricted subsidiaries that guarantee our existing senior secured credit facilities or certain other indebtedness. The Senior Notes are unsecured senior obligations that are equal in right of payment to all of our existing and future senior unsecured indebtedness. Interest on the Senior Notes is payable on March 30 and September 30 of each year.

At any time prior to March 30, 2022, we may, at our option, redeem the Senior Notes, in whole or in part, at a price equal to 100% of the principal amount of the Senior Notes, plus an applicable "make-whole" premium, plus accrued and unpaid interest to the redemption date. At any time on or after March 30, 2022, we may redeem some or all of the Senior Notes, in whole or in part, at the redemption prices set forth in the indenture governing the Senior Notes plus accrued and unpaid interest to the redemption date. In addition, at any time on or before March 30, 2022, we may to redeem up to 40% of the aggregate principal amount of the Senior Notes at a redemption price equal to 105.5% of the principal amount thereof, plus accrued and unpaid interest to the redemption date, with the net proceeds of one or more equity offerings.

The indenture governing the Senior Notes contains a number of covenants that restrict, subject to certain thresholds and exceptions, our ability and the ability of our domestic restricted subsidiaries to incur debt or liens, make certain investments, pay dividends, dispose of certain assets, or enter into transactions with its affiliates. Any event of default under the Credit Agreement that leads to an acceleration of those amounts due also results in a default under the indenture governing the Senior Notes.

As of December 31, 2019, there was \$2.0 billion in principal amount of Senior Notes outstanding.

On April 16, 2018, we redeemed all of the outstanding principal amount of our Prior Senior Notes utilizing a portion of the proceeds from the Initial Term Loans described above. The redemption of the Prior Senior Notes required the payment of a “make whole” premium calculated pursuant to the indenture governing the Prior Senior Notes. See *Loss on extinguishment of debt* section below. In addition, on May 1, 2018, we redeemed senior notes of DST that were acquired as a part of the acquisition of DST utilizing a portion of the proceeds from the Initial Term Loans described above. The redemption of DST’s senior notes totaled \$600.4 million, which included a “make whole” premium.

Other Indebtedness

In connection with the acquisition of DST, we assumed a mortgage, which matures in October 2020 (“U.K. Mortgage”). The outstanding amount under the U.K. Mortgage was \$22.5 million at December 31, 2019 with a fixed interest rate of 3.1%.

Debt Issuance Costs and Loss on Extinguishment of Debt

In connection with the issuance of our Senior Notes and repayment of a portion of our Term B-3 Loan in 2019, in accordance with FASB Accounting Standards Codification 470-50, *Debt-Modifications and Extinguishments*, for modification and extinguishment accounting, we capitalized an aggregate of \$6.1 million in financing costs. We accounted for the refinancing as a debt modification with respect to amounts that remained obligations of the same lender with minor changes in cash flows and as a debt extinguishment with respect to amounts that were obligations of lenders which remained but experienced a change in cash flows of greater than 10%. Other costs of \$7.1 million, incurred in connection with the issuance of the Senior Notes, which did not meet the criteria for capitalization, are included in loss on extinguishment of debt in the Consolidated Statements of Comprehensive Income (Loss) during 2019.

In connection with the Credit Agreement, we capitalized an aggregate of \$55.3 million in financing costs in 2018. Other costs incurred in connection with the Credit Agreement, which did not meet the criteria for capitalization, are included in transaction expenses in the Consolidated Statements of Comprehensive Income (Loss). We recorded a \$44.4 million loss on extinguishment of debt in connection with the entry into the Credit Agreement and redemption of the Prior Senior Notes during 2018. The loss on extinguishment of debt includes the write-off of a portion of the unamortized capitalized financing fees and the unamortized original issue discount related to the Prior Credit Agreement for amounts accounted for as a debt extinguishment, a make-whole premium paid in connection with the redemption of the Prior Senior Notes and the write-off of all unamortized capitalized financing fees and unamortized original issue discount related to the Prior Senior Notes. During the fourth quarter of 2018, we purchased \$45.0 million principal amount of our Term Loans in privately negotiated transactions, which resulted in a gain on extinguishment of debt totaling \$1.1 million.

Fair Value of Debt

The carrying amounts and fair values of financial instruments are as follows (in millions):

	December 31, 2019		December 31, 2018	
	Carrying Amount	Fair Value	Carrying Amount	Fair Value
Financial liabilities:				
Senior secured credit facilities	\$ 5,198.7	\$ 5,231.7	\$ 8,319.1	\$ 7,847.4
5.5% senior notes due 2027	2,000.0	2,135.0	—	—
Other indebtedness	25.6	25.9	28.2	28.3

The above fair values, which are Level 2 liabilities, were computed based on comparable quoted market prices. The fair values of cash, accounts receivable, net, short-term borrowings and accounts payable approximate the carrying amounts due to the short-term maturities of these instruments.

Future Maturities of Debt

At December 31, 2019, annual maturities of long-term debt during the next five years and thereafter are as follows (in millions):

Year ending December 31,	
2020	\$ 76.3
2021	53.8
2022	53.8
2023	53.8
2024	53.0
Thereafter	6,933.6
Total	<u>\$ 7,224.3</u>

Note 11—Stockholders' Equity

Public Offering

In April 2018, we completed a public offering of our common stock. The offering included 30.3 million newly issued shares of common stock sold by us (including 3.9 million shares of common stock sold pursuant to the underwriters' option to purchase additional shares) at an offering price to the public of \$47.50 per share for which we received total net proceeds of approximately \$1.4 billion.

Other Common Stock Issuance

In November 2018, we issued 9.9 million shares in connection with our acquisition of Intralinks.

Dividends

In 2019, we paid a quarterly cash dividend of \$0.10 per share of common stock in March, June and September and \$0.125 per share of common stock in December, totaling \$107.7 million. In 2018, we paid a quarterly cash dividend of \$0.07 per share of common stock in March and June and \$0.08 per share of common stock in September and December, totaling \$70.9 million.

Stock Repurchase Program

In August 2019, our Board of Directors authorized the repurchase of up to \$500 million of our common stock on the open market or in privately negotiated transactions. During 2019, we repurchased 1.3 million shares of common stock for approximately \$60.3 million. We use the cost method to account for treasury stock purchases. Under the cost method, the price paid for the stock is charged to the treasury stock account.

Other Comprehensive Income (Loss)

Accumulated other comprehensive loss balances, net of tax consist of the following (in millions):

	Interest Rate Swap	Foreign Currency Translation	Accumulated Other Comprehensive Loss
Balance, December 31, 2017	\$ —	\$ (82.7)	\$ (82.7)
Net current period other comprehensive loss	—	(260.3)	(260.3)
Balance, December 31, 2018	\$ —	\$ (343.0)	\$ (343.0)
Net current period other comprehensive (loss) income	(2.8)	92.8	90.0
Balance, December 31, 2019	<u>\$ (2.8)</u>	<u>\$ (250.2)</u>	<u>\$ (253.0)</u>

Adjustments to accumulated other comprehensive income (loss) attributable to us are as follows (in millions):

	Year Ended December 31, 2019		Year Ended December 31, 2018		Year Ended December 31, 2017	
	Pretax	Tax Effect	Pretax	Tax Effect	Pretax	Tax Effect
Interest Rate Swap						
Unrealized loss on interest rate swaps	\$ (5.6)	\$ 1.0	\$ —	\$ —	\$ —	\$ —
Reclassification of losses into net earnings on interest rate swaps	1.8	—	—	—	—	—
Net change in cash flow hedges	(3.8)	1.0	—	—	—	—
Foreign Currency Translation						
Current period translation adjustments	92.8	—	(260.9)	0.6	56.9	(0.5)
Net cumulative translation adjustments	92.8	—	(260.9)	0.6	56.9	(0.5)
Total other comprehensive income (loss)	\$ 89.0	\$ 1.0	\$ (260.9)	\$ 0.6	\$ 56.9	\$ (0.5)

Note 12—Revenue

Adoption of ASC Topic 606, “Revenue from Contracts with Customers”

On January 1, 2018, we adopted ASC 606 using the modified retrospective method for those contracts that were not completed as of the date of adoption. Results for reporting periods beginning after January 1, 2018 are presented under ASC 606, while prior period amounts continue to be reported in accordance with ASC 605 and 985. The most significant impact of the standard to us relates to the timing of revenue recognition for arrangements involving term licenses. Under ASC 606, we are required to recognize term license revenues upon the transfer of the license and recognize the associated maintenance revenues over the contract period, as opposed to our prior practice of recognizing both the term license and maintenance revenues ratably over the contract period. In addition, we are required to capitalize and amortize incremental costs of obtaining a contract, such as certain sales commission costs, over the expected customer relationship period if we expect to recover those costs. We previously expensed these costs over the length of the initial contract excluding any renewals.

We recorded an increase to retained earnings of \$65.8 million, or \$47.9 million net of tax, as of January 1, 2018 due to the cumulative impact of adopting ASC 606, with the impact primarily related to our term license revenues. The impact to revenues for the year ended December 31, 2018 related to these adjustments was a decrease of \$39.9 million.

The adoption of ASC 606 had no impact on our total cash flows from operations.

Deferred revenues primarily represents unrecognized fees billed or collected for maintenance and professional services. Deferred revenues are recognized as (or when) we perform under the contract. Deferred revenues are recorded on a net basis with contract assets at the contract level. Accordingly, as of December 31, 2019 and 2018, approximately \$51.8 million and \$32.4 million, respectively, of deferred revenue is presented net within contract assets arising from the same contracts. The amount of revenues recognized in the period that was included in the opening deferred revenues balance was \$204.3 million and \$208.7 million for the years ended December 31, 2019 and 2018, respectively.

As of December 31, 2019, revenue of approximately \$654.4 million is expected to be recognized from remaining performance obligations for license, maintenance and related revenues, of which \$312.7 million is expected to be recognized over the next twelve months. As of December 31, 2018, revenue of approximately \$357.0 million is expected to be recognized from remaining performance obligations for license, maintenance and related revenues, of which \$233.5 million is expected to be recognized over the next twelve months.

Revenue Disaggregation

The following table disaggregates our revenues by geography (in millions):

	Year Ended December 31,		
	2019	2018	2017 (1)
United States	\$ 3,383.6	\$ 2,479.8	\$ 1,222.4
United Kingdom	652.9	503.9	115.8
Europe (excluding United Kingdom), Middle East and Africa	216.5	145.4	102.1
Asia-Pacific and Japan	207.6	145.8	112.7
Canada	107.5	96.3	76.4
Americas, excluding United States and Canada	64.8	49.9	45.9
Total	\$ 4,632.9	\$ 3,421.1	\$ 1,675.3

(1) As noted above, prior period amounts have not been adjusted under the modified retrospective method.

The following table disaggregates our revenues by source (in millions):

	Year Ended December 31,		
	2019	2018	2017 (1)
Software-enabled services	\$ 3,869.2	\$ 2,798.9	\$ 1,114.0
Maintenance and term licenses	644.2	508.8	463.6
Professional services	84.7	83.9	77.9
Perpetual licenses	34.8	29.5	19.8
Total	\$ 4,632.9	\$ 3,421.1	\$ 1,675.3

(1) As noted above, prior period amounts have not been adjusted under the modified retrospective method.

Note 13—Stock-based Compensation

In March 2019, our Board of Directors adopted the Second Amended and Restated 2014 Stock Incentive Plan, which amends and restates our Amended and Restated 2014 Stock Incentive Plan (the “Amended 2014 Plan”) (together with the Amended 2014 Plan, the “2014 Plans”), which became effective in May 2019 upon stockholder approval. The Second Amended and Restated 2014 Stock Incentive Plan was adopted to increase the shares available for equity awards by an additional 34.0 million shares.

In February 2016, our Board of Directors adopted the Amended 2014 Plan, which became effective in May 2016 upon stockholder approval and which amended and restated our 2014 Stock Option Plan. The Amended 2014 Plan was adopted with an initial share capacity of 24.0 million shares available for the grant of awards and was adopted with the intent of being our only equity plan by also authorizing the issuance of full-value awards (that is, restricted stock awards (“RSAs”) and restricted stock units (“RSUs”)) and by expanding the class of participants to include non-employee directors. Since the adoption of the Amended 2014 Plan, we have not made any grants of equity or equity-based awards under the 2008 Stock Incentive Plan or the 2006 Equity Incentive Plan.

The 2014 Stock Option Plan authorizes stock options to be granted for up to 6.0 million shares of our common stock. We have granted time-based stock options under the 2014 Stock Option Plan.

In April 2008, our Board of Directors adopted, and our stockholders approved, an equity-based incentive plan (“the 2008 Plan”), which authorizes equity awards to be granted for up to 21.8 million shares of our common stock, which was calculated based on an initial authorization of 2.8 million shares of our common stock and an annual increase beginning in fiscal 2009. We have granted time-based stock options and RSUs under the 2008 Plan.

In August 2006, our Board of Directors adopted an equity-based incentive plan (“the 2006 Plan”), which authorizes equity awards to be granted for up to 22.3 million shares of our common stock. We have granted RSAs of our common stock and both time-based and performance-based stock options under the 2006 Plan.

Under the terms of the 2014 Plans, the 2008 Plan and 2006 Plan, the exercise price of awards is set on the grant date and may not be less than the fair market value per share on such date. Generally, awards expire ten years from the date of grant.

We generally settle RSUs, RSAs, stock appreciation rights (“SARs”) and stock option exercises with newly issued common shares.

Restricted Stock Units

At December 31, 2019 and 2018, there was approximately \$6.0 million and \$18.4 million, respectively, of unearned non-cash stock-based compensation related to the RSUs that we expect to recognize as expense over a remaining period of approximately 1.1 and 2.7 years, respectively.

Time-based Stock Options and SARs

Time-based stock options and SARs granted under the 2006 Plan, the 2008 Plan and the 2014 Plans generally vest 25% on the first anniversary of the grant date and 1/36th of the remaining balance each month thereafter for 36 months. All outstanding time-based stock options and SARs vest upon a change in control, subject to certain conditions. Time-based stock options and SARs granted during 2019, 2018 and 2017 have a weighted-average grant date fair value of \$14.85, \$10.38 and \$7.86 per share, respectively, based on the Black-Scholes option pricing model. Compensation expense is recorded on a straight-line basis over the requisite service period. The fair value of time-based stock options and SARs vested during the years ended December 31, 2019, 2018 and 2017 was approximately \$75.5 million, \$50.4 million and \$32.1 million, respectively. At December 31, 2019 and 2018, there was approximately \$250.9 million and \$199.7 million, respectively, of unearned non-cash stock-based compensation related to time-based stock options and SARs that we expect to recognize as expense over a weighted average remaining period of approximately 3.3 years and 3.3 years, respectively.

For the time-based stock options and SARs valued using the Black-Scholes option-pricing model, we used the following weighted-average assumptions:

	Time-based Awards		
	2019	2018	2017
Expected term to exercise (years)	4.0	4.0	4.0
Expected volatility	30.35%	25.26%	25.61%
Risk-free interest rate	1.71%	2.67%	1.92%
Expected dividend yield	0.82%	0.70%	0.73%

Total Stock Options, SARs, RSUs and RSAs

The amount of stock-based compensation expense recognized in our Consolidated Statements of Comprehensive (Loss) Income for the years ended December 31, 2019, 2018 and 2017 was as follows (in millions):

Consolidated Statements of Comprehensive Income (Loss) Classification	Year Ended December 31,									
	2019			2018			2017			
	Stock Options, SARs	RSUs	Total	Stock Options, SARs	RSUs	Total	Stock Options, SARs	RSUs	RSAs	Total
Cost of software-enabled services	\$ 24.9	\$ 4.6	\$ 29.5	\$ 25.7	\$ 13.7	\$ 39.4	\$ 11.1	\$ 0.1	\$ —	\$ 11.2
Cost of license, maintenance and other related	4.5	0.2	4.7	3.9	0.8	4.7	3.6	0.6	—	4.2
Total cost of revenues	29.4	4.8	34.2	29.6	14.5	44.1	14.7	0.7	—	15.4
Selling and marketing	10.5	0.6	11.1	7.3	4.5	11.8	8.5	1.0	0.1	9.6
Research and development	9.2	0.1	9.3	8.0	1.0	9.0	6.2	1.3	—	7.5
General and administrative	16.2	1.6	17.8	16.1	15.9	32.0	8.6	0.4	—	9.0
Total operating expenses	35.9	2.3	38.2	31.4	21.4	52.8	23.3	2.7	0.1	26.1
Total stock-based compensation expense	\$ 65.3	\$ 7.1	\$ 72.4	\$ 61.0	\$ 35.9	\$ 96.9	\$ 38.0	\$ 3.4	\$ 0.1	\$ 41.5

The associated future income tax benefit recognized was \$13.8 million, \$33.7 million and \$10.3 million for the years ended December 31, 2019, 2018 and 2017, respectively.

For the year ended December 31, 2019, the amount of cash received from the exercise of stock options was \$125.7 million, with an associated tax benefit from stock awards realized of \$48.7 million. The intrinsic value of stock options and SARs exercised during the year ended December 31, 2019 was approximately \$156.8 million. For the year ended December 31, 2018, the amount of cash

received from the exercise of stock options was \$84.9 million, with an associated tax benefit from stock awards realized of \$34.6 million. The intrinsic value of stock options and SARs exercised during the year ended December 31, 2018 was approximately \$107.6 million. For the year ended December 31, 2017, the amount of cash received from the exercise of stock options was \$60.2 million, with an associated tax benefit from stock awards realized of \$25.0 million. The intrinsic value of stock options and SARs exercised during the year ended December 31, 2017 was approximately \$71.1 million.

In connection with our acquisition of DST in April 2018, we converted DST's unvested stock options, unvested RSUs and unvested performance stock units into equity awards and rights to receive our common stock. The unvested stock options vest and generally become fully exercisable over three years of continued employment and generally have a ten year contractual life. The unvested RSUs provide for additional dividend equivalent RSUs in lieu of cash dividends. Unvested RSUs may be forfeited upon termination of employment depending on the circumstances of the termination. During the year ended December 31, 2018, we recognized stock-based compensation expense of \$49.3 million related to these assumed awards, of which \$31.1 million related to one-time charges for the accelerated vesting of certain awards.

The following table summarizes stock option and SAR activity as well as RSU activity as of and for the years ended December 31, 2019, 2018 and 2017 (share data in millions):

	Stock Options and SARs		RSUs	
	Shares	Weighted Average Exercise Price	Shares	Weighted Average Grant Date Fair Value
Outstanding at December 31, 2016	25.0	\$ 24.04	0.4	\$ 31.06
Granted	11.5	\$ 36.63	—	\$ —
Cancelled/forfeited	(1.4)	\$ 31.59	—	\$ 31.36
Vested	—	\$ —	(0.2)	\$ 31.03
Exercised	(3.8)	\$ 19.08	—	\$ —
Outstanding at December 31, 2017	31.3	\$ 28.92	0.2	\$ 31.04
Granted	13.2	\$ 47.50	—	\$ 50.62
Equity awards assumed from DST	0.7	\$ 48.85	2.0	\$ 50.71
Cancelled/forfeited	(1.4)	\$ 38.56	—	\$ 48.71
Vested	—	\$ —	(0.8)	\$ 46.45
Exercised	(4.0)	\$ 24.71	—	\$ —
Outstanding at December 31, 2018	39.8	\$ 35.48	1.4	\$ 50.44
Granted	9.0	\$ 60.82	—	\$ —
Cancelled/forfeited	(1.7)	\$ 46.84	(0.1)	\$ 40.69
Vested	—	\$ —	(0.8)	\$ 45.89
Exercised	(5.0)	\$ 27.76	—	\$ —
Outstanding at December 31, 2019	42.1	\$ 41.37	0.5	\$ 44.94

The following table summarizes information about vested stock options and SARs outstanding that are currently exercisable and stock options and SARs outstanding that are expected to vest at December 31, 2019:

Outstanding, Vested Stock Options and SARs Currently Exercisable				Outstanding Stock Options and SARs Expected to Vest			
Shares	Weighted Average Exercise Price	Aggregate Intrinsic Value	Weighted Average Remaining Contractual Term	Shares	Weighted Average Exercise Price	Aggregate Intrinsic Value	Weighted Average Remaining Contractual Term
(In millions)		(In millions)	(Years)	(In millions)		(In millions)	(Years)
20.7	\$ 31.50	\$ 620.1	5.98	42.1	\$ 41.37	\$ 843.3	7.56

Note 14—Defined Contribution Plans

We sponsor defined contribution plans that cover our domestic and non-domestic employees following the completion of an eligibility period. During the years ended December 31, 2019, 2018 and 2017, we incurred \$91.4 million, \$60.8 million and \$18.1 million, respectively, of employer contribution expenses under these plans.

Note 15—Basic and Diluted Earnings per Share

Earnings per share (“EPS”) is calculated in accordance with the relevant standards. Basic EPS includes no dilution and is computed by dividing income available to our common stockholders by the weighted average number of common shares outstanding during the period. Diluted EPS is computed by dividing net income by the weighted average number of common and common equivalent shares outstanding during the period. Common equivalent shares consist of stock options, SARs, RSUs and RSAs using the treasury stock method. Common equivalent shares are excluded from the computation of diluted earnings per share if the effect of including such common equivalent shares would be anti-dilutive because their total assumed proceeds exceed the average fair value of common stock for the period. We have two classes of common stock, each with identical participation rights to earnings and liquidation preferences, and therefore the calculation of EPS as described above is identical to the calculation under the two-class method.

The following table sets forth the computation of basic and diluted EPS (in millions, except per share amounts):

	Year Ended December 31,		
	2019	2018	2017
Net income	\$ 438.5	\$ 103.2	\$ 328.9
Shares:			
Weighted average common shares outstanding — used in calculation of basic EPS	252.9	232.5	204.9
Weighted average common stock equivalents — options and restricted shares	11.3	11.2	6.7
Weighted average common and common equivalent shares outstanding — used in calculation of diluted EPS	264.2	243.7	211.6
Earnings per share - Basic	\$ 1.73	\$ 0.44	\$ 1.60
Earnings per share - Diluted	\$ 1.66	\$ 0.42	\$ 1.55

Weighted average stock options, SARs, RSUs and RSAs representing 4.5 million, 5.5 million and 10.6 million shares were outstanding for the years ended December 31, 2019, 2018 and 2017, respectively, but were not included in the computation of diluted EPS because the effect of including them would be anti-dilutive.

Note 16—Income Taxes

The sources of income before income taxes were as follows (in millions):

	Year Ended December 31,		
	2019	2018	2017
U.S.	\$ 342.7	\$ (10.9)	\$ 153.8
Foreign	189.0	136.0	128.9
Income before income taxes	\$ 531.7	\$ 125.1	\$ 282.7

The income tax provision (benefit) consists of the following (in millions):

	Year Ended December 31,		
	2019	2018	2017
Current:			
Federal	\$ 84.6	\$ 66.4	\$ 81.1
Foreign	44.9	37.8	21.4
State	50.8	23.5	3.3
Total	<u>180.3</u>	<u>127.7</u>	<u>105.8</u>
Deferred:			
Federal	(50.7)	(75.4)	(144.7)
Foreign	(8.9)	0.2	(2.8)
State	(27.5)	(30.6)	(4.5)
Total	<u>(87.1)</u>	<u>(105.8)</u>	<u>(152.0)</u>
Total	<u>\$ 93.2</u>	<u>\$ 21.9</u>	<u>\$ (46.2)</u>

The reconciliation between the expected tax expense and the actual tax provision (benefit) is computed by applying the U.S. federal corporate income tax rate of 21% (35% for the year ended December 31, 2017) to income before income taxes as follows (in millions):

	Year Ended December 31,		
	2019	2018	2017
Computed "expected" tax expense	\$ 111.7	\$ 26.3	\$ 98.9
Increase (decrease) in income tax expense resulting from:			
State income taxes (net of federal income tax benefit)	18.0	(6.0)	7.5
Foreign operations	1.7	10.7	(36.2)
Enactment of Tax Act	—	—	(88.0)
Effects of stock based compensation	(21.8)	(14.6)	(13.6)
Effect of valuation allowance	(6.5)	4.6	(3.3)
Uncertain tax positions	(8.0)	(0.9)	(8.2)
Tax credits	(9.4)	(4.0)	(0.6)
Other	7.5	5.8	(2.7)
Provision (benefit) for income taxes	<u>\$ 93.2</u>	<u>\$ 21.9</u>	<u>\$ (46.2)</u>

On December 22, 2017, the Tax Act was enacted into law, reducing the U.S. corporate income tax rate from 35% to 21%. In accordance with Staff Accounting Bulletin No. 118, *Income Tax Accounting Implications of the Tax Cuts and Jobs Act* ("SAB 118"), we made a provisional beneficial estimate of \$88.0 million in the fourth quarter of 2017 to account for specific income tax effects of the Tax Act. Pursuant to SAB 118, we were allowed a measurement period of up to one year after the enactment date of the Tax Act to finalize the accounting of the related tax impacts. We completed our accounting of the Tax Act in the fourth quarter of 2018 and made no significant adjustments to the provisional estimates made in the prior year.

The components of deferred income taxes at December 31, 2019 and 2018 are as follows (in millions):

	2019		2018	
	Deferred Tax Assets	Deferred Tax Liabilities	Deferred Tax Assets	Deferred Tax Liabilities
Net operating loss carryforwards	31.3	—	54.8	—
Deferred compensation	44.6	—	47.6	—
Tax credit carryforwards	38.2	—	34.6	—
Accrued expenses	11.5	—	25.3	—
Leases	92.1	83.8	—	—
Other	42.0	17.8	24.8	14.7
Depreciable and amortizable property	—	1,072.5	—	1,198.7
Investments	—	136.9	—	134.4
Total	259.7	1,311.0	187.1	1,347.8
Valuation allowance	(30.3)	—	(36.2)	—
Total	\$ 229.4	\$ 1,311.0	\$ 150.9	\$ 1,347.8

At December 31, 2019 and 2018, we had accrued a deferred income tax liability for foreign withholding taxes of \$10.3 million and \$9.0 million, respectively, on the unremitted earnings of our major Canadian subsidiary and certain unconsolidated foreign affiliates we do not control and whose earnings cannot be considered permanently reinvested. We have not accrued any deferred income taxes for withholding, foreign local or U.S. state income taxes on the unremitted earnings of other foreign subsidiaries as those earnings are permanently reinvested.

At December 31, 2019, we have domestic federal net operating loss carryforwards of \$30.8 million, which will begin to expire in 2026 and state net operating loss carryforwards of \$134.0 million, which will begin to expire in 2021. At December 31, 2019, we have foreign net operating loss carryforwards of \$80.4 million, of which \$39.5 million can be carried forward indefinitely. The remaining \$41.0 million will begin to expire in 2020.

At December 31, 2019, we have tax credit carryforwards of \$38.2 million relating to domestic and foreign jurisdictions, of which \$27.0 million relate to domestic tax credits that are expected to be utilized before they begin to expire in 2020, \$8.3 million relate to domestic tax credits that are not expected to be utilized before they begin to expire in 2021, \$2.0 million relate to foreign jurisdictions that are expected to be utilized before they begin to expire in 2025 and \$0.9 million relate to foreign jurisdictions that are not expected to be utilized before they begin to expire in 2025. The domestic credits consist primarily of federal and state research and development credits, while the foreign credits consist primarily of minimum alternative tax credit carryforwards related to our India operations.

A valuation allowance is recorded against deferred tax assets if, based on the weight of available evidence, it is more likely than not that some or all of the deferred tax assets will not be realized. We have recorded valuation allowances of \$30.3 million at December 31, 2019 related primarily to certain foreign and state net operating loss carryforwards and tax credit carryforwards and \$36.2 million at December 31, 2018 related to certain foreign net operating loss carryforwards and tax credit carryforwards. Of the \$30.3 million valuation allowance recorded at December 31, 2019, \$5.7 million relates to foreign net operating losses that do not expire. The change in the valuation allowance from 2018 to 2019 is primarily due to the utilization of foreign net operating losses during 2019, against which valuation allowances were previously recorded.

The following table summarizes the activity related to our unrecognized tax benefits for the years ended December 31, 2019 and 2018 (in millions):

Balance at December 31, 2017	\$	57.6
Increases related to current year tax positions		6.5
Increases related to prior tax positions		2.6
Increases related to acquired tax positions		83.3
Lapse in statute of limitation		(9.0)
Foreign exchange translation adjustment		(0.5)
Balance at December 31, 2018	\$	140.5
Increases related to current year tax positions		9.5
Decreases related to prior tax positions		(10.1)
Lapse in statute of limitation		(10.0)
Foreign exchange translation adjustment		(0.1)
Balance at December 31, 2019	\$	<u>129.8</u>

We accrued potential penalties and interest on the unrecognized tax benefits of \$1.7 million and \$2.3 million during 2019 and 2018, respectively, and have recorded a total liability for potential penalties and interest, including penalties and interest related to unrecognized tax benefits, of \$27.2 million and \$25.2 million at December 31, 2019 and 2018, respectively. Our unrecognized tax benefits increased from 2017 to 2018 due to acquired uncertain tax positions, primarily consisting of domestic tax positions, and an increase in current and prior year tax positions, offset partially by a lapse in the statute of limitations for certain domestic tax filings. Our unrecognized tax benefits decreased from 2018 to 2019 due to a lapse in the statute of limitations for certain domestic tax filings, settlements with federal and state tax authorities, decreases in prior year tax positions and a decrease in acquired uncertain tax positions, offset partially by an increase in current year tax positions. Our unrecognized tax benefits as of December 31, 2019 relate to domestic and foreign taxing jurisdictions and are recorded in other long-term liabilities on our Consolidated Balance Sheet at December 31, 2019.

We are subject to examination by tax authorities throughout the world, including such major jurisdictions as the U.S., United Kingdom, India, Massachusetts, Missouri, New Jersey and New York. In these major jurisdictions, we are no longer subject to examination by tax authorities prior to tax years ending 2014, 2018, 2013, 2016, 2016, 2015 and 2011, respectively. Our U.S. federal income tax returns are currently under audit or in appeals for the tax periods ended December 31, 2015 through December 31, 2018. Our India income tax returns are currently under audit or in appeals for tax periods ending March 31, 2013, March 31, 2014, March 31, 2016 and March 31, 2017. Our New York state income tax returns are currently under audit for the tax periods ended December 31, 2011 through 2017.

Note 17—Commitments and Contingencies

Purchase Obligations

Our contractual cash obligations for our committed purchase obligations as of December 31, 2019 are as follows (in millions):

<u>Year Ending December 31,</u>		
2020	\$	103.6
2021		61.3
2022		25.2
2023		3.5
2024 and thereafter		1.1
Total	\$	<u>194.7</u>

Legal Proceedings

From time to time, we are subject to legal proceedings and claims. In our opinion, we are not involved in any litigation or proceedings that would have a material adverse effect on us or our business.

A putative representative action suit was filed against DST, the Compensation Committee of DST's Board of Directors, the Advisory Committee of DST Systems, Inc. 401(k) Profit Sharing Plan (the "Plan") and certain of DST's present and/or former officers and directors, alleging breach of fiduciary duties and other violations of the Employee Retirement Income Security Act ("ERISA"). On September 1, 2017, a complaint was filed purportedly on behalf of the Plan in the United States District Court for the Southern

District of New York, captioned Ferguson, et al v. Ruane Cunniff & Goldfarb Inc., et al., naming as defendants DST, the Compensation Committee of DST’s Board of Directors, the Advisory Committee of the Plan and certain of DST’s present and/or former officers and directors (collectively the “DST Defendants”). On September 18, 2019, the United States District Court for the Southern District of New York granted a partial dismissal related to certain claims against the DST Defendants concerning the 401k portion of the Plan.

On September 28, 2018, a complaint was filed in the United States District Court for the Southern District of New York captioned Robert Canfield, et al. v. SS&C Technologies Holdings, Inc., et al., on behalf of five individual plaintiffs. On November 5, 2018, a similar complaint was filed in the United States District Court for the Southern District of New York captioned Mark Mendon, et al. v. SS&C Technologies Holdings, Inc., et al., on behalf of two individual plaintiffs. These complaints name as defendants SS&C, DST, the Advisory Committee of the Plan, the Compensation Committee of DST’s Board of Directors, and Ruane, Cunniff & Goldfarb, Inc. The underlying claim in each complaint is the same as in the above-described Ferguson matter, with the exception that these are individual actions and not putative class actions.

DST, the Advisory Committee of the Plan, and the Compensation Committee of DST’s Board of Directors have been named in 427 substantially similar individual demands for arbitration through February 11, 2020, by former and current DST employees demanding arbitration under the DST Employee Arbitration Program and Agreement. The underlying claim in each is the same as in the above-described Ferguson matter, with the exception that each is an individual claim and not a putative class action. As of February 11, 2020, the parties have jointly submitted 392 of the demands for arbitration to the American Arbitration Association. The remaining demands for arbitration have not yet been submitted.

On October 8, 2019, a substantially similar action to the above-described Ferguson, Canfield, Mendon and arbitration matters captioned Scalia v. Ruane, Cunniff & Goldfarb Inc. was filed by the U.S. Department of Labor (“DOL”) in the United States District Court for the Southern District of New York naming as defendants DST, the Advisory Committee of the Plan, the Compensation Committee of DST’s Board of Directors and certain of DST’s former officers and directors (“DST DOL Defendants”), and alleging that the DST DOL Defendants breached fiduciary duties in violation of ERISA in connection with the Plan. The complaint also names as defendants Ruane, Cunniff & Goldfarb, Inc. and its former Chairman and Chief Executive Officer Robert D. Goldfarb. In the complaint, the DOL seeks disgorgement, damages and any other appropriate injunctive or equitable relief.

We continue to vigorously defend these matters. We have not yet determined what effect these matters will have, if any, on our financial position or results of operations.

Note 18—Segment and Geographic Information

We operate in one operating segment. Our geographic regions consist of the United States, Europe, Middle East and Africa, Asia Pacific and Japan, Canada and the Americas, excluding the United States and Canada.

Long-lived assets as of December 31, were (in millions):

	2019	2018	2017
United States	\$ 350.2	\$ 425.2	\$ 97.2
Europe, Middle East and Africa	95.7	108.5	4.6
Asia-Pacific and Japan	25.5	24.7	6.0
Canada	6.1	6.0	7.9
Americas, excluding United States and Canada	0.5	0.4	0.4
Total	<u>\$ 478.0</u>	<u>\$ 564.8</u>	<u>\$ 116.1</u>

Note 19—Selected Quarterly Financial Data (Unaudited)

The following tables set forth selected unaudited quarterly Consolidated Statements of Comprehensive Income (Loss) data for each of the quarters indicated. The unaudited information should be read in conjunction with our Consolidated Financial Statements and related notes included elsewhere in this report. We believe that the following unaudited information reflects all normal recurring adjustments necessary for a fair presentation of the information for the periods presented. The operating results for any quarter are not necessarily indicative of results for any future period.

	First Quarter	Second Quarter	Third Quarter	Fourth Quarter
(\$ in millions, except per share data)				
2019				
Revenues	\$ 1,137.2	\$ 1,148.0	\$ 1,144.2	\$ 1,203.5
Gross profit	475.3	498.9	501.5	545.5
Operating income	202.0	223.5	227.6	261.3
Net income	80.8	121.1	95.0	141.6
Basic earnings per share	\$ 0.32	\$ 0.48	\$ 0.38	\$ 0.56
Diluted earnings per share	\$ 0.31	\$ 0.45	\$ 0.36	\$ 0.54
Cash dividends declared and paid per common share	\$ 0.10	\$ 0.10	\$ 0.10	\$ 0.125

	First Quarter	Second Quarter	Third Quarter	Fourth Quarter
(\$ in millions, except per share data)				
2018				
Revenues	\$ 421.9	\$ 895.8	\$ 992.4	\$ 1,111.0
Gross profit	192.4	292.3	412.3	473.0
Operating income (loss)	86.8	(50.7)	180.6	212.4
Net income (loss)	51.2	(63.7)	57.0	58.7
Basic earnings (loss) per share	\$ 0.25	\$ (0.27)	\$ 0.24	\$ 0.24
Diluted earnings (loss) per share	\$ 0.24	\$ (0.27)	\$ 0.23	\$ 0.23
Cash dividends declared and paid per common share	\$ 0.07	\$ 0.07	\$ 0.08	\$ 0.08

Note 20—Subsequent Events

Dividend Declared

On February 14, 2020, our Board of Directors declared a quarterly cash dividend of \$0.125 per share of common stock payable on March 16, 2020 to stockholders of record as of the close of business on March 2, 2020.

Term Debt Repricing

On January 31, 2020, we entered into an amendment (the “Amendment”) to our Credit Agreement. Pursuant to the Amendment the interest rate margin applicable to the term loans was reduced from LIBOR plus 2.25% to LIBOR plus 1.75%. No changes were made to the financial covenants, outstanding principal amounts or the scheduled amortization.

Severance

On February 24, 2020, in connection with our continued integration efforts and the identification of redundant positions, we approved a plan to reduce headcount by approximately 670 employees. We expect to record approximately \$30.0 million of severance expense in the first quarter of 2020, which represents cash payments to be made when the positions are eliminated, primarily during the first and second quarters of 2020.

Preferred Stock Investment

On February 27, 2020, we entered into a Series A Convertible Share Purchase Agreement with SILAC, Inc. (“SILAC”), pursuant to which we acquired 40 million shares of series A convertible preferred stock of SILAC for a purchase price of \$40.0 million. Mr. William C. Stone, our Chairman of the Board of Directors and Chief Executive Officer, has an economic interest in SILAC and is a member of its board of directors. Accordingly, the transaction constitutes a “related person transaction” under our related person transaction policy. Our audit committee and the independent members of our Board of Directors authorized and approved the transaction. Mr. Stone did not participate in the Board of Directors’ consideration of the transaction.

Item 9. CHANGES IN AND DISAGREEMENTS WITH ACCOUNTANTS ON ACCOUNTING AND FINANCIAL DISCLOSURE

None.

Item 9A. CONTROLS AND PROCEDURES

Disclosure Controls and Procedures

Our management, with the participation of our Chief Executive Officer and Chief Financial Officer (our principal executive officer and principal financial officer, respectively), evaluated the effectiveness of our disclosure controls and procedures as of December 31, 2019. The term “disclosure controls and procedures,” as defined in Rules 13a-15(e) and 15d-15(e) under the Securities Exchange Act of 1934, as amended, or Exchange Act, means controls and other procedures of a company that are designed to ensure that information required to be disclosed by a company in the reports that it files or submits under the Exchange Act is recorded, processed, summarized and reported, within the time periods specified in the rules and forms of the Securities and Exchange Commission. Disclosure controls and procedures include, without limitation, controls and procedures designed to ensure that information required to be disclosed by a company in the reports that it files or submits under the Exchange Act is accumulated and communicated to the company’s management, including its principal executive and principal financial officers, as appropriate to allow timely decisions regarding required disclosure. 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. Based on the evaluation of our disclosure controls and procedures as of December 31, 2019, our Chief Executive Officer and Chief Financial Officer concluded that, as of such date, our disclosure controls and procedures were effective at the reasonable assurance level.

Report of Management on Internal Control Over Financial Reporting

Our management is responsible for establishing and maintaining adequate internal control over financial reporting for the Company. Internal control over financial reporting is a process designed to provide reasonable assurance regarding the reliability of our financial reporting and the preparation of financial statements for external purposes in accordance with generally accepted accounting principles. Internal control over financial reporting includes policies and procedures that: 1) pertain to maintaining records that in reasonable detail accurately and fairly reflect our transactions and dispositions of assets; 2) provide reasonable assurance that transactions are recorded as necessary to permit preparation of our financial statements in accordance with generally accepted accounting principles and that receipts and expenditures are made in accordance with management and board of director authorization; and 3) provide reasonable assurance regarding the prevention or timely detection of unauthorized acquisition, use or disposition of company assets that could have a material effect on our 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.

Management conducted an evaluation of the effectiveness of our internal control over financial reporting based on the framework in *Internal Control – Integrated Framework* (2013) issued by the Committee of Sponsoring Organizations of the Treadway Commission. Based on this evaluation, management concluded that our internal control over financial reporting was effective as of December 31, 2019. In November 2019, we acquired the assets of Algorithmics. Management has excluded Algorithmics from its assessment of internal control over financial reporting as of December 31, 2019 because it was acquired by us in a purchase business combination during 2019. Algorithmics and their related entities are our wholly-owned subsidiaries whose total assets and total revenues represent less than 1% for each, respectively, of the Consolidated Financial Statement amounts as of and for the year ended December 31, 2019.

The effectiveness of our internal control over financial reporting as of December 31, 2019 has been audited by PricewaterhouseCoopers LLP, an independent registered public accounting firm, as stated in their report, which is included herein.

Changes in Internal Control Over Financial Reporting

There have not been any 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, 2019, that have materially affected, or are reasonably likely to materially affect, our internal control over financial reporting.

Item 9B. OTHER INFORMATION

Incorporated by reference from paragraphs 3 and 4 of Note 20 to the Consolidated Financial Statements, which is included elsewhere in this annual report on Form 10-K.

PART III

Item 10. **DIRECTORS, EXECUTIVE OFFICERS AND CORPORATE GOVERNANCE**

Incorporated by reference from the information in our proxy statement for the 2020 annual meeting of stockholders, which we intend to file within 120 days after the end of the fiscal year to which this annual report on Form 10-K relates.

Item 11. **EXECUTIVE COMPENSATION**

Incorporated by reference from the information in our proxy statement for the 2020 annual meeting of stockholders, which we intend to file within 120 days after the end of the fiscal year to which this annual report on Form 10-K relates.

Item 12. **SECURITY OWNERSHIP OF CERTAIN BENEFICIAL OWNERS AND MANAGEMENT AND RELATED STOCKHOLDER MATTERS**

Incorporated by reference from the information in our proxy statement for the 2020 annual meeting of stockholders, which we intend to file within 120 days after the end of the fiscal year to which this annual report on Form 10-K relates.

Item 13. **CERTAIN RELATIONSHIPS AND RELATED TRANSACTIONS, AND DIRECTOR INDEPENDENCE**

Incorporated by reference from the information in our proxy statement for the 2020 annual meeting of stockholders, which we intend to file within 120 days after the end of the fiscal year to which this annual report on Form 10-K relates.

Item 14. **PRINCIPAL ACCOUNTANT FEES AND SERVICES**

Incorporated by reference from the information in our proxy statement for the 2020 annual meeting of stockholders, which we intend to file within 120 days after the end of the fiscal year to which this annual report on Form 10-K relates.

PART IV

Item 15. **EXHIBITS AND FINANCIAL STATEMENT SCHEDULES**

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

- (1) Financial Statements — See Index to Financial Statements in Item 8 of this Report.
- (2) Financial Statement Schedules — All financial statement schedules are not submitted because they are not applicable, not required or the information is included in our Consolidated Financial Statements.
- (3) Exhibits — See the Exhibit listing below.

Exhibit Number	Description of Exhibit
3.1	Restated Certificate of Incorporation of the Registrant is incorporated herein by reference to Exhibit 3.1 to the Company's Quarterly Report on Form 10-Q, filed on August 5, 2016 (File No. 001-34675).
3.2	Amended and Restated Bylaws of the Registrant are incorporated herein by reference to Exhibit 3.4 to the Form S-1, as amended (File No. 333-164043) (the "2010 Form S-1").
4.1	Indenture, dated as of March 28, 2019, among SS&C Technologies, Inc., SS&C Technologies Holdings, Inc., the other guarantors party thereto and Wilmington Trust, National Association, as trustee is incorporated by reference to Exhibit 4.1 to the Registrant's Current Report on Form 8-K, filed on March 28, 2019 (File No. 001-34675).
4.2	Form of 5.500 % Senior Notes due 2027 is incorporated by reference to Exhibit 4.2 to the Registrant's Current Report on Form 8-K, filed on March 28, 2019 (File No. 001-34675).
4.3**	Description of Securities Registered Pursuant to Section 12 of the Securities Exchange Act of 1934

Exhibit Number	Description of Exhibit
10.1	<u>Credit Agreement, dated as of July 8, 2015, by and among SS&C Technologies Holdings, Inc., SS&C Technologies, Inc., SS&C European Holdings S.a R.L., SS&C Technologies Holdings Europe S.a R.L., certain of SS&C's subsidiaries, Deutsche Bank AG New York Branch and certain Lenders and L/C Issuers party thereto is incorporated herein by reference to Exhibit 10.2 of the Registrants Current Report on Form 8-K, filed on July 8, 2015 (File No. 001-34675).</u>
10.2	<u>Amendment No. 1 to the Credit Agreement, dated as of March 2, 2017, by and among SS&C Technologies Holdings, Inc., SS&C Technologies, Inc., SS&C European Holdings S.a R.L., SS&C Technologies Holdings Europe S.a R.L., certain of SS&C's subsidiaries, Deutsche Bank AG New York Branch and certain Lenders and L/C Issuers party thereto is incorporated herein by reference to Exhibit 10.1 to the Registrant's Current Report on Form 8-K, filed on March 6, 2017 (File No. 001-34675).</u>
10.3	<u>Second Amendment to Credit Agreement, dated as of March 9, 2018, among SS&C Technologies Holdings, Inc., SS&C Technologies, Inc., SS&C European Holdings S.a R.L., SS&C Technologies Holdings Europe S.a R.L., the Company's other subsidiaries party thereto, Credit Suisse AG, Cayman Islands Branch, as administrative agent, and the lenders and L/C issuers party thereto (Exhibit A thereto is incorporated herein by reference to Exhibit 10.1 to the Registrant's Current Report on Form 8-K, filed on April 16, 2018 (File No. 001-34675)).</u>
10.4	<u>Commitment Increase Amendment, dated as of October 1, 2018, among SS&C Technologies Holdings, Inc., certain of its subsidiaries and Credit Suisse AG, Cayman Islands Branch, as administrative agent and lender is incorporated by reference to Exhibit 10.1 to the Registrant's Current Report on Form 8-K, filed on October 5, 2018 (File No. 001-34675).</u>
10.5	<u>Commitment Increase Amendment dated as of November 16, 2018, among SS&C Technologies Holdings, Inc., certain of its subsidiaries, Credit Suisse AG, Cayman Islands Branch, as administrative agent, and Deutsche Bank AG New York Branch, as lender</u>
10.6	<u>Stockholders Agreement, dated as of November 23, 2005, by and among the Registrant, Carlyle Partners IV, L.P., CP IV Coinvestment, L.P., William C. Stone and Other Executive Stockholders (as defined therein) is incorporated herein by reference to Exhibit 10.5 to SS&C Technologies, Inc's Registration Statement on Form S-4, as amended (File No. 333-135139) (the "2006 Form S-4")</u>
10.7	<u>Amendment No. 1, dated April 22, 2008, to the Stockholders Agreement dated as of November 23, 2005, by and among the Registrant, Carlyle Partners IV, L.P., CP IV Coinvestment, L.P. and William C. Stone is incorporated herein by reference to Exhibit 10.28 to the Registrant's Registration Statement on Form S-1, as amended (File No. 333-143719) (the "2008 Form S-1")</u>
10.8	<u>Amendment No. 2, dated March 2, 2010, to the Stockholders Agreement dated as of November 23, 2005, as amended by Amendment No. 1 to the Stockholders Agreement dated April 22, 2008, by and among the Registrant, Carlyle Partners IV, L.P., CP IV Coinvestment, L.P. and William C. Stone is incorporated herein by reference to Exhibit 10.1 to SS&C Technologies, Inc.'s Current Report on Form 8-K, filed on March 2, 2010 (File No. 000-28430) (the "March 2, 2010 8-K")</u>
10.9	<u>Amendment No. 3, dated March 10, 2011, to the Stockholders Agreement dated as of November 23, 2005, as amended by Amendment No. 1 to the Stockholders Agreement dated April 22, 2008, and Amendment No. 2 to the Stockholders Agreement dated March 2, 2010, by and among the Registrant, Carlyle Partners IV, L.P., CP IV Coinvestment, L.P. and William C. Stone is incorporated herein by reference to Exhibit 10.35 to SS&C Technologies, Inc.'s Annual Report on Form 10-K for the year ended December 31, 2010 (File No. 000-28430)</u>
10.10	<u>Registration Rights Agreement, dated as of November 23, 2005, by and among the Registrant, Carlyle Partners IV, L.P., CP IV Coinvestment, L.P., William C. Stone and Other Executive Investors (as defined therein) is incorporated herein by reference to Exhibit 10.6 to the 2006 Form S-4</u>
10.11	<u>Registration Rights Agreement, dated November 16, 2018, by and between the Impala Private Holdings I, LLC and SS&C Technologies Holdings, Inc. is incorporated herein by reference to Exhibit 10.1 to the Registrant's Current Report on Form 8-K filed on November 16, 2018 (File No. 001-34675)</u>
10.12*	<u>Employment Agreement, dated as of March 11, 2010, by and among William C. Stone, the Registrant and SS&C Technologies, Inc. is incorporated herein by reference to Exhibit 10.27 to the 2010 Form S-1</u>

Exhibit Number	Description of Exhibit
10.13*	First Amended and Restated Employment Agreement, dated as of March 31, 2015, between SS&C Technologies Holdings, Inc. and William C. Stone is incorporated herein by reference to Exhibit 99.1 to the Registrant’s Current Report on Form 8-K, filed on April 1, 2015 (File No. 001-34675)
10.14*	Employment Agreement, dated as of February 8, 2018, among SS&C Technologies Holdings, Inc, SS&C Technologies, Inc. and Joseph J. Frank is incorporated herein by reference to Exhibit 10.2 to the Registrant’s Quarterly Report on Form 10-Q for the quarter ended March 31, 2018 (File No. 001-34675)
10.15*	Employment Agreement, dated as of February 8, 2018, among SS&C Technologies Holdings, Inc, SS&C Technologies, Inc. and Joseph J. Frank is incorporated herein by reference to Exhibit 10.2 to the Registrant’s Quarterly Report on Form 10-Q for the quarter ended March 31, 2018 (File No. 001-34675)
10.16*	Form of Director Indemnification Agreement is incorporated herein by reference to Exhibit 10.35 to the 2010 Form S-1
10.17*	2006 Equity Incentive Plan is incorporated herein by reference to Exhibit 10.1 to SS&C Technologies, Inc.’s Current Report on Form 8-K, filed on August 15, 2006 (File No. 000-28430) (the “August 15, 2006 8-K”)
10.18*	Forms of 2006 Equity Incentive Plan Amended and Restated Stock Option Grant Notice and Amended and Restated Stock Option Agreement are incorporated herein by reference to Exhibit 10.2 to the March 2, 2010 8-K
10.19*	Form of Stock Award Agreement is incorporated herein by reference to Exhibit 10.4 to the August 15, 2006 8-K
10.20*	2008 Stock Incentive Plan is incorporated herein by reference to Exhibit 10.26 to the 2008 Form S-1
10.21*	Form of 2008 Stock Incentive Plan Stock Option Grant Notice and Stock Option Agreement is incorporated herein by reference to Exhibit 10.26 to the 2010 Form S-1
10.22*	Form of Restricted Stock Award Agreement under 2006 Equity Incentive Plan is incorporated herein by reference to Exhibit 10.2 to the Registrant’s Quarterly Report on Form 10-Q for the Quarter ended June 30, 2013 (File No. 001-34675)
10.23*	SS&C Technologies Holdings, Inc. Second Amended and Restated 2014 Stock Incentive Plan, adopted effective May 15, 2019, is incorporated herein by reference to Exhibit 99.1 to the Registrant’s Registration Statement on Form S-8, filed on August 2, 2019 (File No. 001-34675)
10.24*	SS&C Technologies Holdings, Inc. Executive Bonus Plan is incorporated herein by reference to Appendix B to the Company’s definitive proxy statement on Schedule 14A, filed on April 16, 2014 (File No. 001-34675)
10.25*	Form of Stock Option Agreement under the SS&C Technologies Holdings, Inc. Second Amended and Restated 2014 Stock Incentive Plan is incorporated herein by reference to Exhibit 10.2 to the Registrant’s Quarterly Report on Form 10-Q for the quarter ended June 30, 2019 (File No. 001-34675)
10.26*	Form of Restricted Stock Unit Award Agreement under the SS&C Technologies Holdings, Inc. Second Amended and Restated 2014 Stock Incentive Plan is incorporated herein by reference to Exhibit 10.3 to the Registrant’s Quarterly Report on Form 10-Q for the quarter ended June 30, 2019 (File No. 001-34675)
10.27*	Restricted Stock Unit Award Agreement, dated as of March 9, 2018, among SS&C Technologies Holdings, Inc and Joseph J. Frank is incorporated herein by reference to Exhibit 10.4 to the Registrant’s Quarterly Report on Form 10-Q for the quarter ended March 31, 2018 (File No. 001-34675)
10.28*	Letter Agreement, dated as of August 5, 2019, among SS&C Technologies Holdings, Inc. and Normand A. Boulanger is incorporated herein by reference to Exhibit 99.1 to SS&C Technologies, Inc.’s Current Report on Form 8-K, filed on August 8, 2019 8-K (File No. 001-34675)
10.29**	Series A Convertible Share Purchase Agreement, dated as of February 27, 2020, among SS&C Technologies, Inc. and SILAC, Inc.
21**	Subsidiaries of the Registrant
23.1**	Consent of PricewaterhouseCoopers LLP
31.1**	Certifications of the Registrant’s Chief Executive Officer pursuant to Section 302 of the Sarbanes-Oxley Act of 2002

Exhibit Number	Description of Exhibit
31.2**	Certifications of the Registrant's Chief Financial Officer pursuant to Section 302 of the Sarbanes-Oxley Act of 2002
32**	Certification of the Registrant's Chief Executive Officer and Chief Financial Officer pursuant to 18 U.S.C. Section 1351, as adopted pursuant to Section 906 of the Sarbanes-Oxley Act of 2002 (furnished and not filed for purposes of sections 11 or 12 of the Securities Act and section 18 of the Exchange Act)
101.INS**	Inline XBRL Instance Document – the instance document does not appear in the Interactive Data File because its XBRL tags are embedded within the Inline XBRL document.
101.SCH**	Inline XBRL Taxonomy Extension Schema Document.
101.CAL**	Inline XBRL Taxonomy Calculation Linkbase Document.
101.LAB**	Inline XBRL Taxonomy Label Linkbase Document.
101.PRE**	Inline XBRL Taxonomy Presentation Linkbase Document.
101.DEF**	Inline XBRL Taxonomy Extension Definition Linkbase.
101.REF**	XBRL Taxonomy Reference Linkbase.
104**	Cover Page Interactive Data File (formatted as Inline XBRL and contained in Exhibit 101).

* Management contract or compensatory plan or arrangement filed herewith in response to Item 15(a)(3) of the Instructions to the Annual Report on Form 10-K.

** Submitted electronically herewith.

Attached as Exhibit 101 to this report are the following formatted in XBRL (Extensible Business Reporting Language): (i) Consolidated Balance Sheets at December 31, 2019 and 2018, (ii) Consolidated Statements of Comprehensive Income (Loss) for the years ended December 31, 2019, 2018 and 2017, (iii) Consolidated Statements of Cash Flows for the years ended December 31, 2019, 2018 and 2017, (iv) Consolidated Statements of Changes in Stockholders' Equity for the years ended December 31, 2019, 2018 and 2017 and (v) Notes to Consolidated Financial Statements.

Item 16. FORM 10-K SUMMARY

None.

SIGNATURES

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

SS&C TECHNOLOGIES HOLDINGS, INC.

By: /s/ William C. Stone
William C. Stone
Chairman of the Board and Chief Executive Officer

Date: February 28, 2020

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

<u>Signatures</u>	<u>Title</u>	<u>Date</u>
<u>/s/ William C. Stone</u> William C. Stone	Chairman of the Board and Chief Executive Officer (Principal Executive Officer)	February 28, 2020
<u>/s/ Patrick J. Pedonti</u> Patrick J. Pedonti	Senior Vice President and Chief Financial Officer (Principal Financial and Accounting Officer)	February 28, 2020
<u>/s/ Normand A. Boulanger</u> Normand A. Boulanger	Director	February 28, 2020
<u>/s/ Smita Conjeevaram</u> Smita Conjeevaram	Director	February 28, 2020
<u>/s/ Michael E. Daniels</u> Michael E. Daniels	Director	February 28, 2020
<u>/s/ Jonathan E. Michael</u> Jonathan E. Michael	Director	February 28, 2020
<u>/s/ David A. Varsano</u> David A. Varsano	Director	February 28, 2020
<u>/s/ Michael J. Zamkow</u> Michael J. Zamkow	Director	February 28, 2020

DESCRIPTION OF SECURITIES REGISTERED PURSUANT TO SECTION 12 OF THE SECURITIES EXCHANGE ACT OF 1934

As of February 20, 2020, SS&C Technologies Holdings, Inc., (“we”) had one class of securities registered under Section 12 of the Securities Exchange Act of 1934, as amended: our common stock, par value \$0.01 per share.

Description of Capital Stock

The following description of our capital stock is based upon our restated certificate of incorporation (“Certificate of Incorporation”), our amended and restated bylaws (“Bylaws”) and applicable provisions of law. We have summarized certain portions of the Certificate of Incorporation and Bylaws below. The summary is not complete and is qualified in its entirety by reference to the Certificate of Incorporation and Bylaws.

General

Our authorized capital stock consists of 400,000,000 shares of common stock, par value \$0.01 per share, 5,000,000 shares of Class A non-voting common stock, par value \$0.01 per share, and 5,000,000 shares of preferred stock, par value \$0.01 per share, all of which preferred stock is undesignated.

Common Stock

Holders of our common stock, other than holders of our Class A non-voting common stock, are entitled to one vote for each share held on all matters submitted to a vote of stockholders and do not have cumulative voting rights. An election of directors by our stockholders shall be determined by a plurality of the votes cast by the stockholders entitled to vote on the election. Class A non-voting common stock shall not be entitled to vote except as otherwise specifically required by law. Holders of common stock are entitled to receive proportionately any dividends as may be declared by our board of directors, subject to any preferential dividend rights of any series of preferred stock that we may designate and issue in the future.

In the event of our liquidation or dissolution, the holders of common stock are entitled to receive proportionately our net assets available for distribution to stockholders after the payment of all debts and other liabilities and subject to the prior rights of any outstanding preferred stock. Holders of common stock have no preemptive, subscription, redemption or conversion rights. Our outstanding shares of common stock (including any shares offered by selling shareholders) are, and the shares offered by us pursuant to this prospectus and any prospectus supplement will be, when issued and paid for, validly issued, fully paid and nonassessable. The rights, preferences and privileges of holders of common stock are subject to and may be adversely affected by the rights of the holders of shares of any series of preferred stock that we may designate and issue in the future.

Each share of Class A non-voting common stock will automatically convert into one share of common stock upon (i) the expiration, with respect to the holder of Class A non-voting common stock, of the applicable waiting period under the Hart-Scott-Rodino Antitrust Improvements Act of 1976, or the HSR Act, such that such holder could acquire shares of common stock issuable upon conversion of such holder’s shares of Class A non-voting common stock in compliance with the HSR Act, (ii) any other event, the occurrence of which results in the ability of a holder of Class A non-voting common stock to acquire the shares of common stock issuable upon conversion of the Class A non-voting common stock in compliance with the HSR Act or (iii) the sale, assignment, transfer or other disposition of such share of Class A non-voting common stock to a person or entity that would not be required to make a filing under the HSR Act to acquire an equal number of shares of common stock or for which the waiting period under the HSR Act applicable to such person acquiring an equal number of shares of common stock has expired.

Preferred Stock

Under the terms of our Certificate of Incorporation, our board of directors is authorized to direct us to issue shares of preferred stock in one or more series without stockholder approval. Our board of directors has the discretion to determine the rights, preferences, privileges and restrictions, including voting rights, dividend rights, conversion rights, redemption privileges and liquidation preferences, of each series of preferred stock.

The purpose of authorizing our board of directors to issue preferred stock and determine its rights and preferences is to eliminate delays associated with a stockholder vote on specific issuances. The issuance of preferred stock, while providing flexibility in connection with possible acquisitions, future financings and other corporate purposes, could have the effect of making it more difficult for a third party to acquire, or could discourage a third party from seeking to acquire, a majority of our outstanding voting stock. Upon the closing of this offering, there will be no shares of preferred stock outstanding, and we have no present plans to issue any shares of preferred stock.

Anti-Takeover Provisions

Staggered Board. Our Certificate of Incorporation and Bylaws divide our board of directors into three classes with staggered three-year terms. In addition, our Certificate of Incorporation and Bylaws provide that directors may be removed only for cause and only by the affirmative vote of the holders of at least two-thirds of the votes that all our stockholders would be entitled to cast in an annual election of directors; provided that for so long as any of our stockholders has a contractual right with us to remove a director, such director may be removed, with or without cause, by the holders that have the contractual right to remove such director by the affirmative vote of at least a majority of the votes that all such holders would be entitled to cast in an annual election of directors. Under our Certificate of Incorporation and Bylaws, any vacancy on our board of directors, including a vacancy resulting from an enlargement of our board of directors, may be filled only by vote of a majority of our directors then in office; provided that for so long as any of our stockholders has a contractual right with us to fill a specified vacancy in the board of directors, such specified vacancy shall be filled by the holders that have the contractual right to remove such director by the affirmative vote of at least a majority of the votes that all such holders would be entitled to cast in an annual election of directors. The classification of our board of directors and the limitations on the ability of our stockholders to remove directors and fill vacancies could make it more difficult for a third party to acquire, or discourage a third party from seeking to acquire, control of our company.

Special Meeting of Stockholders; Advance Notice Requirements for Stockholder Proposals and Director Nominations. Our Certificate of Incorporation and Bylaws provide that any action required or permitted to be taken by our stockholders at an annual meeting or special meeting of stockholders may only be taken if it is properly brought before such meeting. Our Certificate of Incorporation and Bylaws also provide that, except as otherwise required by law, special meetings of the stockholders can only be called by our chairman of the board, our chief executive officer or our board of directors. In addition, our bylaws establish an advance notice procedure for stockholder proposals to be brought before an annual meeting of stockholders, including proposed nominations of candidates for election to the board of directors. Stockholders at an annual meeting may only consider proposals or nominations specified in the notice of meeting or brought before the meeting by or at the direction of the board of directors, or by a stockholder of record on the record date for the meeting who is entitled to vote at the meeting and who has delivered timely written notice in proper form to our secretary of the stockholder's intention to bring such business before the meeting. These provisions could have the effect of delaying until the next stockholder meeting stockholder actions that are favored by the holders of a majority of our outstanding voting securities.

No Action by Written Consent. Action taken by the stockholders must be effected at a duly called annual or special meeting. These provisions make it more procedurally difficult for a stockholder to place a proposal or nomination on the meeting agenda or to take action without a meeting, and therefore may reduce the likelihood that a stockholder will seek to take independent action to replace directors or seek a stockholder vote with respect to other matters that are not supported by management.

Super-Majority Voting. The Delaware General Corporation Law provides generally that the affirmative vote of holders of a majority of the shares entitled to vote on any matter is required to amend a corporation's certificate of incorporation or bylaws, unless a corporation's certificate of incorporation or bylaws, as the case may be, require a greater percentage. Our bylaws may be amended or repealed by a majority vote of our board of directors or the affirmative vote of the holders of at least two-thirds of the votes that all our stockholders would be entitled to cast in an annual election of directors. In addition, the affirmative vote of the holders of at least two-thirds of the votes which all our stockholders would be entitled to cast in an election of directors is required to amend or repeal or to adopt any provisions inconsistent with any of the provisions of our Certificate of Incorporation described in the prior two paragraphs.

Authorized But Unissued Shares. The authorized but unissued shares of common stock and preferred stock are available for future issuance without stockholder approval, subject to any limitations imposed by the listing standards of The Nasdaq Global Select Market. These additional shares may be used for a variety of corporate finance transactions, acquisitions and employee benefit plans. The existence of authorized but unissued and

unreserved common stock and preferred stock could make more difficult or discourage an attempt to obtain control of us by means of a proxy contest, tender offer, merger or otherwise.

Delaware Takeover Statute. We have opted out of Section 203 of the Delaware General Corporation Law, which would have otherwise imposed additional requirements regarding mergers and other business combinations.

Transfer Agent and Registrar

The transfer agent and registrar for our common stock is American Stock Transfer & Trust Company.

Nasdaq Listing

Our common stock is traded on The Nasdaq Global Select Market under the symbol “SSNC.”

SERIES A CONVERTIBLE PREFERRED SHARE PURCHASE AGREEMENT

This SERIES A CONVERTIBLE PREFERRED SHARE PURCHASE AGREEMENT (this “Agreement”), dated February 27, 2020, is by and between SILAC, INC., a Delaware corporation (the “Company”), and SS&C TECHNOLOGIES, INC., a Delaware corporation (“Investor”).

RECITALS

WHEREAS, the Company desires to sell to Investor, and Investor desires to purchase from the Company, Series A Preferred Stock (as defined herein) of the Company on the terms and conditions set forth in this Agreement;

NOW, THEREFORE, in consideration of the foregoing recitals and the mutual promises set forth in this Agreement, the parties to this Agreement agree as follows:

AGREEMENT**1. Authorization and Purchase and Sale of Preferred Stock.**

1.1 Amendment to Certificate of Incorporation. The Company shall adopt and file with the Secretary of State of the State of Delaware on or before the Closing (as defined in Section 2) an amendment (the “Amendment”) to the Certificate of Incorporation in the form of Exhibit B attached to this Agreement (as amended by the Amendment, the “Certificate of Incorporation”).

1.2 Authorization. As of the Closing (as defined in Section 2) the Company shall have authorized the issuance and sale, pursuant to the terms and conditions of this Agreement, of 200,000,000 shares of convertible Series A Preferred Stock (the “Series A Preferred Stock”), having the rights, preferences, privileges, and restrictions set forth in the Certificate of Incorporation. The parties agree, and the Company covenants to Investor, that the Certificate of Incorporation shall be adopted and effective on or before the Closing to reflect the terms of this Agreement including, without limitation, the rights, privileges and preferences of the Series A Preferred Stock.

1.3 Agreement to Purchase and Sell. Subject to the terms and conditions of this Agreement and in reliance upon the representations and warranties set forth in this Agreement, the Company agrees to issue, sell, and deliver to Investor at the Closing, and Investor agrees to purchase from the Company at the Closing, that number of shares of Series A Preferred Stock, \$0.001 par value per share, set forth opposite to Investor’s name on Exhibit A, at a purchase price of \$1.00 per share. The Series A Preferred Stock purchased and sold pursuant to this Agreement shall be referred to in this Agreement as the “Preferred Shares”, and the common shares issuable upon conversion of the Preferred Shares shall be referred to as the “Conversion Shares,” with the Preferred Shares and Conversion Shares collectively referred to herein as the “Securities.”

2. Closing.

2.1 The purchase and sale of the Preferred Shares shall take place remotely via the exchange of documents and signatures, at 10:00 a.m., on February 27, 2020, or at such other time

and place as the Company and Investor mutually agree upon, orally or in writing (which time and place are designated as the “Closing”).

2.2 At the Closing, the Company shall deliver to Investor a certificate representing the Preferred Shares being purchased by Investor at the Closing against payment of the purchase price therefor by wire transfer to a bank account designated by the Company.

3. Use of Proceeds. In accordance with the directions of the Company’s Board of Directors, the Company will use the proceeds from the sale of the Preferred Shares for working capital and other general corporate purposes.

4. Defined Terms Used in this Agreement. In addition to the terms defined above, the following terms used in this Agreement shall be construed to have the meanings set forth or referenced below.

4.1 “Affiliate” means, with respect to a specified Person, any other Person that directly, or indirectly, involves one (1) or more intermediaries, controls or is controlled by, or is under common control with, such Person. For purposes of this Agreement, “**control**” means the possession, directly or indirectly, of the power to direct or cause the direction of management and policies, whether through the ownership of voting securities, by contract or otherwise.

4.2 “Company Covered Person” means, with respect to the Company as an “issuer” for purposes of Rule 506 promulgated under the Securities Act, any Person listed in the first paragraph of Rule 506(d)(1) of the Securities Act.

4.3 “Governmental Entity” means any federal, national, supranational, state, provincial, local or similar government, governmental, regulatory, administrative or quasi-governmental authority, branch, office agency, commission or other body, whether domestic or foreign.

4.4 “Insurance Contracts” means the life, annuity and supplemental policies, certificates and contracts, including policies sold to individuals on a group form, issued or reinsured, by the Company or any of its Subsidiaries.

4.5 “Insurance Laws” means all applicable Laws regulating the business of insurance companies and all applicable orders and written opinions or written recommendations of Insurance Regulators binding on the Company or any of its Subsidiaries.

4.6 “Insurance Regulators” means the Utah Insurance Department, the Indiana Department of Insurance and each other governmental insurance regulatory authority that regulates the insurance operations of the Company or any of its Subsidiaries.

4.7 “Intellectual Property Rights” means any and all intellectual property or similar proprietary rights throughout the world, including any and all: (i) trademarks, service marks, logos, domain names, trade dress, social media identifiers and accounts and all other indications of origin in any jurisdiction, and all registrations and applications for registration of, renewals for, and all goodwill of the business associated with, any of the foregoing, (ii) patents and patent applications

(including all provisionals, non-provisionals, reissues, divisions, continuations, continuations-in-part, extensions and reexaminations thereof), (iii) copyrights and copyrighted works (including software), copyright registrations and applications and any and all renewals, extensions, reversions, restorations and moral rights for or associated with any of the foregoing, and (iv) know-how and trade secrets and other rights in confidential information (including inventions, technology, methods, processes, drawings, specifications, designs, plans, proposals, technical data, financial and marketing plans and customer and supplier lists).

4.8 “IT Assets” means computers, software, firmware, middleware, servers, workstations, routers, hubs, switches, data communications lines and all other information technology equipment, including all documentation related to the foregoing, owned by, or licensed or leased to, the Company or its Subsidiaries.

4.9 “Key Employee” means Stephen C. Hilbert, G. Daniel Acker, James S. Adams, Ngaire E. Cuneo, and Scott D. Matthews.

4.10 “Knowledge” including the phrase “to the Company’s knowledge” shall mean the actual knowledge of the following officers: Stephen C. Hilbert, G. Daniel Acker, James S. Adams, Ngaire E. Cuneo and Scott D. Matthews, and all information that would be possessed by such individual had he or she made reasonable investigation of the subject matter, in light of his or her role in the Company and, where appropriate, having conferred with appropriate personnel.

4.11 “Law” means any applicable statute, law (including principles of common law), ordinance, rule, regulation or binding circular, binding bulletin or binding and published written opinion by any Governmental Entity.

4.12 “Licensed Intellectual Property Rights” means any and all Intellectual Property Rights owned by a third party and licensed or sublicensed (or purported to be licensed or sublicensed) to the Company or its Subsidiaries or for which the Company or its Subsidiaries have obtained a covenant not to be sued.

4.13 “Material Adverse Effect” means a material adverse effect on the business, assets (including intangible assets), liabilities, financial condition, property, or results of operations of the Company and its Subsidiaries, taken as a whole.

4.14 “Owned Intellectual Property Rights” means any and all Intellectual Property Rights owned (or purported to be owned) by the Company or its Subsidiaries.

4.15 “Person” means any individual, corporation (including any non-profit corporation), general or limited partnership, trust, limited liability company, joint venture, association, organization, labor union, Governmental Entity or other entity.

4.16 “Reinsurance Agreements” has the meaning set forth in Subsection 5.20.

4.17 “RIC” means (a) Equitable Life & Casualty Insurance Company, Sterling Investors Life Insurance Company and Equitable Family Insurance Group, and (b) any other Person that (i) is authorized or admitted to engage in the business of selling, issuing or underwriting

insurance or reinsurance in any jurisdiction, (ii) is regulated by any Insurance Regulator, and (iii) is either (A) required by any Insurance Regulator to file an annual financial statement in the form prescribed by the NAIC for a life, accident and health, health, property and casualty, title, fraternal benefit or other insurance company, as applicable, or (B) a captive insurance company.

4.18 “SAP” means the statutory accounting principles and practices prescribed or permitted by the applicable Insurance Regulators (or other similar Governmental Entity) with respect to each RIC, consistently applied.

4.19 “Securities Act” means the Securities Act of 1933, as amended, and the rules and regulations promulgated thereunder.

4.20 “Service Provider” means any director, officer, employee or individual independent contractor of the Company or any of its Subsidiaries.

4.21 “Subsidiary” as to any Person, means any corporation, partnership, limited liability company, joint venture, trust or estate of or in which 50% or more of (i) the issued and outstanding capital stock having ordinary voting power to elect a majority of the board of directors of such corporation (irrespective of whether at the time capital stock of any other class of such corporation may have voting power upon the happening of a contingency), (ii) the interest in the capital or profits of such partnership, limited liability company, or joint venture or (iii) the beneficial interest in such trust or estate is at the time directly or indirectly owned or controlled through one or more intermediaries, or both, by such Person.

4.22 “Transaction Agreements” means this Agreement and the Certificate of Incorporation.

5. Representations and Warranties of the Company. The Company hereby represents and warrants to Investor that, except as set forth on the Disclosure Schedule attached as Exhibit C to this Agreement, which exceptions shall be deemed to be part of the representations and warranties made hereunder, the following representations are true and complete as of the date hereof and the date of the Closing, except as otherwise indicated. The Disclosure Schedule shall be arranged in sections corresponding to the numbered and lettered sections and subsections contained in this Section 5, and the disclosures in any section or subsection of the Disclosure Schedule shall qualify other sections and subsections in this Section 5 only to the extent it is readily apparent from a reading of the disclosure that such disclosure is applicable to such other sections and subsections. For purposes of these representations and warranties (other than those in Subsections 5.1, 5.2, 5.3, 5.4, 5.5, 5.14(c) and 5.21), the term the “Company” shall include any Subsidiaries of the Company unless otherwise noted herein.

5.1 Organization and Standing. Each of the Company and its Subsidiaries is a corporation or limited liability company, as applicable, duly organized, validly existing and in good standing under the laws of the State of Delaware.

5.2 Corporate Power and Qualification. The Company and each Subsidiary of the Company has all requisite legal and corporate power and authority (i) to execute and deliver this Agreement, (ii) to sell and issue the Securities, (iii) to carry out and perform its obligations under the

terms of this Agreement and (iv) to carry on its business as presently conducted and as proposed to be conducted. The Company and each Subsidiary of the Company is duly qualified to transact business and in good standing in each jurisdiction in which it is required to be so qualified, except where the failure to so qualify would not be reasonably expected to have, individually or in the aggregate, a Material Adverse Effect.

5.3

Subsidiaries. Except for the Persons set forth in Subsection 5.3 of the Disclosure Schedule, the Company has no Subsidiaries or affiliated companies and does not otherwise own or control, directly or indirectly, any interest in any corporation, partnership, trust, joint venture, limited liability company, association or other business entity. Neither the Company nor any Subsidiary of the Company is a participant in any joint venture, partnership or similar arrangement. The rights, property and assets held by the Company and the Subsidiaries set forth on Subsection 5.3 of the Disclosure Schedule are reasonably sufficient for the continued conduct of the business of the Company after the Closing in substantially the same manner as conducted prior to the Closing and constitute all of the rights, property and assets reasonably necessary to conduct the business of the Company as currently conducted.

5.4

Capitalization and Voting Rights.

(a) The authorized capital of the Company consists, or will consist immediately prior to the Closing, of:

(i) Common Stock. 1,000,000,000 shares of capital stock, 300,000,000 of which have been or will be designated as voting common stock ("Series A Common Stock") and 30,000,000 of which are issued and outstanding, and 500,000,000 of which have or will be designated as non-voting common stock ("Series B Common Stock" and with the Series A Common Stock, collectively, the "Common Stock") and 74,807,634 of which are issued and outstanding.

(ii) Preferred Stock. 200,000,000 shares of Series A Preferred Stock, none of which are issued and outstanding prior to the effectiveness of this Agreement. The Series A Preferred Stock are non-voting shares. The rights, privileges and preferences of the Preferred Stock are as stated in the Certificate of Incorporation and as provided by the Delaware General Corporation Law.

(b) The issued and outstanding Common Stock are all duly authorized, validly issued, fully paid and nonassessable, and were issued in accordance with the registration or qualification provisions of the Securities Act and any applicable state securities laws or pursuant to valid exemptions therefrom.

(c) Subsection 5.4(c) of the Disclosure Schedule sets forth the capitalization of the Company immediately following the Closing including the number of shares of the following: (i) issued and outstanding Common Stock; (ii) granted stock options, including vesting schedule and exercise price; and (iii) warrants or stock purchase rights, including a list of holders and strike price. Except for (A) the conversion privileges of the Preferred Shares to be issued under this Agreement and (B) the securities and rights described in Subsection 5.4(c) of the Disclosure Schedule, there are no outstanding options, warrants, rights (including conversion or

preemptive rights and rights of first refusal or similar rights), equity or equity-based awards or agreements, orally or in writing, to purchase or acquire from the Company any shares of Common Stock or Preferred Shares, or any securities convertible into or exchangeable for shares of Common Stock or Preferred Shares.

(d) None of the Company's stock purchase agreements or stock option documents contains a provision for acceleration of vesting (or lapse of a repurchase right) or other changes in the vesting provisions or other terms of such agreement or understanding upon the occurrence of any event or combination of events. The Company has never adjusted or amended the exercise price of any stock options previously awarded, whether through amendment, cancellation, replacement grant, repricing, or any other means. Except as set forth in the Certificate of Incorporation, the Company has no obligation (contingent or otherwise) to purchase or redeem any of its capital stock.

(e) The Company is the record owner of and has good and valid title to the ownership interests in each Subsidiary of the Company, free and clear of all liens or encumbrances. Such ownership interests constitute 100% of the total issued and outstanding ownership interests in each Subsidiary of the Company. Such ownership interests have been duly authorized and are validly issued, fully-paid and non-assessable.

(f) The ownership interests in each Subsidiary of the Company were issued in compliance with applicable federal and state securities laws. The ownership interests in each Subsidiary of the Company were not issued in violation of the certificate of formation or the limited liability operating agreement of each Subsidiary of the Company, or any other agreement, arrangement or commitment to which a Subsidiary of the Company is a party and are not subject to or issued in violation of any preemptive or similar rights of any Person or entity.

(g) Except as set forth on Subsection 5.4(g) of the Disclosure Schedule, there are no outstanding or authorized options, warrants, convertible securities or other rights, agreements, arrangements or commitments of any character relating to any ownership interests in any Subsidiary of the Company or obligating the Company to issue or sell any ownership interests, or any other interest, in the Company (or any Subsidiary of the Company). There are no voting trusts, proxies or other agreements or understandings in effect with respect to the voting or transfer of any of the ownership interests in any Subsidiary of the Company.

5.5 Valid Issuance of Securities.

(a) All corporate action required to be taken by the Company's Board of Directors (the "Board of Directors") and the Company's stockholders in order to authorize the Company to enter into the Transaction Agreements, and to issue the Preferred Shares at the Closing and the Common Stock issuable upon conversion of the Preferred Shares, has been taken. All action on the part of the officers of the Company necessary for the execution and delivery of the Transaction Agreements, the performance of all obligations of the Company under the Transaction Agreements to be performed as of the Closing, and the issuance and delivery of the Preferred Shares has been taken or will be taken prior to the Closing. The Transaction Agreements, when executed and delivered by the Company, constitute or shall constitute valid and legally binding obligations of the Company, enforceable against the Company in accordance with their respective terms except (i)

as limited by applicable bankruptcy, insolvency, reorganization, moratorium, fraudulent conveyance, or other laws of general application relating to or affecting the enforcement of creditors' rights generally, or (ii) as limited by laws relating to the availability of specific performance, injunctive relief, or other equitable remedies.

(b) The Preferred Shares, when issued, sold and delivered in accordance with the terms and for the consideration set forth in this Agreement, will be validly issued, fully paid and nonassessable and free of restrictions on transfer other than restrictions on transfer under the Transaction Agreements, applicable state and federal securities laws and liens or encumbrances created by or imposed by Investor. Assuming the accuracy of the representations of Investor in Section 6 of this Agreement and subject to the filings described in Subsection 5.6 below, the Preferred Shares will be issued in compliance with all applicable federal and state securities laws. The Common Stock issuable upon conversion of the Preferred Shares has been duly reserved for issuance, and upon issuance in accordance with the terms of the Certificate of Incorporation, will be validly issued, fully paid and nonassessable and free of restrictions on transfer other than restrictions on transfer under the Transaction Agreements, applicable federal and state securities laws and liens or encumbrances created by or imposed by Investor. Based in part upon the representations of the Investor in Section 6 of this Agreement, and subject to Subsection 5.6 below, the Common Stock issuable upon conversion of the Preferred Shares will be issued in compliance with all applicable federal and state securities laws.

(c) No "bad actor" disqualifying event described in Rule 506(d)(1)(i)-(viii) of the Securities Act (a "Disqualification Event") is applicable to the Company or, to the Company's knowledge, any Company Covered Person, except for a Disqualification Event as to which Rule 506(d)(2)(ii-iv) or (d)(3), is applicable.

5.6 Governmental Consents and Filings. Assuming the accuracy of the representations made by Investor in Section 6 of this Agreement, no consent, approval, order or authorization of, or registration, qualification, designation, declaration or filing with, any Governmental Entity is required on the part of the Company in connection with the consummation of the transactions contemplated by this Agreement, except for (i) the filing of the Amendment, which will have been filed as of the Closing, (ii) filings pursuant to Regulation D of the Securities Act, and applicable state securities laws, which have been made or will be made in a timely manner and (iii) any filings required by the Utah Insurance Department or Indiana Department of Insurance in connection with the execution of this Agreement and listed in Subsection 5.6 of the Disclosure Schedule.

5.7 Offering. Subject in part to the truth and accuracy of Investor's representations set forth in Section 6 of this Agreement, the offer, sale and issuance of the Securities as contemplated by this Agreement are exempt from the registration requirements of Section 5 of the Securities Act, and all applicable state securities laws, and neither the Company nor any authorized agent acting on its behalf will take any action hereafter that would cause the loss of such exemption.

5.8 Intellectual Property.

(a) Subsection 5.8(a) of the Disclosure Schedule sets forth a true and complete list of all registrations and applications for registration included in the Owned Intellectual

Property Rights (collectively, the “Registered Intellectual Property Rights”). None of the Registered Intellectual Property Rights have been adjudged invalid or unenforceable in whole or in part and, to the Company’s knowledge, all Registered Intellectual Property Rights are otherwise valid, subsisting and enforceable.

(b) The Company owns, free and clear of all encumbrances, all Owned Intellectual Property Rights. The Company owns or has a valid and enforceable right to use any and all Intellectual Property Rights used or held for use in, or otherwise necessary for, the conduct of its business as now conducted and as proposed to be conducted. The consummation of the transactions contemplated by this Agreement will not (i) alter, encumber, impair or extinguish any Owned Intellectual Property Rights or Licensed Intellectual Property Rights or (ii) encumber any of the Intellectual Property Rights licensed or owned by the Investor.

(c) Neither the Company nor the conduct of its business has infringed, misappropriated or otherwise violated, or is infringing, misappropriating or otherwise violating, any Intellectual Property Rights of any third party. To the Company’s knowledge no Person has infringed, misappropriated or otherwise violated any Owned Intellectual Property Right or Licensed Intellectual Property Right.

(d) The Company has taken reasonable steps in accordance with normal industry practice to maintain, enforce and protect the confidentiality of all Intellectual Property Rights, the value of which to its business is contingent upon maintaining the confidentiality thereof and, to the Company’s knowledge, no such Intellectual Property Right has been disclosed other than to employees, contractors, consultants, representatives and agents of the Company in the ordinary course of business under or subject to the terms of a written confidentiality agreements.

5.9 Information Technology.

(a) To the Company’s knowledge, none of the software included in the Owned Intellectual Property Rights or distributed by, or otherwise used in the business of, the Company (i) contains any worm, bomb, backdoor, clock, timer, or other disabling device code, design or routine which can cause software to be erased, inoperable, or otherwise incapable of being used, either automatically or upon command; (ii) contains any software code that is licensed under any terms or conditions that require that any software be (A) made available or distributed in source code form; (B) licensed for the purpose of making derivative works; (C) licensed under terms that allow reverse engineering, reverse assembly or disassembly of any kind; or (D) redistributable at no charge; or (iii) is subject to any agreement with any Person under which the Company has deposited, or could be required to deposit, into escrow the source code of such software and no such source code has been released to any Person, or is entitled to be released to any Person, by any escrow agent. The consummation of the transactions contemplated by this Agreement will not trigger the release of any source code of any such software.

(b) To the Company’s knowledge, the IT Assets operate and perform in a manner that permits the Company to conduct its business as currently conducted. The Company has taken commercially reasonable actions, consistent with current industry standards, to protect the confidentiality, integrity and security of the IT Assets (and all information and transactions stored or contained therein or transmitted thereby) against any unauthorized use, access, interruption,

modification or corruption. There has been no breach, or unauthorized use, access, interruption, modification or corruption, of any IT Assets (or any information or transactions stored or contained therein or transmitted thereby).

5.10 Compliance with Other Instruments. The Company is not in material violation or default (i) of any provisions of its Certificate of Incorporation, Bylaws or other governing documents, (ii) of any instrument, judgment, order, writ or decree, (iii) under any note, indenture or mortgage, (iv) under any lease, agreement, contract or purchase order to which it is a party or by which it is bound that is required to be listed on the Disclosure Schedule, or (v) of any provision of federal or state statute, rule or regulation applicable to the Company. The execution, delivery and performance of the Transaction Agreements and the consummation of the transactions contemplated by the Transaction Agreements will not result in any such material violation or be in conflict with or constitute, with or without the passage of time and giving of notice, either (i) a default under any such provision, instrument, judgment, order, writ, decree, contract or agreement, or (ii) an event which results in the creation of any lien, charge or encumbrance upon any assets of the Company or the suspension, revocation, forfeiture, or nonrenewal of any material permit or license applicable to the Company.

5.11 Litigation. There is no claim, action, suit, proceeding, arbitration, complaint, charge or investigation pending or, to the Company's knowledge, currently threatened (i) against the Company or any officer, director, manager or Key Employee of the Company; or (ii) that questions the validity of the Transaction Agreements or the right of the Company to enter into them, or to consummate the transactions contemplated by the Transaction Agreements; or (iii) that would reasonably be expected, individually or in the aggregate, to be material to the Company. Neither the Company nor any of its officers, directors, managers or Key Employees is a party or is named as subject to the provisions of any order, writ, injunction, judgment or decree of any court or Governmental Entity or instrumentality (in the case of officers, directors or Key Employees, such as would affect the Company). There is no action, suit, proceeding or investigation by the Company pending or which the Company intends to initiate. The foregoing includes, without limitation, actions, suits, proceedings or investigations pending or, to the Company's knowledge, currently threatened against the Company or, to the Company's knowledge, currently threatened against any officer, director, manager or Key Employee (or any basis therefor known to the Company) involving the prior employment of any of the Company's employees, their services provided in connection with the Company's business, any information or techniques allegedly proprietary to any of their former employers or their obligations under any agreements with prior employers.

5.12 Employees. To the Company's knowledge, no employee of the Company is in violation of any term of any employment contract, patent disclosure agreement or any other contract or agreement relating to the relationship of such employee with the Company or any other party because of the nature of the business conducted or to be conducted by the Company. The Company and its Subsidiaries are, and have been since January 1, 2017, in material compliance with all applicable Laws relating to employee compensation, benefits, labor and employment. None of the Company or any of its Subsidiaries is party to any collective bargaining or similar agreement and there has been no unionizing activity seeking recognition of a collective bargaining unit relating to any Service Provider. None of the Company or any of its Subsidiaries currently sponsors, maintains, contributes or is required to sponsor, maintain or contribute to any defined benefit pension plan or

arrangement (whether or not tax-qualified) or that provides for post-employment or post-retirement medical, dental, disability, life or similar benefits to any current or former Service Provider (other than as required by applicable Law). To the Company's knowledge, no Key Employee intends to terminate employment with the Company or is otherwise likely to become unavailable to continue as a Key Employee, nor does the Company have a present intention to terminate the employment of any of the foregoing. No compensation or benefits will be paid or become payable to any current or former Service Provider (alone or in conjunction with any other events) as a result of the transactions contemplated by this Agreement.

5.13

Registration Rights and Voting Rights. The Company is not under any contractual obligation to register under the Securities Act any of its presently outstanding securities or any of its securities issuable upon exercise or conversion of its currently outstanding securities or that may hereafter be issued. To the Company's knowledge no stockholder or member of the Company or the Company's Subsidiaries has entered into any agreements with respect to the voting of capital shares or other equity interests of the Company or the Company's Subsidiaries.

5.14

Financial Statements.

(a) The Company has delivered to Investor the audited financial statements (including balance sheet, income statement and statement of cash flows) as of December 31, 2018 for Equitable Life & Casualty Insurance Company, Equitable National Insurance Company and Sterling Investors Life Insurance Company and the unaudited consolidated financial statement of Equitable Family Insurance Group for the period ending September 30, 2019 and the quarterly financial statements for the period ending September 30, 2019 for Equitable Life & Casualty Insurance Company, Equitable National Insurance Company and Sterling Investors Life Insurance Company (collectively, the "Financial Statements"). The Financial Statements have been prepared in accordance with SAP applied on a consistent basis throughout the periods indicated, except that such Financial Statements may be subject to normal year-end audit adjustments. The Financial Statements fairly present in all material respects the financial condition and operating results of the Company as of the dates, and for the periods, indicated therein, subject in the case of the unaudited Financial Statements to normal year-end audit adjustments. Except as set forth in the Financial Statements, the Company has no material liabilities or obligations, contingent or otherwise, other than (i) liabilities incurred in the ordinary course of business subsequent to September 30, 2019, as applicable; (ii) obligations under contracts and commitments incurred in the ordinary course of business; and (iii) liabilities and obligations of a type or nature not required to be reflected in the Financial Statements, which, in all such cases, individually and in the aggregate would not be expected to be material to the Company or its Subsidiaries.

(b) The Company or relevant Subsidiary of the Company has filed all annual and quarterly statements required to be filed with the applicable Insurance Regulators on forms prescribed or permitted by such authorities for the period ending September 30, 2019 and the year ended December 31, 2018, (the "Statutory Statements"). All such Statutory Statements fairly present in all material respects in accordance with SAP, applied on a consistent basis throughout the periods involved (except as required by SAP) the statutory financial position of the Company or Subsidiary, as applicable, as of the dates therein specified and the statutory results of operations and cash flow of the Company or Subsidiary, as applicable, for the periods therein specified. All assets that are, or

will be, as applicable, reflected as admitted assets on the Statutory Statements, to the extent applicable, comply, or will comply, as applicable, in all material respects with all Laws applicable to admitted assets and are, or will be, as applicable, in an amount at least equal to the minimum amounts required by applicable Insurance Laws.

(c) The Company is a holding company, has not previously conducted any business and conducts no business, except through its Subsidiaries, and has no assets or liabilities, except as disclosed on Subsection 5.14(c) of the Disclosure Schedule or in other representations pursuant to this Agreement.

5.15 Absence of Changes. Since September 30, 2019 there has not been:

(a) any materially adverse change in the assets, liabilities, financial condition or operating results of the Company from that reflected in the Financial Statements, except changes in the ordinary course of business;

(b) any damage, destruction or loss, whether or not covered by insurance, that would reasonably be expected to be, individually or in the aggregate, material;

(c) any waiver or compromise by the Company of a valuable right or of a material debt owed to it;

(d) any satisfaction or discharge of any lien, claim, or encumbrance or payment of any obligation by the Company, except in the ordinary course of business;

(e) any material change to a material contract or agreement by which the Company or any of its assets is bound or subject;

(f) any material change in any compensation arrangement or agreement with any employee, officer, director, manager, stockholder or member;

(g) any resignation or termination of employment of any officer or Key Employee of the Company;

(h) any mortgage, pledge, transfer of a security interest in, or lien, created by the Company, with respect to any of its material properties or assets, except liens for taxes not yet due or payable and liens that arise in the ordinary course of business and do not materially impair the Company's ownership or use of such property or assets;

(i) any loans or guarantees made by the Company to or for the benefit of its employees, officers, managers or directors, or any members of their immediate families, other than travel advances and other advances made in the ordinary course of its business;

(j) any declaration, setting aside or payment or other distribution in respect of any of the Company's capital stock, or any direct or indirect redemption, purchase, or other acquisition of any of such stock by the Company;

(k) receipt of notice that there has been a loss of, or material order cancellation by, any major customer of the Company;

(l) any grant of equity or equity-based awards to any Service Provider;

(m) any material increase in the compensation or benefits (including relating to change in control bonuses or severance rights) for Service Providers or entering into any individual severance, termination, retention, change in control or similar agreement with any Service Provider;

(n) to the Company's knowledge, any other event or condition of any character, other than events affecting the economy or the Company's industry generally, that could reasonably be expected to result in, individually or in the aggregate, a Material Adverse Effect; or

(o) any arrangement or commitment by the Company to do any of the things described in this Subsection 5.15.

5.16 Agreements; Actions.

(a) Except for (i) the Transaction Agreements, (ii) Insurance Contracts, (iii) Reinsurance Agreements and (iv) as set forth in Subsection 5.16(a) of the Disclosure Schedule, there are no agreements, understandings, instruments, contracts or proposed transactions with reasonably expected obligations (contingent or otherwise) of, or payments to, the Company in excess of \$1,000,000, to which the Company is party or by which it is bound that involve (A) the grant of rights to license, market, or sell its products to any other Person that limits the Company's exclusive right to license, market or sell its products or (B) indemnification by the Company.

(b) Except as set forth in Subsection 5.16(b) of the Disclosure Schedule, the Company has not (i) declared or paid any dividends, or authorized or made any distribution upon or with respect to any class or series of its capital stock, (ii) incurred any indebtedness in excess of \$50,000 (other than indebtedness that have already been fully satisfied), (iii) made any loans or advances to any Person, other than ordinary advances for business expenses, or (iv) sold, exchanged or otherwise disposed of any of its assets or rights, other than in the ordinary course of business. For the purposes of (a) and (b) of this Subsection 5.16, all indebtedness, liabilities, agreements, understandings, instruments, contracts and proposed transactions involving the same Person (including Persons the Company has reason to believe are affiliated with each other) shall be aggregated for the purpose of meeting the individual minimum dollar amounts of such subsection.

(c) The Company is not a guarantor or indemnitor of any indebtedness of any other Person.

5.17 Related Party Transactions.

(a) Other than (i) as set forth in Subsection 5.17(a) of the Disclosure Schedule (ii) the Transaction Agreements, (ii) standard employee benefits generally made available to all employees, (iii) standard director and officer indemnification agreements approved by the Board of Directors, (iv) standard employment agreements, (v) the purchase of shares of the

Company's capital stock and the issuance of options to purchase shares of the Company's Common Stock, in each instance, approved in the written minutes of the Board of Directors (previously provided to Investor), there are no agreements, understandings or proposed transactions between the Company and any of its officers, directors, consultants or Key Employees, or any Affiliate thereof.

(b) The Company is not indebted, directly or indirectly, to any of its directors, officers or employees or to their respective spouses or children or to any Affiliate of any of the foregoing, other than in connection with expenses or advances of expenses incurred in the ordinary course of business or employee relocation expenses and for other customary employee benefits made generally available to all employees. None of the Company's directors, officers or employees, or any members of their immediate families, or any Affiliate of the foregoing are, directly or indirectly, indebted to the Company. To the Company's knowledge, no officers, employees or members of their immediate families have any (i) material commercial, industrial, banking, consulting, legal, accounting, charitable or familial relationship with any of the Company's customers, suppliers, service providers, joint venture partners, licensees or competitors, (ii) direct or indirect ownership interest in any firm or corporation with which the Company is affiliated or with which the Company has a business relationship, or any firm or corporation which competes with the Company except that directors, officers, employees or stockholders of the Company may own stock in (but not exceeding 2% of the outstanding capital stock of) publicly traded companies that may compete with the Company; or (iii) financial interest in any contract with the Company.

5.18 Property. With respect to the property and assets it leases, the Company is in compliance in all material respects with such leases and, to its knowledge, holds a valid leasehold interest free of any liens, claims or encumbrances other than those of the lessors of such property or assets. The Company does not own any real property.

5.19 Benefits Under Insurance Contracts; Underwriting; Etc.

(a) Except as set forth on Subsection 5.19(a) of the Disclosure Schedule, all benefits claimed by, or paid, payable, or credited to, any Person under any Insurance Contract have in all material respects been paid or credited (or provision as required under SAP for payment thereof has been made) in accordance with the terms of the applicable Insurance Contract under which they arose and such payments, credits or provisions were not materially delinquent and were paid or credited (or will be paid or credited) without fines or penalties (excluding interest), except for any such claim for benefits for which there is a reasonable basis to contest payment.

(b) The Company upon request will make available to Investor the material elements of all underwriting policies utilized by the Company with respect to the Insurance Contracts. Except for variances in the ordinary course which are not material in the aggregate, the underwriting standards utilized and rates and rating and criteria applied by the Company with respect to the Insurance Contracts outstanding as of the date hereof conformed in all material respects to those contained in their applicable underwriting manuals as in effect at the times such Insurance Contracts were underwritten and, with respect to any Insurance Contract reinsured in whole or in part, conform in all material respects to the standards and ratings required pursuant to the terms of the related reinsurance, coinsurance, modified coinsurance or other similar policies.

(c) Except as, individually or in the aggregate, would not reasonably be expected to result in a Material Adverse Effect: (i) each employee, advisor, general agent, broker, broker-dealer, reinsurance intermediary, consultant, producer, financial institution, registered representative, call center personnel or other Person who marketed, sold, negotiated, serviced, administered, managed, advised or otherwise interacted (“Interacted”) with holders of products included in the business (each, a “Producer”), at the time such Producer Interacted any business for the Company, to the extent required by applicable Law, was duly and appropriately appointed by the Company to act as a Producer and was duly and appropriately licensed or registered as a Producer (for the type of business Interacted by such Producer), in each case, in the particular jurisdiction in which such Producer, marketed such business for the Company; (ii) no such Producer violated any term or provision of any Law applicable to any aspect of the Company’s products, including with respect to churning, suitability, conservation, surrender, investment or allocation of funds, market timing, late trading, replacement, fictitious bids or quotes; (iii) to the Company’s knowledge, no such Producer has breached the terms of any agency or broker contract with or for the benefit of the Company; (iv) all compensation paid to each such Producer by the Company was paid in accordance with applicable Law; (v) all training and instruction materials pertaining to Interaction with holders of products included in the business provided by the Company to each such Producer were in compliance with all applicable Laws; and (vi) except as set forth on Subsection 5.19(c) of the Disclosure Schedule with respect to certain trailing commissions, and except for vested commissions, the Company has no ongoing payment obligations to any such Producer.

(d) The Company upon request will make available to Investor true, correct and complete copies of a representative sample of the Insurance Contract forms applicable to in-force Insurance Contracts including representative riders and other related forms, prospectuses and other selling materials and written advertising, disclosure or marketing materials. Each Insurance Contract in force on the date of this Agreement conforms in all material respects to one of the Insurance Contract forms so provided to Investor. Each Insurance Contract form as well as any related ancillary documents and other agreements of insurance and reinsurance, prospectuses and other selling or disclosure material and rate or rule marketed, filed or otherwise utilized by the Company or any of its Subsidiaries, the use or issuance of which requires filing or approval, has, in all material respects, been appropriately filed and, if required, approved by the applicable Governmental Entity in each jurisdiction requiring such filing or approval. All such Insurance Contract forms, ancillary documents, and prospectuses, statements of additional information, other selling, advertising, marketing or disclosure materials and rates or rules as of their respective mailing dates or dates of use (i) contained or contain, as applicable, no untrue statement of material fact and did not or do not, as applicable, omit to state any material fact required to be stated therein or necessary in order to make the statements therein, in light of the circumstances under which they were made, not misleading, (ii) accurately described or describe (as applicable) and were or are (as applicable) consistent with the terms of the underlying Insurance Contract and the applicable rates and rules, and (iii) complied with, applicable Law and were within the scope of the approvals received therefor, in each case in all material respects.

(e) All Insurance Contracts were administered and operated, in all material respects, in accordance with the applicable rates and rules and in a manner consistent with their terms and with such prospectuses, statements of additional information, other selling, advertising, marketing or disclosure materials and applicable Law.

5.20

Reinsurance. Subsection 5.20 of the Disclosure Schedule sets forth a true, complete and correct list of all reinsurance and retrocession treaties and agreements in force as of the date of this Agreement to which the Company is a ceding or assuming party (collectively, the “Reinsurance Agreements”). Each Reinsurance Agreement is in full force and effect and is a valid and binding obligation of the Company, as the case may be. Neither the Company, nor, to the Company’s knowledge, is any other party to a Reinsurance Agreement, in default in any material respect as to any provision of any Reinsurance Agreement or has failed to meet, in any material respect, the underwriting standards required for any business reinsured thereunder. To the Company’s knowledge, all amounts to which the Company is entitled as of the date hereof under any Reinsurance Agreements (including amounts based on paid and unpaid losses), are collectible, except as otherwise reflected in the applicable Statutory Statements. To the Company’s knowledge, no Reinsurance Agreement contains any provision providing that the other party thereto may terminate or modify such treaty or agreement by reason of the transactions contemplated by this Agreement or any ancillary agreements hereto. To the Company’s knowledge, the Company is entitled to take full credit in its Statutory Statements pursuant to applicable Law for all reinsurance and coinsurance ceded by it pursuant to any Reinsurance Agreement, and (ii) in the Company’s Financial Statements the Company has applied, in all material respects, the requirements of Statement of Financial Accounting Standards No. 113, as amended, promulgated by the Financial Accounting Standards Board, to all reinsurance or coinsurance ceded by the Company.

5.21

Tax Returns and Payments. There are no U.S. federal, state, county, local or foreign taxes due and payable by the Company which have not been timely paid. There are no accrued and unpaid U.S. federal, state, county, local or foreign taxes of the Company which are due, whether or not assessed or disputed. The Company’s tax returns are not currently the subject of examinations or audits or reports by any applicable Governmental Entity, and no such examination or audit has been threatened in writing. The Company has duly and timely filed all federal, state, county, local and foreign tax returns (including information returns and reports) required to have been filed by it and all such tax returns and reports were true, complete and correct in all material respects. There are in effect no waivers of applicable statutes of limitations with respect to taxes of the Company for any year. The Company has withheld or collected from each payment made to each of its employees and contractual counterparties, the amount of all taxes required to be withheld or collected therefrom, and has paid the same to the proper taxing authorities. The Company has not participated in a “reportable transaction” within the meaning of Treasury Regulations Section 1.6011-4.

5.22

Corporate Documents.

(a)

Except for amendments necessary to satisfy the representations, warranties or conditions contained in this Agreement, the Certificate of Incorporation and Bylaws of the Company are in the form provided to Investor. The copy of the minute books of the Company provided to Investor accurately reflects in all material respects the minutes of all meetings of directors and members and all actions by written consent without a meeting by the directors (including any committee of directors) and members and stockholders with respect to all transactions referred to in such minutes.

(b) The certificates of formation and the operating agreements of the Subsidiaries of the Company are in the form provided to Investor. The copies of the minute books of the Subsidiaries of the Company provided to Investor contain minutes of all meetings of directors and members and all actions by written consent without a meeting by the directors and members and accurately reflects in all material respects all actions by the directors (including any committee of directors) and members with respect to all transactions referred to in such minutes.

5.23 Data Privacy. In connection with its collection, storage, transfer (including, without limitation, any transfer across national borders) and/or use of any personally identifiable information from any individuals, including, without limitation, any customers, prospective customers, employees and/or other third parties (collectively “Personal Information”), the Company to the Company’s Knowledge is and has at all times been in compliance, in all material respects with all applicable Laws, policies and procedures in all relevant jurisdictions, the Company’s privacy policies and the requirements of any contract or codes of conduct to which the Company is a party. The Company has commercially reasonable physical, technical, organizational and administrative security measures and policies in place to protect all Personal Information collected by it or on its behalf from and against unauthorized access, use and/or disclosure. No claims or actions have been asserted or, to the Company’s Knowledge, threatened against the Company by any Person alleging a violation of such Person’s privacy, personal or confidentiality rights under any applicable Laws, rules, policies, procedures or contracts.

5.24 Disclosure. The Company has made available to Investor all the information reasonably available to the Company that Investor has requested for deciding whether to acquire the Preferred Shares. No representation or warranty of the Company contained in this Agreement, as qualified by the Disclosure Schedule, and no certificate furnished or to be furnished to Investor at the Closing contains any untrue statement of a material fact or, to the Company’s knowledge, omits to state a material fact necessary in order to make the statements contained herein or therein not misleading in light of the circumstances under which they were made. It is understood that this representation is qualified by the fact that the Company has not delivered to Investor, and has not been requested to deliver, a private placement or similar memorandum or any written disclosure of the types of information customarily furnished to purchasers of securities.

5.25 No Other Representations and Warranties. Except for the representations and warranties contained in this Article 5 (including the related portions of the Disclosure Schedules), none of the Company or any other Person has made or makes any other express or implied representation or warranty, either written or oral, on behalf of the Company, including any representation or warranty as to the accuracy or completeness of any information regarding the Company furnished or made available to Investor (including any information, documents, or material delivered to Investor, management presentations or in any other form in expectation of the transactions contemplated hereby) or as to the future revenue, profitability or success of the Company, or any representation or warranty arising from statute or otherwise in Law.

6. Representations and Warranties of Investor. Investor hereby represents and warrants to the Company with respect to the purchase of the Securities as follows:

6.1 Authorization. This Agreement, when executed and delivered by Investor will constitute a valid and legally binding obligation of Investor, enforceable in accordance with its

terms, except (i) as limited by applicable bankruptcy, insolvency, reorganization, moratorium and other laws of general application affecting enforcement of creditors' rights generally, (ii) as limited by laws relating to the availability of specific performance, injunctive relief or other equitable remedies and (iii) to the extent indemnification provisions may be limited by applicable federal or state securities law and principles of public policy.

6.2 Purchase Entirely for Own Account. This Agreement is made with Investor in reliance upon Investor's representation to the Company, which by Investor's execution of this Agreement Investor hereby confirms, that the Securities will be acquired for investment for Investor's own account, not as a nominee or agent, and not with a view to the resale or distribution of any part thereof, and that Investor has no present intention of selling, granting any participation in, or otherwise distributing the same. By executing this Agreement, Investor further represents that Investor does not have any contract, undertaking, agreement or arrangement with any Person to sell, transfer or grant participations to such Person or to any third person with respect to any of the Securities.

6.3 Disclosure of Information. Investor has conducted its own independent investigation, review and analysis of the business, results of operations, prospects, condition (financial or otherwise) or assets of the Company, and acknowledges that it has been provided adequate access to the personnel, properties, assets, premises, book and records, and other documents and data of the Company for such purpose. Investor acknowledges and agrees that in making its decision to consummate the transactions contemplated hereby, Investor had an opportunity to ask questions and receive answers from the Company regarding the terms and conditions of the offering of the Securities and the business, properties, prospects and financial condition of the Company.

6.4 Accredited Investor. Investor is an "accredited investor" within the meaning of Rule 501(a) of Regulation D promulgated under the Securities Act.

6.5 Restricted Securities. Investor understands that the Securities have not been, and will not be, registered under the Securities Act, by reason of a specific exemption from the registration provisions of the Securities Act which depends upon, among other things, the bona fide nature of the investment intent and the accuracy of Investor's representations as expressed herein. Investor understands that the Securities are "restricted securities" under applicable U.S. federal and state securities laws and that, pursuant to these laws, Investor must hold the Securities indefinitely unless they are registered with the Securities and Exchange Commission and qualified by state authorities, or an exemption from such registration and qualification requirements is available. Investor acknowledges that the Company has no obligation to register or qualify the Securities, or the Common Stock into which it may be converted, for resale. Investor further acknowledges that if an exemption from registration or qualification is available, it may be conditioned on various requirements including, but not limited to, the time and manner of sale, the holding period for the Securities, and on requirements relating to the Company which are outside of Investor's control, and which the Company is under no obligation and may not be able to satisfy.

6.6 Legends. It is understood that the certificates evidencing the Securities shall bear the following legend (in addition to any legend required by ancillary agreements to this Agreement or under applicable state securities laws):

“THE SHARES REPRESENTED HEREBY HAVE NOT BEEN REGISTERED UNDER THE SECURITIES ACT OF 1933, AND HAVE BEEN ACQUIRED FOR INVESTMENT AND NOT WITH A VIEW TO, OR IN CONNECTION WITH, THE SALE OR DISTRIBUTION THEREOF. NO SUCH TRANSFER MAY BE EFFECTED WITHOUT AN EFFECTIVE REGISTRATION STATEMENT RELATED THERETO OR AN OPINION OF COUNSEL IN A FORM SATISFACTORY TO THE COMPANY THAT SUCH REGISTRATION IS NOT REQUIRED UNDER THE SECURITIES ACT OF 1933.”

6.7 Residence. The office or offices of Investor in which its principal place of business is identified in the address or addresses of Investor set forth on Exhibit A.

7. Conditions of Investor’s Obligations at Closing. The obligations of Investor to close under the terms of this Agreement are subject to the fulfillment on or before the Closing of each of the following conditions:

7.1 Representations and Warranties. The representations and warranties made by the Company in Section 5 shall be true and correct in all respects as of the Closing.

7.2 Covenants. All covenants, agreements, obligations and conditions contained in this Agreement to be performed by the Company on or prior to the Closing shall have been performed or complied with by the Company.

7.3 Compliance Certificate. An officer of the Company shall deliver to Investor at the Closing certificates certifying that the conditions specified in Subsections 7.1 and 7.2 have been fulfilled.

7.4 Qualifications. All authorizations, approvals or permits, if any, of any Governmental Entity of the United States or of any state that are required in connection with the transactions contemplated by the Transaction Agreements shall be obtained and effective as of the Closing.

7.5 Proceedings and Documents. All corporate and other proceedings in connection with the transactions contemplated at the Closing and all documents incident thereto shall be reasonably satisfactory in form and substance to Investor, and it shall have received all such counterpart original and certified or other copies of such documents as it may reasonably request.

7.6 Secretary’s Certificate. The Secretary of the Company shall deliver to Investor at the Closing a certificate stating that the copies of the Certificate of Incorporation and Bylaws and Board of Director and stockholder resolutions relating to the sale of the Preferred Shares attached thereto are true and complete copies of such documents and resolutions.

7.7 Amendment to Certificate of Incorporation. The Company shall have filed the Amendment with the Secretary of State of Delaware on or prior to the Closing.

8. Conditions to Closing of Company. The obligations of the Company to Investor under this Agreement are subject to fulfillment on or before the Closing of each of the following conditions:

8.1 Representations and Warranties. The representations and warranties made by Investor in Section 6 shall be true and correct in all material respects as of the Closing.

8.2 Performance. Investor shall have performed and complied with all covenants, agreements, obligations and conditions contained in this Agreement that are required to be performed or complied with by Investor on or before the Closing.

8.3 Qualifications. All authorizations, approvals or permits, if any, of any Governmental Entity of the United States or of any state that are required in connection with the transactions contemplated by the Transaction Agreements shall be obtained and effective as of the Closing.

9. Miscellaneous.

9.1 Governing Law. THIS AGREEMENT SHALL BE GOVERNED IN ALL RESPECTS BY THE INTERNAL LAWS OF THE STATE OF DELAWARE AS APPLIED TO AGREEMENTS ENTERED INTO AMONG DELAWARE RESIDENTS TO BE PERFORMED ENTIRELY WITHIN DELAWARE, WITHOUT REGARD TO CONFLICT OF LAWS RULES.

9.2 Survival of Warranties. The representations, warranties and covenants of the Company and Investor contained herein or made pursuant to this Agreement shall survive the execution and delivery of the Agreement and the Closing and shall in no way be affected by any investigation of the subject matter thereof made by or on behalf of Investor or the Company.

9.3 Successors and Assigns. Except as otherwise provided herein, the provisions hereof shall inure to the benefit of, and be binding upon, the successors, assigns, heirs, executors and administrators of the parties hereto. Nothing in this Agreement, express or implied, is intended to confer upon any party other than the parties hereto or their respective successors and assigns any rights, remedies, obligations, or liabilities under or by reason of this Agreement, except as expressly provided in this Agreement.

9.4 Entire Agreement; Amendment; Waiver; Termination. This Agreement (including the Exhibits hereto), the Certificate of Incorporation and the other Transaction Agreements constitute the full and entire understanding and agreement between the parties with regard to the subject matter hereof and thereof, and no party shall be liable or bound to any other party in any manner by any warranties, representations or covenants except as specifically set forth herein or therein. Except as expressly provided herein, neither this Agreement nor any term hereof may be amended, waived, discharged or terminated other than by a written instrument signed by the party against whom enforcement of any such amendment, waiver, discharge or termination is sought. This Agreement shall automatically terminate and be of no further force and effect if the Closing shall not have occurred by April 1, 2020; provided that no such termination shall relieve any party from any liability arising from its willful breach of this Agreement prior to termination.

9.5 Notices, etc. All notices and other communications required or permitted hereunder shall be in writing and may be delivered in person or by facsimile, electronic mail, courier or U.S. mail, in which event it may be mailed by first-class, certified or registered, postage prepaid, addressed (a) if to Investor, at Investor's address set forth on the signature page of this Agreement,

or at such other address as Investor shall have furnished to the Company in writing, or (b) if to the Company, to its address set forth on the signature page of this Agreement and addressed to the attention of the Secretary, or at such other address as the Company shall have furnished to Investor. All such notices and other communications shall be deemed given upon personal delivery, upon confirmation of facsimile transfer, upon confirmation of electronic mail transmission, upon delivery by courier or three business days after deposit in the United States mail. Notwithstanding the foregoing, all notices and communications to addresses outside the United States shall be given by facsimile and confirmed in writing sent by overnight or two-day courier service.

9.6 Delays or Omissions. Except as expressly provided herein, no delay or omission to exercise any right, power or remedy accruing to Investor, upon any breach or default of the Company under this Agreement, shall impair any such right, power or remedy of Investor nor shall it be construed to be a waiver of any such breach or default, or an acquiescence therein, or of any similar breach or default thereafter occurring; nor shall any waiver of any single breach or default be deemed a waiver of any other breach or default theretofore or thereafter occurring. Any waiver, permit, consent or approval of any kind or character on the part of Investor of any breach or default under this Agreement, or any waiver on the part of Investor of any provisions or conditions of this Agreement, must be in writing and shall be effective only to the extent specifically set forth in such writing. All remedies, either under this Agreement or by law or otherwise afforded to Investor, shall be cumulative and not alternative.

9.7 Expenses. Irrespective of whether the Closing is effected, each party shall pay all costs and expenses that it incurs with respect to the negotiation, execution, delivery and performance of this Agreement. If any action at law or in equity is necessary to enforce or interpret the terms of this Agreement, the prevailing party shall be entitled to reasonable attorney's fees, costs and necessary disbursements in addition to any other relief to which such party may be entitled.

9.8 Finder's Fees. The Company agrees to indemnify and hold harmless Investor from any liability for any commission or compensation in the nature of a finder's or broker's fee arising out of this transaction (and the costs and expenses of defending against such liability or asserted liability) for which the Company or any of its officers, employees or representatives is responsible. Investor agrees to indemnify and to hold harmless the Company from any liability for any commission or compensation in the nature of a finder's or broker's fee arising out of this transaction (and the costs and expenses of defending against such liability or asserted liability) for which Investor or any of its officers, employees or representatives is responsible.

9.9 Severability. In the event that any provision of this Agreement becomes or is declared by a court of competent jurisdiction to be illegal, unenforceable or void, this Agreement shall continue in full force and effect without said provision; provided that no such severability shall be effective if it materially changes the economic benefit of this Agreement to any party.

9.10 Counterparts. This Agreement may be executed in any number of counterparts, each of which shall be enforceable, and all of which together shall constitute one instrument.

9.11 Telecopy Execution and Delivery. A facsimile, telecopy or other reproduction of this Agreement may be executed by one or more parties hereto, and an executed copy of this

Agreement may be delivered by one or more parties hereto by facsimile or similar electronic transmission device pursuant to which the signature of or on behalf of such party can be seen, and such execution and delivery shall be considered valid, binding and effective for all purposes. At the request of any party hereto, all parties hereto agree to execute an original of this Agreement as well as any facsimile, telecopy or other reproduction hereof.

9.12 Dispute Resolution. The parties (a) hereby irrevocably and unconditionally submit to the jurisdiction of the state courts of Delaware and to the jurisdiction of the United States District Court for the District of Delaware for the purpose of any suit, action or other proceeding arising out of or based upon this Agreement, (b) agree not to commence any suit, action or other proceeding arising out of or based upon this Agreement except in the state courts of Delaware or the United States District Court for the District of Delaware, and (c) hereby waive, and agree not to assert, by way of motion, as a defense, or otherwise, in any such suit, action or proceeding, any claim that it is not subject personally to the jurisdiction of the above-named courts, that its property is exempt or immune from attachment or execution, that the suit, action or proceeding is brought in an inconvenient forum, that the venue of the suit, action or proceeding is improper or that this Agreement or the subject matter hereof may not be enforced in or by such court.

9.13 WAIVER OF JURY TRIAL. EACH PARTY HEREBY WAIVES ITS RIGHTS TO A JURY TRIAL OF ANY CLAIM OR CAUSE OF ACTION BASED UPON OR ARISING OUT OF THIS AGREEMENT, THE OTHER TRANSACTION DOCUMENTS, THE SECURITIES OR THE SUBJECT MATTER HEREOF OR THEREOF. THE SCOPE OF THIS WAIVER IS INTENDED TO BE ALL-ENCOMPASSING OF ANY AND ALL DISPUTES THAT MAY BE FILED IN ANY COURT AND THAT RELATE TO THE SUBJECT MATTER OF THIS TRANSACTION, INCLUDING, WITHOUT LIMITATION, CONTRACT CLAIMS, TORT CLAIMS (INCLUDING NEGLIGENCE), BREACH OF DUTY CLAIMS, AND ALL OTHER COMMON LAW AND STATUTORY CLAIMS. THIS SECTION HAS BEEN FULLY DISCUSSED BY EACH OF THE PARTIES HERETO AND THESE PROVISIONS WILL NOT BE SUBJECT TO ANY EXCEPTIONS. EACH PARTY HERETO HEREBY FURTHER WARRANTS AND REPRESENTS THAT SUCH PARTY HAS REVIEWED THIS WAIVER WITH ITS LEGAL COUNSEL, AND THAT SUCH PARTY KNOWINGLY AND VOLUNTARILY WAIVES ITS JURY TRIAL RIGHTS FOLLOWING CONSULTATION WITH LEGAL COUNSEL.

9.14 No Commitment for Additional Financing. The Company acknowledges and agrees that Investor has not made any representation, undertaking, commitment or agreement to provide or assist the Company in obtaining any financing, investment or other assistance, other than the purchase of the Preferred Shares as set forth herein and subject to the conditions set forth herein. In addition, the Company acknowledges and agrees that (i) no statements, whether written or oral, made by Investor or its representatives on or after the date of this Agreement shall create an obligation, commitment or agreement to provide or assist the Company in obtaining any financing or investment, (ii) the Company shall not rely on any such statement by Investor or its representatives, and (iii) an obligation, commitment or agreement to provide or assist the Company in obtaining any financing or investment may only be created by a written agreement, signed by Investor and the Company, setting forth the terms and conditions of such financing or investment and stating that the parties intend for such writing to be a binding obligation or agreement. Investor shall have the right,

in its sole and absolute discretion, to refuse or decline to participate in any other financing of or investment in the Company, and shall have no obligation to assist or cooperate with the Company in obtaining any financing, investment or other assistance.

[signature page immediately follows]

IN WITNESS WHEREOF, the parties have executed this Agreement on the day, month and year first set forth above.

COMPANY:

SILAC, INC.

By: /s/ James S. Adams
Printed: James S. Adams
Title: CFO

INVESTOR:

SS&C TECHNOLOGIES, INC.

By:/s/ Patrick J. Pedonti

Printed:Patrick J. Pedonti

Title:SVP, CFO

Address:80 Lambertson Rd., Windsor, CT 06095

SIGNATURE PAGE

TO

SERIES A CONVERTIBLE PREFERRED STOCK PURCHASE AGREEMENT

EXHIBIT A**Schedule of Investors**

Name and Address	Number of Series A Preferred Stock Purchased	Purchase Price
SS&C TECHNOLOGIES, INC. 80 Lamberton Road Windsor, CT 06095	40,000,000	\$1.00
Totals:	40,000,000	\$40,000,000

EXHIBIT B

Amendment to Certificate of Incorporation

[See attached.]

EXHIBIT C

Disclosure Schedule

[See attached.]

EXHIBIT C

NAME	JURISDICTION OF ORGANIZATION
Financial Models Company Ltd.	New York
SS&C Financial Services LLC	Delaware
SS&C Technologies Connecticut LLC	Connecticut
SS&C Technologies, Inc.	Delaware
Advent Software, Inc.	Delaware
Hub Data, Inc.	Massachusetts
Second Street Securities, Inc.	Delaware
Advent Software (Middle East) Limited	United Arab Emirates
Advent Software (Asia) Ltd.	Hong Kong
Advent Software (Beijing) Co. Ltd.	China
Advent Software (Singapore) Pte. Ltd.	Singapore
Advent Software ApS	Denmark
Advent Norway AS	Norway
Advent Sweden AB	Sweden
Advent Software Luxembourg S.a.r.l.	Luxembourg
Primatics Financial (Pvt) Ltd.	Pakistan
Financial Models Corporation Limited	United Kingdom
FMC Global Investments Limited	Barbados
SS&C Fund Services (Cayman) Ltd.	Cayman Islands
GlobeOp Financial Services (India) Private Limited	India
SS&C Financial Services (Ireland) Limited	Ireland
SS&C Financial Services Limited	United Kingdom
GlobeOp Financial Services (Switzerland) GmbH	Switzerland
GlobeOp Financial Services Technologies (India) Private Limited	India
GlobeOp Holding Company (Mauritius) Private Limited	Mauritius
SS&C Depositary Services Limited	United Kingdom
SS&C Fund Services (Bermuda) Ltd.	Bermuda
SS&C Fund Administration Company	Nova Scotia
SS&C European Holdings S.a.r.l.	Luxembourg
SS&C Technologies (s) Pte Ltd.	Singapore
SS&C Technologies Australia Pty Ltd	Australia
SS&C Technologies B.V.	Netherlands
SS&C Technologies Canada Corp.	Nova Scotia
SS&C Technologies Holdings Europe S.a.r.l.	Luxembourg
SS&C Technologies Hong Kong Limited	Hong Kong
SS&C Technologies India Private Limited	India
SS&C Technologies Ireland Limited	Ireland
SS&C Technologies Sdn. Bhd.	Malaysia
SS&C Luxembourg S.a.r.l.	Luxembourg
DST Global Solutions LLC	Delaware
Global Solutions (Thailand) Limited	Thailand
SS&C Guernsey Limited	Guernsey
SS&C Solutions Limited	United Kingdom
SS&C Solutions Pty Limited	Australia
SS&C Solutions Hong Kong Limited	Hong Kong
SS&C Solutions NZ Limited	New Zealand
SS&C Technologies Shanghai Limited	China
PT DST Global Solutions Indonesia	Indonesia
SS and C Technologies South Africa (Pty) Ltd	South Africa
SSC Jersey Limited	United Kingdom
SS&C Fund Services (UK) Limited	United Kingdom
SS&C Fund Services (Asia) Limited	Hong Kong
SS&C Fund Services (Asia) Pte Ltd.	Singapore
SS&C (USA) Inc.	Delaware
SS&C (Canada) Limited	New Brunswick

SS&C Financing LLC	Delaware
DST Systems, Inc.	Delaware
DST Pershing Realty, Inc.	Missouri
Pershing Road Development Company, LLC	Missouri
C&T Acquisition Limited	United Kingdom
DST Healthcare Holdings, Inc.	Delaware
DST Health Solutions, LLC	Delaware
Intellisource Solutions, LLC	Pennsylvania
DST Pharmacy Solutions, Inc.	Delaware
Pacific Ventures (Mauritius)	Mauritius
DST Worldwide Services India Private Limited	India
DST Insurance Solutions, LLC	Delaware
DST Output Summit Development Corporation	Missouri
ALPS Holdings, Inc.	Delaware
ALPS Advisors, Inc.	Colorado
ALPS Distributors, Inc.	Colorado
ALPS Fund Services, Inc.	Colorado
ALPS Portfolio Solutions Distributor, Inc.	Colorado
Red Rocks Capital, LLC	Colorado
ALPS Alternative Investment Services, LLC	Delaware
Vermont Western Assurance, Inc.	Missouri
DST Technologies, Inc.	Missouri
DST Brokerage Solutions, LLC	Missouri
DST Worldwide Services, LLC	Missouri
DST Worldwide Services (Thailand) Limited	Thailand
DST Market Services, LLC	New York
IFDS GP, Inc.	Missouri
DST Retirement Solutions, LLC	Delaware
DST Realty, Inc.	Missouri
Broadway Development, L.L.C.	Missouri
DST UK Realty, LLC	Delaware
DST UK Leasing I, LLC	Delaware
DST UK Leasing II, LLC	Delaware
Eleventh Street Corridor Development Corporation	Missouri
Hillside Properties Corporation	Missouri
Kansas City Downtown Hotel Group, L.L.C.	Missouri
Lewis Real Estate, LLC	Missouri
Winchester Business Center, Inc.	Missouri
Broadway Square Partners, LLP	Missouri
Penn Seven, L.L.C.	Missouri
Kirkwood Realty Company, LLC	Missouri
MC Realty Group, LLC	Missouri
Winchester Ventures II, LLC	Missouri
International Financial Data Services Limited Partnership	Massachusetts
IFDS Luxembourg S.A.	Luxembourg
International Financial Data Services (Canada) Limited	Canada
International Financial Data Services (Ireland) Limited	Ireland
MobliCo Solutions, LLC	Delaware
DSTi US, LLC	Delaware
West Side Investment Management, Inc.	Nevada
DST Asset Manager Solutions, Inc.	Massachusetts
DST Realty Masskan, LLC	Massachusetts
SS&C DST Holdings Limited	United Kingdom
DSTi Group LLP	United Kingdom
DSTi Holdings Limited	United Kingdom
DST Bluedoor Holdings Pty Ltd.	Australia
Bluedoor Technologies Pty Limited	Australia

DST Bluedoor Pty Limited	Australia
DST Process Solutions (Australia) Pty Limited	Australia
DST Financial Services International Limited	United Kingdom
IFDS Financial Services Limited	United Kingdom
DST Financial Services Europe Limited	United Kingdom
DST Financial Services Ireland Limited	Ireland
DST International Managed Services Limited	Ireland
DST Process Solutions Limited	United Kingdom
DST Process Solutions SA (Pty) Ltd	South Africa
DST Global Solutions (Realty) Limited	United Kingdom
DST (Hong Kong) Limited	Hong Kong
Pensions and Actuarial Services Limited	United Kingdom
Eze Castle Software LLC	Delaware
EzeSoftware India Private Limited (India)	India
Eze Software Asia Pacific Limited (Hong Kong)	Hong Kong
Eze Software Group Pty Limited (Australia)	Australia
Eze Castle Transaction Services LLC	Delaware
Eze Software EMEA Limited (United Kingdom)	United Kingdom
Eze Software Europe Limited (United Kingdom)	United Kingdom
Eze Castle Software Singapore Pte. Ltd. (Singapore)	Singapore
Intralinks, Inc.	Delaware
Intralinks Ltd. (England)	United Kingdom
IntraLinks Goudou Kaisha (Japan)	Japan
Intralinks Servicios de Tecnologia de Mexico, S de R.L. de C.V. (Mexico)	Mexico
IntraLinks Servicios de Informatica Ltda. (Brazil)	Brazil
IntraLinks Pty Limited (Australia)	Australia
IntraLinks Canada, Inc. (Canada)	Canada
IntraLinks EMEA Holdings B.V. (Netherlands)	Netherlands
IntraLinks SRL (Romania)	Romania
Intralinks Asia Pacific Pte. Ltd. (Singapore)	Singapore
IntraLinks GmbH (Germany)	Germany
IntraLinks Spain SLU (Spain)	Spain
IntraLinks EMEA France SARL (France)	France
Intralinks India Solutions Pvt. Limited (India)	India
SS&C Technologies Israel (Process Solutions) Ltd.	Israel
SS&C Technologies Austria GmbH	Austria
SS&C Technologies Italy S.r.l.	Italy
SS&C Technologies Poland sp. z.o.o	Poland
SS&C TURKEY YAZILIM TEKNOLOJILERI LIMITED SIRKETI	Turkey

CONSENT OF INDEPENDENT REGISTERED PUBLIC ACCOUNTING FIRM

We hereby consent to the incorporation by reference in the Registration Statements on Form S-8 (No. 333-232978, No. 333-224390, No. 333-205705, No. 333-197943, No. 333-187599, No. 333-167796 and No. 333-165810) and Form S-3 (No. 333-228087) of SS&C Technologies Holdings, Inc. of our report dated February 28, 2020 relating to the financial statements and the effectiveness of internal control over financial reporting, which appears in this Form 10-K.

/s/ PricewaterhouseCoopers LLP

February 28, 2020
Hartford, Connecticut

CERTIFICATION

I, William C. Stone, certify that:

1. I have reviewed this annual report on Form 10-K of SS&C Technologies Holdings, Inc.;
2. Based on my knowledge, this report does not contain any untrue statement of a material fact or omit to state a material fact necessary to make the statements made, in light of the circumstances under which such statements were made, not misleading with respect to the period covered by this report;
3. Based on my knowledge, the financial statements, and other financial information included in this report, fairly present in all material respects the financial condition, results of operations and cash flows of the registrant as of, and for, the periods presented in this report;
4. The registrant's other certifying officer(s) and I are responsible for establishing and maintaining disclosure controls and procedures (as defined in Exchange Act Rules 13a-15(e) and 15d-15(e)) and internal control over financial reporting (as defined in Exchange Act Rules 13a-15(f) and 15d-15(f)) for the registrant and have:
 - a) Designed such disclosure controls and procedures, or caused such disclosure controls and procedures to be designed under our supervision, to ensure that material information relating to the registrant, including its consolidated subsidiaries, is made known to us by others within those entities, particularly during the period in which this report is being prepared;
 - b) Designed such internal control over financial reporting, or caused such internal control over financial reporting to be designed under our supervision, to provide reasonable assurance regarding the reliability of financial reporting and the preparation of financial statements for external purposes in accordance with generally accepted accounting principles;
 - c) Evaluated the effectiveness of the registrant's disclosure controls and procedures and presented in this report our conclusions about the effectiveness of the disclosure controls and procedures, as of the end of the period covered by this report based on such evaluation; and
 - d) Disclosed in this report any change in the registrant's internal control over financial reporting that occurred during the registrant's most recent fiscal quarter (the registrant's fourth fiscal quarter in the case of an annual report) that has materially affected, or is reasonably likely to materially affect, the registrant's internal control over financial reporting; and
5. The registrant's other certifying officer(s) and I have disclosed, based on our most recent evaluation of internal control over financial reporting, to the registrant's auditors and the audit committee of the registrant's board of directors (or persons performing the equivalent functions):
 - a) All significant deficiencies and material weaknesses in the design or operation of internal control over financial reporting which are reasonably likely to adversely affect the registrant's ability to record, process, summarize and report financial information; and
 - b) Any fraud, whether or not material, that involves management or other employees who have a significant role in the registrant's internal control over financial reporting.

Date: February 28, 2020

/s/ William C. Stone

William C. Stone

Chairman of the Board and Chief Executive Officer
(Principal Executive Officer)

CERTIFICATION

I, Patrick J. Pedonti, certify that:

1. I have reviewed this annual report on Form 10-K of SS&C Technologies Holdings, Inc.;
2. Based on my knowledge, this report does not contain any untrue statement of a material fact or omit to state a material fact necessary to make the statements made, in light of the circumstances under which such statements were made, not misleading with respect to the period covered by this report;
3. Based on my knowledge, the financial statements, and other financial information included in this report, fairly present in all material respects the financial condition, results of operations and cash flows of the registrant as of, and for, the periods presented in this report;
4. The registrant's other certifying officer(s) and I are responsible for establishing and maintaining disclosure controls and procedures (as defined in Exchange Act Rules 13a-15(e) and 15d-15(e)) and internal control over financial reporting (as defined in Exchange Act Rules 13a-15(f) and 15d-15(f)) for the registrant and have:
 - a) Designed such disclosure controls and procedures, or caused such disclosure controls and procedures to be designed under our supervision, to ensure that material information relating to the registrant, including its consolidated subsidiaries, is made known to us by others within those entities, particularly during the period in which this report is being prepared;
 - b) Designed such internal control over financial reporting, or caused such internal control over financial reporting to be designed under our supervision, to provide reasonable assurance regarding the reliability of financial reporting and the preparation of financial statements for external purposes in accordance with generally accepted accounting principles;
 - c) Evaluated the effectiveness of the registrant's disclosure controls and procedures and presented in this report our conclusions about the effectiveness of the disclosure controls and procedures, as of the end of the period covered by this report based on such evaluation; and
 - d) Disclosed in this report any change in the registrant's internal control over financial reporting that occurred during the registrant's most recent fiscal quarter (the registrant's fourth fiscal quarter in the case of an annual report) that has materially affected, or is reasonably likely to materially affect, the registrant's internal control over financial reporting; and
5. The registrant's other certifying officer(s) and I have disclosed, based on our most recent evaluation of internal control over financial reporting, to the registrant's auditors and the audit committee of the registrant's board of directors (or persons performing the equivalent functions):
 - a) All significant deficiencies and material weaknesses in the design or operation of internal control over financial reporting which are reasonably likely to adversely affect the registrant's ability to record, process, summarize and report financial information; and
 - b) Any fraud, whether or not material, that involves management or other employees who have a significant role in the registrant's internal control over financial reporting.

Date: February 28, 2020

/s/ Patrick J. Pedonti

Patrick J. Pedonti

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

CERTIFICATION PURSUANT TO 18 U.S.C. SECTION 1350,
AS ADOPTED PURSUANT TO
SECTION 906 OF THE SARBANES-OXLEY ACT OF 2002

In connection with the annual report on Form 10-K of SS&C Technologies Holdings, Inc. (the "Company") for the year ended December 31, 2019 as filed with the Securities and Exchange Commission on the date hereof (the "Report"), the undersigned officers of the Company hereby certify to their knowledge, pursuant to 18 U.S.C. Section 1350, that:

- (1) the Report fully complies with the requirements of Section 13(a) or 15(d) of the Securities Exchange Act of 1934; and
- (2) the information contained in the Report fairly presents, in all material respects, the financial condition and results of operations of the Company.

Date: February 28, 2020

By: /s/ William C. Stone
William C. Stone
Chairman of the Board and
Chief Executive Officer
(Principal Executive Officer)

Date: February 28, 2020

By: /s/ Patrick J. Pedonti
Patrick J. Pedonti
Senior Vice President and
Chief Financial Officer
(Principal Financial Officer)