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

FORM 10-K

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

For the fiscal year ended December 31, 2018

Commission File Number 0-25346

ACI WORLDWIDE, INC.

(Exact name of registrant as specified in its charter)

Delaware
(State or other jurisdiction of
incorporation or organization)

3520 Kraft Rd, Suite 300
Naples, FL 34105

(Address of principal executive offices, including zip code)

47-0772104
(I.R.S. Employer
Identification No.)

(239) 403-4600

(Registrant's telephone number, including area code)

Securities registered pursuant to Section 12(b) of the Act: Common Stock, \$.005 par value, 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 every Interactive Data File required to be submitted pursuant to Rule 405 of Regulation S-T during the preceding 12 months (or for such shorter period that the registrant was required to submit such files). Yes No

Indicate by check mark 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, 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 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"/>
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 Act). Yes No

The aggregate market value of the Company's voting common stock held by non-affiliates on June 29, 2018 (the last business day of the registrant's most recently completed second fiscal quarter), based upon the last sale price of the common stock on that date of \$24.67 was \$2,181,473,639. For purposes of this calculation, executive officers, directors, and holders of 10% or more of the outstanding shares of the registrant's common stock are deemed to be affiliates of the registrant and are excluded from the calculation.

As of February 25, 2019, there were 116,143,338 shares of the registrant's common stock outstanding.

Documents Incorporated by Reference – Portions of the registrant's definitive Proxy Statement for the Annual Meeting of Shareholders to be held on June 11, 2019, are incorporated by reference in Part III of this report. This registrant's Proxy Statement will be filed with the Securities and Exchange Commission pursuant to Regulation 14A.

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Forward-Looking Statements

This report contains forward-looking statements based on current expectations that involve a number of risks and uncertainties. Generally, forward-looking statements do not relate strictly to historical or current facts and may include words or phrases such as “believes,” “will,” “expects,” “anticipates,” “intends,” and words and phrases of similar impact. The forward-looking statements are made pursuant to safe harbor provisions of the Private Securities Litigation Reform Act of 1995, as amended.

Forward-looking statements in this report include, but are not limited to, statements regarding future operations, business strategy, business environment, key trends, and, in each case, statements related to expected financial and other benefits. Many of these factors will be important in determining our actual future results. Any or all of the forward-looking statements in this report may turn out to be incorrect. They may be based on inaccurate assumptions or may not account for known or unknown risks and uncertainties. Consequently, no forward-looking statement can be guaranteed. Actual future results may vary materially from those expressed or implied in any forward-looking statements, and our business, financial condition and results of operations could be materially and adversely affected. In addition, we disclaim any obligation to update any forward-looking statements after the date of this report, except as required by law.

All of the forward-looking statements in this report are expressly qualified by the risk factors discussed in our filings with the Securities and Exchange Commission (“SEC”). Such factors include, but are not limited to, risks related to:

- increased competition;
- the performance of our strategic products, Universal Payments solutions;
- demand for our products;
- consolidations and failures in the financial services industry;
- customer reluctance to switch to a new vendor;
- failure to obtain renewals of customer contracts or to obtain such renewals on favorable terms;
- delay or cancellation of customer projects or inaccurate project completion estimates;
- the complexity of our products and services and the risk that they may contain hidden defects;
- compliance of our products with applicable legislation, governmental regulations, and industry standards;
- failing to comply with money transmitter rules and regulations;
- our compliance with privacy regulations;
- being subject to security breaches or viruses;
- our ability to adequately protect our intellectual property;
- increasing intellectual property rights litigation;
- certain payment funding methods expose us to the credit and/or operating risk of our clients;
- business interruptions or failure of our information technology and communication systems;
- our offshore software development activities;
- operating internationally;
- global economic conditions impact on demand for our products and services;
- volatility and disruption of the capital and credit markets and adverse changes in the global economy;

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- attracting and retaining employees;
- potential future litigation;
- our sale of Community Financial Services (“CFS”) assets and liabilities to Fiserv, Inc. (“Fiserv”), including potential claims arising under the transaction agreement, the transition services agreement or with respect to retained liabilities;
- future acquisitions, strategic partnerships, and investments;
- impairment of our goodwill or intangible assets;
- restrictions and other financial covenants in our debt;
- difficulty meeting our debt service requirements;
- the accuracy of our backlog estimates;
- exposure to unknown tax liabilities;
- the cyclical nature of our revenue and earnings and the accuracy of forecasts due to the concentration of revenue generating activity during the final weeks of each quarter; and
- volatility in our stock price.

The cautionary statements in this report expressly qualify all of our forward-looking statements. Factors that could cause actual results to differ from those expressed or implied in the forward-looking statements include, but are not limited to, those discussed in Item 1A, “Risk Factors”.

Trademarks and Service Marks

ACI, ACI logo, ACI PAY.ON, ACI ReD Shield, ACI Universal Payments, ACI Worldwide, Any Payment, Every Possibility., AuthoAlert, BASE24, BASE24-atm, BASE24-Card, BASE24-eps, BASE24-pos, BASE24-Teller, ChoicePay, DistrA, Enguard, eSocket, iBroker, IEX, iExchange, Money HQ, Official Payments, Official Payments logo, Officially Paid, Online Resources, PayAnyone, PayMyBill, Postilion, Prism, Prism Credit, Prism Debit, Prism Merchant, Real-Time Digital Scanline, Universal Payments, UP, UP BASE24-eps, UP logo, among others, are registered trademarks and/or registered service marks of ACI Worldwide, Inc., or one of its subsidiaries, in the United States and/or other countries.

ACI Acquirer, ACI Automated Dispute Manager, ACI Card and Merchant Management, ACI Card Management System, ACI Communication Services, ACI DataWise, ACI Enterprise Banker, ACI Enterprise Security Services, ACI Global Banker, ACI Interchange, ACI Issuer, ACI Model Generator, ACI Money Transfer System, ACI Monitoring and Management, ACI On Demand, ACI On Premise, ACI PAY.ON Payments Gateway, ACI Proactive Risk Manager, ACI ReD Fraud Xchange, ACI ReDi, ACI Retail Commerce Server, ACI RFX Club, ACI Simulation Services for Enterprise Testing (ASSET or ACI Payment Testing), ACI Token Manager, ACI Universal Online Banker, ACI Web Access Services, ASx, eSocket.POS, Global HELP24, NET24, NET24-XPNET, ON/2, Stream Analytics Engine, Universal Scoring Engine, UP Bill Payment, UP eCommerce Payments, UP Framework, UP Immediate Payments, UP Merchant Payments, UP Payments Risk Management, UP Retail Payments, UP Real-Time Payments, among others, are common-law trademarks and/or service marks of ACI Worldwide, Inc., or one of its subsidiaries, in the United States and/or other countries. Other parties’ marks referred to in this report are the property of their respective owners.

PART I

ITEM 1. BUSINESS

General

ACI Worldwide, Inc. (“ACI”, “ACI Worldwide”, the “Company,” “we,” “us,” or “our”) is a Delaware corporation incorporated in November 1993 under the name ACI Holding, Inc. ACI is largely the successor to Applied Communications, Inc. and Applied Communications Inc. Limited, which we acquired from Tandem Computers Incorporated on December 31, 1993. On July 24, 2007, we changed our corporate name from “Transaction Systems Architects, Inc.” to “ACI Worldwide, Inc.” We have been marketing our products and services under the ACI Worldwide brand since 1993 and have gained significant market recognition under this brand name.

We develop, market, install, and support a broad line of software products and solutions primarily focused on facilitating real-time electronic payments. Our payment capabilities, technologies, and solutions are marketed under the brand name Universal Payments, or “UP,” which describes the breadth and depth of ACI’s product offerings. UP defines ACI’s enterprise or “universal” payments capabilities targeting any channel, any network, and any payment type. ACI UP solutions empower customers to regain control, choice, and flexibility in today’s complex payments environment, get to market more quickly, and reduce operational costs.

These products and services are used globally by banks, financial intermediaries, merchants and corporates, such as third-party electronic payment processors, payment associations, switch interchanges and a wide range of transaction-generating endpoints, including automated teller machines (“ATM”), merchant point-of-sale (“POS”) terminals, bank branches, mobile phones, tablets, corporations, and internet commerce sites. The authentication, authorization, switching, settlement, fraud-checking, and reconciliation of electronic payments is a complex activity due to the large number of locations and variety of sources from which transactions can be generated, the large number of participants in the market, high transaction volumes, geographically dispersed networks, differing types of authorization, and varied reporting requirements. These activities are typically performed online and are conducted 24 hours a day, seven days a week.

ACI combines a global perspective with local presence to tailor electronic payment solutions for our customers. We believe that we have one of the most diverse and robust electronic payment product portfolios in the industry with application software spanning the entire payments value chain. We also believe that our financial performance has been attributable to our ability to design and deliver quality products and solutions coupled with our ability to identify and successfully consummate and integrate strategic acquisitions.

Fiscal 2016 Divestiture

On March 3, 2016, we completed the sale of our CFS assets and liabilities to Fiserv. The transaction included employee agreements and customer contracts as well as technology assets and intellectual property. The sale of CFS assets and liabilities enabled us to focus resources on our strategic products and new high-growth initiatives in support of large banks, financial intermediaries, merchants and corporates worldwide.

Target Markets

ACI’s comprehensive electronic payment solutions serve four key markets:

Banks

ACI provides payment solutions to large and mid-size banks globally for both retail banking, digital, and other payment services. Our solutions transform banks’ complex payment environments to speed time to market, reduce costs, and deliver a consistent experience to customers across channels while enabling them to prevent

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and rapidly react to fraudulent activity. In addition, we enable banks to meet the requirements of different real-time payment schemes and to quickly create differentiated products to meet consumer, business, and merchant demands.

Financial intermediaries

ACI's payment solutions support financial intermediaries, such as processors, networks, payment service providers ("PSPs"), and new financial technology ("FinTech") entrants. We offer these customers scalable solutions that strategically position them to innovate and achieve growth and cost efficiency, while protecting them against fraud. Our solutions also allow new entrants in the digital marketplace to access innovative payment schemes, such as the U.K. Faster Payments New Access Model, Singapore FAST and the Payments Network Malaysia (PayNet) Real-Time Retail Payments Platform.

Merchants

ACI's support of merchants globally includes Tier 1 and Tier 2 merchants, online-only merchants and the PSPs, independent selling organizations ("ISOs"), value added resellers ("VARs"), and acquirers who service them. These customers operate in a variety of verticals, including general merchandise, grocery, hospitality, dining, transportation, and others. Our solutions provide merchants with a secure, omni-channel payments platform that gives them independence from third-party payment providers. We also offer secure solutions to online-only merchants that provide consumers with a convenient and seamless way to shop.

Corporates

Within the corporate segment, ACI provides electronic bill presentment and payment ("EBPP") services to companies operating in the consumer finance, insurance, healthcare, higher education, tax, and utility categories. Our solutions enable these customers to support a wide range of payment options and provide a painless consumer payments experience that drives consumer loyalty and increases revenue.

Solutions

ACI's UP[®] solutions span the payments ecosystem to support the electronic payment needs of banks, intermediaries, merchants and corporates. Our six strategic solution areas include the following:

Retail Payments

ACI offers comprehensive consumer payment solutions ranging from core payment engines to back-office support that enable banks and financial intermediaries to compete effectively in today's real-time, open payments ecosystem.

UP Retail Payments[™] solution enables banks and financial intermediaries to accept, authorize, route and secure payment transactions. Using the orchestration capabilities of UP Framework[™], this solution combines legacy technology with the modern, service-oriented architecture (SOA)-enabled UP BASE24-eps[®], protecting customers' existing investment while enabling them to move to a real-time, open environment. Customers have the flexibility to operate this solution on a range of hardware options, including x86/Linux, IBM System z, IBM System p, HP NonStop and Oracle Solaris servers. This solution drives innovation and increases customer loyalty by delivering choice and consistency across channels.

ACI Card and Merchant Management[™] solutions include comprehensive credit, debit, smart card and prepaid card issuance and management; end-to-end merchant account management and settlement; and operation of complex settlement environments through a flexible system designed to support changing business models. With proven scalability and interoperability with ACI's other payment offerings, this suite allows banks to introduce new products to their consumer segments quickly, across different markets, nationally and internationally.

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Real-Time Payments

ACI supports both low- and high-value, real-time payment processing for banks and financial intermediaries globally, ensuring multi-bank, multi-currency and 24x7 payment processing capabilities, as well as complete and ongoing regulatory compliance.

UP Real-Time Payments™ solution is the only global solution that allows banks to address their RTGS (Real-Time Gross Settlement), SWIFT messaging, ACH and real-time faster payments needs with a single, universal offering. The solution delivers accelerated time to market with improved management of cash flow; payments security and fraud detection capabilities; simplified connectivity to new payment types and transparency for customers in tracking their payments. It supports several major schemes globally, including EBA and ECB in Europe; Faster Payments in the U.K.; Equens in the Netherlands, Germany and Italy; GIRO in Hungary; UPI in India; FAST in Singapore; ITMX in Thailand; RPP in Malaysia; NPP in Australia; and Zell and TCH in the U.S.

UP Immediate Payments™ solution enables banks and PSPs to meet multiple real-time payment scheme requirements globally and to quickly create differentiated products to address consumer, business and merchant demands. The solution provides gateway connectivity to any live, real-time payments scheme around the world and can serve as a modern, real-time hub. The cloud solution speeds time to market through pre-packaged offerings available for major schemes globally, including U.K. Faster Payments, The Clearing House Real-Time Payments System, Early Warning Services Zelle Network, ECB TIPS, and EBA RT1.

Merchant Payments

ACI provides real-time, any-to-any payment capabilities globally in both card-present and card-not-present environments.

UP Merchant Payments™ solution provides merchants with a vendor-agnostic, flexible and secure omni-channel payments environment through an integration of Postilion®, ACI ReD Shield® and ACI PAY.ON® Payments Gateway™. Postilion facilitates transactions generated at the point of purchase, as well as back-office functions, including prepaid, debit and credit card processing, ACH processing, electronic benefits transfer, card issuance and management, check authorization, customer loyalty programs and returned check collection. ACI ReD Shield offers real-time fraud prevention to detect and manage domestic and cross-border payments fraud across all payment types, as well as an interactive, self-service business intelligence portal for deep insight into merchant fraud activity. Lastly, the ACI PAY.ON Payments Gateway delivers global payments connectivity through eCommerce and mCommerce channels, including a network of hundreds of local and cross-border card acquirers and alternative payment methods almost anywhere in the world.

UP eCommerce Payments™ solution is designed for PSPs, ISOs, VARs, acquirers and others that offer payment services to their merchant customer base. The cloud-based solution integrates ACI PAY.ON Payments Gateway and ACI ReD Shield, and is available as a white-label product.

Payments Intelligence

ACI's big data engine uses powerful analytics to deliver robust fraud prevention and detection capabilities to bank, financial intermediary and merchant customers.

UP Payments Risk Management™ solution uses a 360-degree approach to enterprise fraud management. The solution is designed to combat existing and emerging fraud threats using a combination of machine learning, fraud and payments data, advanced analytics, flexible rules and agile decision strategies. For banks and financial intermediaries, the ACI® Proactive Risk Manager™ component gives customers real-time visibility into threats across their enterprise, including issuer card fraud, check/deposit fraud, wire fraud, merchant acquirer fraud, internal fraud and money laundering schemes at multiple perspectives, ranging

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from an account or customer level. It is available to financial institutions on premise or in the cloud. For merchants, ACI ReD Shield provides real-time fraud prevention for eCommerce and mCommerce transactions. It is available in the cloud.

Digital Channels

ACI offers banks advanced cash management capabilities in a multi-tenant, cloud-based platform.

ACI Universal Online Banker™ is a comprehensive digital banking platform designed to meet the needs of small businesses up to large corporations. It enables banks to generate new revenues through an extensive library of APIs and payment services while delivering a compelling customer experience with a highly-intuitive user interface. Customers can use digital tools to easily manage daily collections, disbursements, information reporting and numerous other corporate cash management services.

Bill Payments

ACI meets the bill payment needs of corporate customers across myriad industries through a range of electronic bill payment solutions that help companies raise consumer satisfaction while reducing costs.

UP Bill Payment™ solutions enable corporate customers to electronically present bills and collect payments from consumers through a single, integrated platform that powers the entire bill payments operation. The solution overcomes internal application silos, providing a seamless consumer experience across all payment channels, payment types and methods. Customers can use UP Bill Payment solutions to power one-time payments, recurring payments, service-fee payments, disbursement services, remittance services and eBilling. The solution also simplifies treasury management operations through a broad array of reconciliation, reporting and payment servicing tools. UP Bill Payment solutions include industry-leading security, full payment card industry (PCI) compliance and privacy practices.

On Premises or On Demand Software Delivery Options

Our software solutions are offered to our customers through either a traditional term software license arrangement where the software is installed and operated on the customer premises (ACI On Premise) or through an on-demand arrangement where the solution is maintained and delivered through the cloud via our global data centers (ACI On Demand). Solutions delivered through ACI's On Demand cloud are available in either a single-tenant environment, known as a software as a service ("SaaS") offering, or in a multi-tenant environment, known as a platform as a service ("PaaS") offering. Pricing and payment terms depend on which solutions the customer requires and their transaction volumes. Generally, customers are required to commit to a minimum contract of five years, three years in the case of certain acquired SaaS and PaaS contracts.

Partnerships and Industry Participation

We have two major types of third-party product partners: Technology Partners, industry leaders with whom we work closely and drive key industry trends and mandates, and Business Partners, with whom we embed the partners' technology in ACI products, host the partners' software in ACI's cloud as a part of our ACI On Demand ("AOD") offering, or jointly market solutions that include the products of the other company.

Technology partners help us add value to our solutions, stay abreast of current market conditions and industry developments such as standards. Technology partner organizations include Diebold, Inc. ("Diebold"), NCR Corporation ("NCR"), Wincor-Nixdorf, VISA, MasterCard, and SWIFT. In addition, ACI has membership in or participates in the relevant committees of a number of industry associations, such as the International Organization for Standardization ("ISO"), Accredited Standards Committee (ASC) X9, Financial Services, Interactive Financial eXchange Forum ("IFX"), nexo standards, International Payments Framework Association ("IPFA"), U.K. Cards Association, and the PCI Security Standards Council. These partnerships provide direction

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as it relates to the specifications that are used by the card schemes, and in some cases, manufacturers. These organizations typically look to ACI as a source of knowledge and experience to be shared in conjunction with creating and enhancing their standards. The benefit to ACI is in having the opportunity to influence these standards with concepts and ideas that will benefit the market, our customers, and ACI.

Business partner relationships extend our product portfolio, improve our ability to get our solutions to market and enhance our ability to deliver market-leading solutions. We share revenues with these business partners based on a number of factors related to overall value contribution in the delivery of the joint solution or payment type. The agreements with business partners include referral, resale, traditional original equipment manufacturer (“OEM”) relationships, and transaction fee based payment-enablement partnerships. These agreements generally grant ACI the right to create an integrated solution that we host or distribute, or provide ACI access to established payment networks or capabilities. The agreements are generally worldwide in scope and have a term of several years.

We have alliances with our technology partners HP, IBM, Microsoft Corporation, Red Hat, Inc., and Oracle USA, Inc. (“Oracle”), whose industry-leading hardware, software, and cloud-based infrastructure services are utilized by ACI’s products. These partnerships allow us to understand developments in the partners’ technology and to utilize their expertise in topics like sizing, scalability, and performance testing.

The following is a list of key product business partners:

- Accuity, Inc.
- Apteau
- Arvato Financial solutions
- Bank of America – Cashpro Online
- Biocatch
- Cardinal Commerce
- Chase Paymentech
- Clickatel
- Computershare Inc.
- DataOceans, LLC
- Diamond Communications Solutions
- Discover
- FairCom Corporation
- Fidelity National Information Services, Inc. (FIS)
- Fifth Third Bank
- Fundtech Corporation
- Gallit
- GFKL
- Heirloom Computing
- Hewlett-Packard Company (HP)
- International Business Machines Corporation (IBM)
- Ingenico Group

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- Integrated Research Limited
- Intuit, Inc.
- iovation
- Jack Henry & Associates, Inc.
- Lean Software Services, Inc.
- Limontech
- Mi-Pay Limited
- Microsoft Corporation
- Micro Focus, Inc.
- Monex Financial Services Limited
- MTFX
- N2N
- Neustar, Inc.
- Noggintech
- Opentext
- Oracle USA, Inc. (Oracle)
- Paragon Application Systems, Inc.
- PayDirect
- PayPal
- Payworks GmbH
- IATA—Perseuss
- Rambus Company
- Reliant Solutions
- Red Hat, Inc.
- RR Donnelley
- RSA Security LLC, the Security Division of Dell EMC Corporation
- Semafone—Card Protect
- Solutions by Text, LLC
- Spectrum Message Services Pty Ltd
- SWIFT
- Symantec Corporation
- TIBCO Software, Inc.
- tru-Rating
- ThreatMetrix, Inc.
- Vantiv LLC.

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- Visa
- Vocalink Limited
- Walletron, Inc.

Services

We offer our customers a wide range of professional services, including analysis, design, development, implementation, integration, and training. Our service professionals generally perform the majority of the work associated with installing and integrating our software products. In addition, we work with a limited number of systems integration and services partners, such as Accenture, LLC, Cognizant Technology Solutions Corporation, and Stanchion Payments Solution, for staff augmentation and coordinated co-prime delivery where appropriate.

We offer the following types of services for our customers:

- **Implementation Services.** We utilize a standard methodology to deliver customer project implementations across all products lines and delivery options. Within the process, we provide customers with a variety of services, including solution scoping reviews, project planning, training, site preparation, installation, product configuration, product customization, testing and go-live support, and project management throughout the project lifecycle. Implementation services are typically priced according to the level of technical expertise required.
- **Product Support Services.** These product-support-funded services are available to customers after a solution has been installed and are based on the relevant product support category. An extensive team of support analysts are available to assist customers.
- **Technical Services.** Our technical services are provided to customers who have licensed one or more of our software products. Services offered include programming and programming support, day-to-day systems operations, network operations, help desk staffing, quality assurance testing, problem resolution, system design, and performance planning and review. Technical services are typically priced according to the level of technical expertise required.
- **Education Services.** ACI courses include both theory and practical sessions to allow students to work through real business scenarios and put their newly learned skills to use. This hands-on approach ensures that the knowledge is retained and the student is more productive upon their return to the workplace. ACI's education courses provide students with knowledge at all levels, to enhance and improve their understanding of ACI products. ACI also provides further, more in-depth technical courses that allow students to use practical labs to enhance what they have learned in the classroom. The ACI trainers' ability to understand customers' systems means ACI can also provide tailored course materials for individual customers. Depending upon products purchased, training may be conducted at a dedicated education facility at one of ACI's offices, online, or at the customer site.

Customer Support

ACI provides our customers with product support that is available 24 hours a day, seven days a week. When requested by a customer, the product support group can remotely access that customer's systems on a real-time basis which allows us to help diagnose and correct problems and enhance the continuous availability of a customer's business-critical systems. We offer our customers three support options.

Standard Customer Support. After software installation and project completion, we provide maintenance services to customers for a monthly product support fee. Maintenance services include:

- New product releases (major, minor and patches)
- 24-hour hotline for priority one ("P1") problem resolution

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- Online support portal (eSupport)
- Vendor-required mandates and updates
- Product documentation
- Hardware operating system compatibility
- User group membership

Enhanced Customer Support. This includes all features of Standard Customer Support plus the following:

- Named technical account manager
- Accelerated service levels
- Annual consulting hours

Premium Customer Support. Under the premium customer support option, referred to as the Premium Customer Support Program, each customer is assigned an experienced technician(s) to work with its system. The technician(s) typically performs functions such as:

- Configure and test software fixes
- Retrofit custom software modifications (“CSMs”) into new software releases
- Answer questions and resolve problems related to the customer’s implementation
- Maintain a detailed CSM history
- Monitor customer problems on ACI’s HELP24™ hotline database on a priority basis
- Supply onsite support, available upon demand
- Perform an annual system review/health check and capacity planning exercise

We provide new releases of our products on a periodic basis. New releases of our products, which often contain minor product enhancements, are typically provided at no additional fee for customers under maintenance agreements. Agreements with our customers permit us to charge for substantial product enhancements that are not provided as part of the maintenance agreement.

Competition

The electronic payments market is highly competitive and subject to rapid change. Competitive factors affecting the market for our products and services include product features, price, availability of customer support, ease of implementation, product and company reputation, and a commitment to continued investment in research and development.

Our competitors vary by solution, geography, and market segment. Generally, our most significant competition comes from in-house information technology departments of existing and potential customers, as well as third-party electronic payments processors (some of whom are our customers). Many of these companies are significantly larger than us and have significantly greater financial, technical, and marketing resources.

Key competitors by solution include the following:

Retail Payments and Real-Time Payments

The third-party software competitors for ACI’s Retail Payments and Real-Time Payments solutions are FIS, Fiserv, Finastra, Computer Sciences Corporation, NCR, OpenWay Group, and Total System

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Services, Inc. (“TSYS”), as well as small, regionally-focused companies such as, BPC Banking Technologies, PayEx Solutions AS, Financial Software and Systems, CR2, Lulus Payments Ltd., and Opus Software Solutions Private Limited. Primary electronic payment processing competitors in this area include global entities such as Atos Origin S.A., First Data Corporation, SiNSYS, TSYS, VISA and MasterCard, as well as regional or country-specific processors.

Merchant Payments

Competitors in the Merchant Payments solution area come from both third-party software and service providers as well as service organizations run by major banks. Third-party software and service competitors include NCR, Ingenico Group, Adyen, Worldpay Inc., GlobalCollect, Cybersource, Square, Inc., Tender Retail Inc., and VeriFone Systems, Inc. Primary competition in this space are large third-party acquirer/processors and payment service providers that offer complete solutions to the retailer.

Payments Intelligence

Principal competitors for our Payments Intelligence solution are NICE LTD, Fair Isaac Corporation, NCR, BAE Systems, FIS, Fiserv, SAS Institute, Inc., Accertify (American Express), and Cybersource (Visa), as well as dozens of smaller companies focused on niches of this segment such as anti-money laundering.

Bill Payments

The principal competitors for Bill Payment solutions are Fiserv, FIS, Jack Henry & Associates, Inc., Western Union Holdings, Inc., TouchNet Information Systems, Inc., Kubra Customer Interaction Management, WorldPay, Inc., Forte Payment Systems, Point & Pay, LLC, Nelnet, Inc. and Affiliates, Higher One, Inc., Paymentus Corp., Aliaswire Inc., and Invoice Cloud, Inc., as well as smaller vertical-specific providers.

Digital Channels

Principal competitors for our Digital Channel solutions are NCR, Bottomline Technologies, Q2 Software, Inc., Jack Henry, FIS, First Data Corporation, Fiserv, and Finastra.

Research and Development

Our product development efforts focus on new products and improved versions of existing products. We facilitate user group meetings to help us determine our product strategy, development plans, and aspects of customer support. The user groups are generally organized geographically or by product lines. We believe that the timely development of new applications and enhancements is essential to maintain our competitive position in the market.

During the development of new products, we work closely with our customers and industry leaders to determine requirements. We work with device manufacturers, such as Diebold, NCR, and Wincor-Nixdorf, to ensure compatibility with the latest ATM technology. We work with network vendors, such as MasterCard, VISA, and SWIFT, to ensure compliance with new regulations or processing mandates. We work with computer hardware and software manufacturers, such as HP, IBM, Microsoft Corporation, and Oracle to ensure compatibility with new operating system releases and generations of hardware. Customers often provide additional information on requirements and serve as beta-test partners.

We have a continuous process to encourage and capture innovative product ideas. Such ideas include features, as well as entirely new products or service offerings. A Proof of Concept (“POC”) may be conducted to validate the idea. If determined to be viable, the innovation is scheduled into a Product Roadmap for development and release.

Customers

We provide software products and solutions to customers in a range of industries worldwide, with banks, intermediaries, merchants and corporates comprising our largest industry segments. As of December 31, 2018, we serve over 5,100 customers, including 18 of the top 20 banks worldwide, as measured by asset size, and more than 300 of the leading merchants globally, as measured by revenue, in over 90 countries on six continents. No single customer accounted for more than 10% of our consolidated revenues for the years ended December 31, 2018, 2017, and 2016. No customer accounted for more than 10% of our consolidated receivables balance as of December 31, 2018 and 2017.

Selling and Implementation

Our primary method of distribution is direct sales by employees assigned to specific target segments. Headquartered in Naples, Florida, we have principal United States sales offices in East Brunswick, Norcross, Omaha, and Waltham. In addition, we have sales offices located outside the United States in Auckland, Bahrain, Bangkok, Beijing, Bogota, Brussels, Buenos Aires, Cape Town, Dubai, Gouda, Johannesburg, Kuala Lumpur, Limerick, Madrid, Manila, Melbourne, Mexico City, Milan, Montevideo, Mumbai, Munich, Naples (Italy), Paris, Quito, Santiago, Sao Paulo, Shanghai, Singapore, Sulzbach, Sydney, Tokyo, Toronto, and Watford.

We use distributors and referral partners to supplement our direct sales force in countries where business practices or customs make it appropriate, or where it is more economical to do so. We generate a majority of our sales leads through existing relationships with vendors, direct marketing programs, customers and prospects, or through referrals. ACI's distributors, resellers and system integration partners are enabled to provide supplemental or complete product implementation and customization services directly to our customers or in a joint delivery model.

Current international distributors, resellers, sales agents, and implementation partners (collectively, "Channel Partners") for us during the year ended December 31, 2018, included:

- AGS Technology Inc. (India)
- ASI International (Colombia/Venezuela/Caribbean)
- Bayshore (China)
- CAPSYS Technologies, LLC (Russia/Eastern Europe)
- Channel Solutions Inc. (Philippines)
- Cognizant (United States)
- DataOne Asia Co., Ltd. (Thailand)
- DDWay (Italy)
- EFT Corporation (Sub-Saharan Africa)
- HPE Spore (Singapore)
- Interswitch Ltd. (Sub-Saharan Africa)
- Korea Computer Inc (Korea)
- Kuvaz (Chile)
- Pactera (China)
- P.T. Mitra Integrasi Informatika (Indonesia)
- P.T. Abhimata Persada (Indonesia)

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- Stanchion (South Africa)
- STJ-CA, Inc. (United States)
- Stream IT Consulting Ltd. (Thailand)
- STET (EU)
- Syscom Computer Co., Ltd. (Shenzhen) (China)
- Syscom Computer Engineering Co. (Taiwan)
- Tomax Corp. (United States)
- Transaction Payment Solutions (Sub-Saharan Africa)
- Worldline (China)

ACI ReD Shield channel partners during the year ended December 31, 2018, included:

- Altapay (Denmark)
- Amadeus (Spain)
- Barclaycard (U.K.)
- Citrus Pay (India)
- Computop (Germany)
- Credit Call (European Union)
- Digital River (European Union)
- Easynollo (Italy)
- eCommera Ltd. (U.K.)
- Evo Payments (United States)
- eWay Pty Ltd. (Australia)
- Global E Online (Israel)
- Ingenico Group (Netherlands)
- Mastercard/Datacash (U.K.)
- Metrics Global (USA)
- MNP Media Ltd. (U.K.)
- Navitaire, an Amadeus Company (United States)
- Nostrum (U.K.)
- Paysafe Group Plc (United States)
- PayU South Africa (South Africa)
- Planet Payments (United States)
- Sagepay (U.K.)
- Secure Trading (U.K.)
- Simplepay (Australia)
- The Logic Group (U.K.)

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- UOL Diveo (Brazil)
- VeriFone Systems, Inc. (United States and European Union)
- WEX Australia

EBPP channel partners during the year ended December 31, 2018, included:

- 3 Point Alliance
- ACH Payment Solutions
- Adirondack Solutions
- API Outsourcing
- Avitar & Assoc. of New England
- Black Knight Financial Services
- BS&A Software
- County Information Resources Agency
- Campus Management Corp
- Competitive Edge Software
- Creative Micro – CMI
- Discover
- Donald R. Frey & Co.
- FICO
- Ellucian
- ETA Data Direct
- Harris
- LD Systems
- Megabyte Systems Inc.
- Megasys
- MoneyGram
- Nortridge Software Company
- Ontario Systems
- Oracle/Peoplesoft
- Pay Plus (Dallas)
- Radiant 44
- Salepoint
- Selectron
- Shaw
- Sofbang
- Solutions by Text

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- SourceHOV
- Thompson Reuters
- Tyler Technology
- Semafone

We distribute the products of other vendors where they complement our existing product lines. We are typically responsible for the sales and marketing of the vendor's products, and agreements with these vendors generally provide for revenue sharing based on relative responsibilities.

Proprietary Rights and Licenses

We rely on a combination of trade secret and copyright laws, license agreements, contractual provisions, and confidentiality agreements to protect our proprietary rights. We distribute our software products under software license agreements that typically grant customers nonexclusive licenses to use our products. Use of our software products is usually restricted to designated computers, specified locations and/or specified capacity, and is subject to terms and conditions prohibiting unauthorized reproduction or transfer of our software products. We also seek to protect the source code of our software as a trade secret and as a copyrighted work. Despite these precautions, there can be no assurance that misappropriation of our software products and technology will not occur.

In addition to our own products, we distribute, or act as a sales agent for, software developed by third parties. However, we typically are not involved in the development process used by these third parties. Our rights to those third-party products and the associated intellectual property rights are limited by the terms of the contractual agreement between us and the respective third party.

Although we believe that our owned and licensed intellectual property rights do not infringe upon the proprietary rights of third parties, there can be no assurance that third parties will not assert infringement claims against us. Further, there can be no assurance that intellectual property protection will be available for our products in all foreign countries.

Like many companies in the electronic commerce and other high-tech industries, third parties have in the past and may in the future assert claims or initiate litigation related to patent, copyright, trademark, or other intellectual property rights to business processes, technologies, and related standards that are relevant to us and our customers. These assertions have increased over time as a result of the general increase in patent claims assertions, particularly in the United States. Third parties may also claim that the third-party's intellectual property rights are being infringed by our customers' use of a business process method that utilizes products in conjunction with other products, which could result in indemnification claims against us by our customers. Any claim against us, with or without merit, could be time-consuming, result in costly litigation, cause product delivery delays, require us to enter into royalty or licensing agreements or pay amounts in settlement, or require us to develop alternative non-infringing technology. We could also be required to defend or indemnify our customers against such claims. A successful claim by a third party of intellectual property infringement or one of our customers could compel us to enter into costly royalty or license agreements, pay significant damages or even stop selling certain products and incur additional costs to develop alternative non-infringing technology.

Government Regulation

Certain of our solutions are subject to federal, state, and foreign regulations and requirements.

Oversight by Banking Regulators. As a provider of payment services to banks and financial intermediaries, we are subject to regulatory oversight and examination by the Federal Financial Institutions Examination Council ("FFIEC"), an interagency body of the Federal Deposit Insurance Corporation, the Office of the Comptroller of

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the Currency, the Board of Governors of the Federal Reserve System, the National Credit Union Administration and various state regulatory authorities as part of the Multi-Region Data Processing Servicer Program (“MDPS”). The MDPS program includes technology suppliers who provide mission critical applications for a large number of financial institutions that are regulated by multiple regulatory agencies. Periodic information technology examination assessments are performed using FFIEC interagency guidelines to identify potential risks that could adversely affect serviced financial institutions, determine compliance with applicable laws and regulations that affect the services provided to financial institutions and ensure the services we provide to financial institutions do not create systemic risk to the banking system or impact the safe and sound operation of the financial institutions we serve. In addition, independent auditors annually review several of our operations to provide reports on internal controls for our clients’ auditors and regulators. We are also subject to review under state and foreign laws and rules that regulate many of the same activities that are described above, including electronic data processing and back-office services for financial institutions and the use of consumer information.

Money Transfer. Official Payments Corporation, our EBPP affiliate, is registered as a Money Services Business. Accordingly, we are subject to the USA Patriot Act and reporting requirements of the Bank Secrecy Act and U.S. Treasury Regulations. These businesses may also be subject to certain state and local licensing requirements. The Financial Crimes Enforcement Network (“FinCEN”), state attorneys general, and other agencies have enforcement responsibility over laws relating to money laundering, currency transmission, and licensing. In addition, most states have enacted statutes that require entities engaged in money transmission to register as a money transmitter with that jurisdiction’s banking department. We have implemented policies, procedures, and internal controls that are designed to comply with all applicable anti-money laundering laws and regulations. ACI has also implemented policies, procedures, and internal controls that are designed to comply with the regulations and economic sanctions programs administered by the U.S. Treasury’s Office of Foreign Assets Control (“OFAC”), which enforces economic and trade sanctions against targeted foreign countries, entities and individuals based on external threats to the U.S. foreign policy, national security, or economy; by other governments; or by global or regional multilateral organizations, such as the United Nations Security Council and the European Union as applicable.

Employees

As of December 31, 2018, we had a total of 3,807 employees.

None of our employees are subject to a collective bargaining agreement. We believe that relations with our employees are good.

Available Information

Our annual reports on Form 10-K, quarterly reports on Form 10-Q, current reports on Form 8-K, and amendments to those reports filed or furnished pursuant to Section 13(a) or 15(d) of the Securities Exchange Act of 1934 (the “Exchange Act”), are available free of charge on our website at www.aciworldwide.com as soon as reasonably practicable after we file such information electronically with the SEC. The information found on our website is not part of this or any other report we file with or furnish to the SEC. The public may read and copy any materials that we file with the SEC at the SEC’s Public Reference Room at 100 F Street, Room 1580, NW, Washington DC 20549. The public may obtain information on the operation of the Public Reference Room by calling the SEC at 1-800-SEC-0330. The SEC maintains an Internet site that contains reports, proxy and information statements, and other information regarding issuers that file electronically with the SEC at www.sec.gov.

Executive Officers of the Registrant

As of February 28, 2019, our executive officers, their ages, and their positions were as follows:

<u>Name</u>	<u>Age</u>	<u>Position</u>
Philip G. Heasley	69	President, Chief Executive Officer and Director
Scott W. Behrens	47	Senior Executive Vice President, Chief Financial Officer
Craig S. Saks	48	Chief Operating Officer
Craig A. Maki	52	Executive Vice President, Chief Development Officer and Treasurer
Dennis P. Byrnes	55	Executive Vice President, Chief Administrative Officer, General Counsel and Secretary

Mr. Heasley has been a director and our President and Chief Executive Officer since March 2005. Mr. Heasley has a comprehensive background in payment systems and financial services. From October 2003 to March 2005, Mr. Heasley served as Chairman and Chief Executive Officer of PayPower LLC, an acquisition and consulting firm specializing in financial services and payment services. Mr. Heasley served as Chairman and Chief Executive Officer of First USA Bank from October 2000 to November 2003. Prior to joining First USA Bank, from 1987 until 2000, Mr. Heasley served in various capacities for U.S. Bancorp, including Executive Vice President, and President and Chief Operating Officer. Mr. Heasley also serves on the National Infrastructure Advisory Council. Mr. Heasley holds a Master of Business Administration from the Bernard Baruch Graduate School of Business in New York and a Bachelor of Arts from Marist College in Poughkeepsie, New York.

Mr. Behrens serves as Senior Executive Vice President and Chief Financial Officer. Mr. Behrens joined ACI in June 2007 as our Corporate Controller and was appointed as Chief Accounting Officer in October 2007. Mr. Behrens was appointed Chief Financial Officer in December 2009. Mr. Behrens ceased serving as our Corporate Controller in December 2010. Mr. Behrens was appointed as Executive Vice President in March 2011 and promoted to Senior Executive Vice President in December of 2013. Prior to joining ACI, Mr. Behrens served as Senior Vice President, Corporate Controller and Chief Accounting Officer at SITEL Corporation from January 2005 to June 2007. He also served as Vice President of Financial Reporting at SITEL Corporation from April 2003 to January 2005. From 1993 to 2003, Mr. Behrens was with Deloitte & Touche, LLP, including two years as a Senior Audit Manager. Mr. Behrens holds a Bachelor of Science from the University of Nebraska – Lincoln.

Mr. Saks serves as Chief Operating Officer. Prior to joining ACI in February 2012, Mr. Saks was Senior Vice President of Shared Services at S1 Corporation, which was subsequently acquired by ACI. From 1999 to 2007, Mr. Saks served as the Chief Operating Officer at Fundamo. Mr. Saks holds a Master of Commerce in IT Management from the University of Cape Town and a Bachelor's degree in Accounting and Computer Science from the University of Port Elizabeth.

Mr. Maki serves as Executive Vice President, Chief Development Officer, and Treasurer. Prior to joining ACI in June 2006, Mr. Maki served as Senior Vice President for Stephens, Inc. from 1999 through May 2006. From 1994 to 1999, Mr. Maki was a director in the corporate finance group at Arthur Andersen, and from 1991 to 1994, he was a senior consultant at Andersen Consulting. Mr. Maki holds a Master of Business Administration degree from the University of Denver and Bachelor of Science degree from the University of Wyoming.

Mr. Byrnes serves as Executive Vice President, Chief Administrative Officer, General Counsel and Secretary. He has served in that capacity since March 2011 and as General Counsel and Secretary since joining the Company in June 2003. Prior to that Mr. Byrnes served as an attorney in Bank One Corporation's technology group from 2002 to 2003 and before that with Sterling Commerce, an electronic commerce software and services company, from 1996. From 1991 to 1996 Mr. Byrnes was an attorney with Baker Hostetler. Mr. Byrnes holds a JD from The Ohio State University College of Law, a Master of Business Administration from Xavier University and a Bachelor of Science in engineering from Case Western Reserve University.

ITEM 1A. RISK FACTORS

Factors That May Affect Our Future Results or the Market Price of Our Common Stock

We operate in a rapidly changing technological and economic environment that presents numerous risks. Many of these risks are beyond our control and are driven by factors that often cannot be predicted. The following discussion highlights some of these risks.

The markets in which we compete are rapidly changing and highly competitive, and we may not be able to compete effectively.

The markets in which we compete are characterized by rapid change, evolving technologies and industry standards and intense competition. There is no assurance that we will be able to maintain our current market share or customer base. We face intense competition in our businesses and we expect competition to remain intense in the future. We have many competitors that are significantly larger than us and have significantly greater financial, technical and marketing resources, have well-established relationships with our current or potential customers, advertise aggressively or beat us to the market with new products and services. In addition, we expect that the markets in which we compete will continue to attract new competitors and new technologies. Increased competition in our markets could lead to price reductions, reduced profits, or loss of market share.

To compete successfully, we need to maintain a successful research and development effort. If we fail to enhance our current products and develop new products in response to changes in technology and industry standards, bring product enhancements or new product developments to market quickly enough, or accurately predict future changes in our customers' needs and our competitors develop new technologies or products, our products could become less competitive or obsolete.

Our Universal Payments strategy could prove to be unsuccessful in the market.

Our UP solutions, including our UP Retail Payments and Real-Time Payments solutions, are strategic for us, in that they are designed to help us win new accounts, replace legacy payments systems on multiple hardware platforms, and help us transition our existing customers to a new, real-time, and open-systems product architecture. Our business, financial condition, cash flows and/or results of operations could be materially adversely affected if we are unable to generate adequate sales of Universal Payments solutions or if we are unable to successfully deploy them in production environments.

Our future profitability depends on demand for our products.

Our revenue and profitability depend on the overall demand for our products and services. A significant portion of our total revenues result from licensing our UP Retail Payments solution, including our BASE24 product line and providing related services and maintenance. Any reduction in demand for, or increase in competition with respect to, our UP Retail Payments solution could have a material adverse effect on our financial condition, cash flows and/or results of operations.

Consolidations and failures in the financial services industry may adversely impact the number of customers and our revenues in the future.

Mergers, acquisitions and personnel changes at key financial services organizations have the potential to adversely affect our business, financial condition, cash flows, and results of operations. Our business is concentrated in the financial services industry, making us susceptible to consolidation in, or contraction of, the number of participating institutions within that industry. Consolidation activity among financial institutions has increased in recent years and changes in financial conditions have historically resulted in even further consolidation and contraction as financial institutions have failed or have been acquired by or merged with other

financial institutions. There are several potential negative effects of increased consolidation activity. Continuing consolidation and failure of financial institutions could cause us to lose existing and potential customers for our products and services. For instance, consolidation of two of our customers could result in reduced revenues if the combined entity were to negotiate greater volume discounts or discontinue use of certain of our products. Additionally, if a non-customer and a customer combine and the combined entity in turn decided to forego future use of our products, our revenues would decline.

Potential customers may be reluctant to switch to a new vendor, which may adversely affect our growth, both in the United States and internationally.

For banks, financial intermediaries, and other potential customers of our products, switching from one vendor of core financial services software (or from an internally-developed legacy system) to a new vendor is a significant endeavor. Many potential customers believe switching vendors involves too many potential disadvantages such as disruption of business operations, loss of accustomed functionality, and increased costs (including conversion and transition costs). As a result, potential customers may resist change. We seek to overcome this resistance through value enhancing strategies such as a defined conversion/migration process, continued investment in the enhanced functionality of our software and system integration expertise. However, there can be no assurance that our strategies for overcoming potential customers' reluctance to change vendors will be successful, and this resistance may adversely affect our growth, both in the United States and internationally.

Failure to obtain renewals of customer contracts or obtain such renewals on favorable terms could adversely affect our results of operations and financial condition.

Failure to achieve favorable renewals of customer contracts could negatively impact our business. Our contracts with our customers generally run for a period of five years, three years in the case of certain acquired SaaS and PaaS contracts. At the end of the contract term, customers have the opportunity to renegotiate their contracts with us and to consider whether to engage one of our competitors to provide products and services. Failure to achieve high renewal rates on commercially favorable terms could adversely affect our results of operations and financial condition.

The delay or cancellation of a customer project or inaccurate project completion estimates may adversely affect our operating results and financial performance.

Any unanticipated delays in a customer project, changes in customer requirements or priorities during the project implementation period, or a customer's decision to cancel a project, may adversely impact our operating results and financial performance. In addition, during the project implementation period, we perform ongoing estimates of the progress being made on complex and difficult projects and documenting this progress is subject to potential inaccuracies. Changes in project completion estimates are heavily dependent on the accuracy of our initial project completion estimates and our ability to evaluate project profits and losses. Any inaccuracies or changes in estimates resulting from changes in customer requirements, delays or inaccurate initial project completion estimates may result in increased project costs and adversely impact our operating results and financial performance.

Our software products may contain undetected errors or other defects, which could damage our reputation with customers, decrease profitability, and expose us to liability.

Our software products are complex. Software typically contains bugs or errors that can unexpectedly interfere with the operation of the software products. Our software products may contain undetected errors or flaws when first introduced or as new versions are released. These undetected errors may result in loss of, or delay in, market acceptance of our products and a corresponding loss of sales or revenues. Customers depend upon our products for mission-critical applications, and these errors may hurt our reputation with customers. In addition, software product errors or failures could subject us to product liability, as well as performance and warranty claims, which could materially adversely affect our business, financial condition, cash flows and/or results of operations.

If our products and services fail to comply with legislation, government regulations, and industry standards to which our customers are subject, it could result in a loss of customers and decreased revenue.

Legislation, governmental regulation and industry standards affect how our business is conducted, and in some cases, could subject us to the possibility of future lawsuits arising from our products and services. Globally, legislation, governmental regulation and industry standards may directly or indirectly impact our current and prospective customers' activities, as well as their expectations and needs in relation to our products and services. For example, our products are affected by VISA, MasterCard and other major payment brand electronic payment standards that are generally updated twice annually. Beyond this, our products are affected by PCI Security Standards. As a provider of electronic data processing to financial institutions, we must comply with FFIEC regulations and are subject to FFIEC examinations.

In addition, action by government and regulatory authorities such as the Dodd-Frank Wall Street Reform and the Consumer Protection Act relating to financial regulatory reform and the European Union-wide General Data Protection Regulation ("GDPR") (which imposes strict data privacy requirements and regulatory fines of up to 4% of "worldwide turnover"), as well as legislation and regulation related to credit availability, data usage, privacy, or other related regulatory developments could have an adverse effect on our customers and therefore could have a material adverse effect on our business, financial condition, cash flows and results of operations. The regulatory focus on privacy issues also continues to increase and worldwide laws and regulations concerning the handling of personal information are expanding and becoming more complex. Our failure, or perceived failure, to comply with laws and regulations concerning the handling of personal information could result in lost or restricted business, proceedings, actions or fines brought against us or levied by governmental entities or others, or could adversely affect our business and harm our reputation.

If we fail to comply with the complex regulations applicable to our payments business, we could be subject to liability or our revenues may be reduced.

Official Payments Corporation is licensed as a money transmitter in those states where such licensure is required. These licenses require us to demonstrate and maintain certain levels of net worth and liquidity, require us to file periodic reports and subject us to inspections by state regulatory agencies. In addition, our payment business is generally subject to federal regulation in the United States, including anti-money laundering regulations and certain restrictions on transactions to or from certain individuals or entities. The complexity of these regulations will continue to increase our cost of doing business. Any violations of these laws may also result in civil or criminal penalties against us and our officers or the prohibition against us providing money transmitter services in particular jurisdictions. We could also be forced to change our business practices or be required to obtain additional licenses or regulatory approvals that could cause us to incur substantial costs.

In addition, our customers must ensure that our services comply with the government regulations, including the EU GDPR, and industry standards that apply to their businesses. Federal, state, foreign or industry authorities could adopt laws, rules, or regulations affecting our customers' businesses that could lead to increased operating costs that may lead to reduced market acceptance. In addition, action by regulatory authorities relating to credit availability, data usage, privacy, or other related regulatory developments could have an adverse effect on our customers and, therefore, could have a material adverse effect on our business, financial condition, and results of operations.

If we fail to comply with privacy regulations imposed on providers of services to financial institutions, our business could be harmed.

As a provider of services to financial institutions, we may be bound by the same limitations on disclosure of the information we receive from our customers as apply to the financial institutions themselves. If we are subject to these limitations and we fail to comply with applicable regulations, including the EU GDPR, we could be exposed to suits for breach of contract or to governmental proceedings, our customer relationships and reputation

could be harmed, and we could be inhibited in our ability to obtain new customers. In addition, if more restrictive privacy laws or rules are adopted in the future on the federal or state level, or, with respect to our international operations, by authorities in foreign jurisdictions on the national, provincial, state, or other level, that could have an adverse impact on our business.

Our risk management and information security programs are the subject of oversight and periodic reviews by the federal agencies that regulate our business. In the event an examination of our information security and risk management functions results in adverse findings, such findings could be made public or communicated to our regulated financial institution customers, which could have a material adverse effect on our business.

If our security measures are breached or become infected with a computer virus, or if our services are subject to attacks that degrade or deny the ability of users to access our products or services, our business will be harmed by disrupting delivery of services and damaging our reputation.

As part of our business, we electronically receive, process, store, and transmit sensitive business information of our customers. Unauthorized access to our computer systems or databases could result in the theft or publication of confidential information or the deletion or modification of records or could otherwise cause interruptions in our operations. These concerns about security are increased when we transmit information over the Internet. Security breaches in connection with the delivery of our products and services, including products and services utilizing the Internet, or well-publicized security breaches, and the trend toward broad consumer and general public notification of such incidents, could significantly harm our business, financial condition, cash flows and/or results of operations. We cannot be certain that advances in criminal capabilities, discovery of new vulnerabilities, attempts to exploit vulnerabilities in our systems, data thefts, physical system or network break-ins or inappropriate access, or other developments will not compromise or breach the technology protecting our networks and confidential information. Computer viruses have also been distributed and have rapidly spread over the Internet. Computer viruses could infiltrate our systems, disrupting our delivery of services and making our applications unavailable. Any inability to prevent security breaches or computer viruses could also cause existing customers to lose confidence in our systems and terminate their agreements with us, and could inhibit our ability to attract new customers.

We may be unable to protect our intellectual property and technology.

To protect our proprietary rights in our intellectual property, we rely on a combination of contractual provisions, including customer licenses that restrict use of our products, confidentiality agreements and procedures, and trade secret and copyright laws. Despite such efforts, we may not be able to adequately protect our proprietary rights, or our competitors may independently develop similar technology, duplicate products, or design around any rights we believe to be proprietary. This may be particularly true in countries other than the United States because some foreign laws do not protect proprietary rights to the same extent as certain laws of the United States. Any failure or inability to protect our proprietary rights could materially adversely affect our business.

We also use a limited amount of software licensed by its authors or other third parties under so-called “open source” licenses and may continue to use such software in the future. Some of these licenses contain requirements that we make available source code for modifications or derivative works we create based upon the open source software, and that we license such modifications or derivative works under the terms of a particular open source license or other license granting third parties certain rights of further use. By the terms of certain open source licenses, we could be required to release the source code of our proprietary software if we combine our proprietary software with open source software in a certain manner. Additionally, the terms of many open source licenses have not been interpreted by United States or other courts, and there is a risk that these licenses could be construed in a manner that could impose unanticipated conditions or restrictions on our ability to commercialize our solutions. In addition to risks related to license requirements, usage of open source software can lead to greater risks than use of third-party commercial software, as open source licensors generally do not provide warranties or controls on origin of the software.

Our exposure to risks associated with the use of intellectual property may be increased for third-party products distributed by us or as a result of acquisitions since we have a lower level of visibility, if any, into the development process with respect to such third-party products and acquired technology or the care taken to safeguard against infringement risks.

We may be subject to increasing litigation over our intellectual property rights.

There has been a substantial amount of litigation in the software industry regarding intellectual property rights. Third parties have in the past, and may in the future, assert claims or initiate litigation related to exclusive patent, copyright, trademark or other intellectual property rights to business processes, technologies and related standards that are relevant to us and our customers. These assertions have increased over time as a result of the general increase in patent claims assertions, particularly in the United States. Because of the existence of a large number of patents in the electronic commerce field, the secrecy of some pending patents and the rapid issuance of new patents, it is not economical or even possible to determine in advance whether a product or any of its components infringes or will infringe on the patent rights of others. Any claim against us, with or without merit, could be time-consuming, result in costly litigation, cause product delivery delays, require us to enter into royalty or licensing agreements or pay amounts in settlement, or require us to develop alternative non-infringing technology.

We anticipate that software product developers and providers of electronic commerce solutions could increasingly be subject to infringement claims, and third parties may claim that our present and future products infringe upon their intellectual property rights. Third parties may also claim, and we are aware that at least two parties have claimed on several occasions, that our customers' use of a business process method which utilizes our products in conjunction with other products infringe on the third-party's intellectual property rights. These third-party claims could lead to indemnification claims against us by our customers. Claims against our customers related to our products, whether or not meritorious, could harm our reputation and reduce demand for our products. Where indemnification claims are made by customers, resistance even to unmeritorious claims could damage the customer relationship. A successful claim by a third-party of intellectual property infringement by us or one of our customers could compel us to enter into costly royalty or license agreements, pay significant damages, or stop selling certain products and incur additional costs to develop alternative non-infringing technology. Royalty or licensing agreements, if required, may not be available on terms acceptable to us or at all, which could adversely affect our business.

Certain payment funding methods expose us to the credit and/or operating risk of our clients.

When we process an automated clearing house or automated teller machine network payment transaction for certain clients, we occasionally transfer funds from our settlement account to the intended destination account before we receive funds from a client's source account. The vast majority of these occurrences are resolved quickly through normal processes. However, if they are not resolved and we are then unable to reverse the transaction that sent funds to the intended destination, a shortfall in our settlement account will be created. Although we have legal recourse against our clients for the amount of the shortfall, timing of recovery may be delayed by litigation or the amount of any recovery may be less than the shortfall. In either case, we would have to fund the shortfall in our settlement account from our corporate funds.

If we experience business interruptions or failure of our information technology and communication systems, the availability of our products and services could be interrupted which could adversely affect our reputation, business and financial condition.

Our ability to provide reliable service in a number of our businesses depends on the efficient and uninterrupted operation of our data centers, information technology and communication systems, and those of our external service providers. As we continue to grow our ACI On Demand business, our dependency on the continuing operation and availability of these systems increases. Our systems and data centers, and those of our external

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service providers, could be exposed to damage or interruption from fire, natural disasters, power loss, telecommunications failure, unauthorized entry and computer viruses. Although we have taken steps to prevent system failures and we have installed back-up systems and procedures to prevent or reduce disruption, such steps may not be sufficient to prevent an interruption of services and our disaster recovery planning may not account for all eventualities. Further, our property and business interruption insurance may not be adequate to compensate us for all losses or failures that may occur.

An operational failure or outage in any of these systems, or damage to or destruction of these systems, which causes disruptions in our services, could result in loss of customers, damage to customer relationships, reduced revenues and profits, refunds of customer charges and damage to our brand and reputation and may require us to incur substantial additional expense to repair or replace damaged equipment and recover data loss caused by the interruption. Any one or more of the foregoing occurrences could have a material adverse effect on our reputation, business, financial condition, cash flows and results of operations.

We are engaged in offshore software development activities, which may not be successful and which may put our intellectual property at risk.

As part of our globalization strategy and to optimize available research and development resources, we utilize our Irish subsidiary to serve as the focal point for certain international product development and commercialization efforts. This subsidiary oversees remote software development operations in Romania and elsewhere, as well as manages certain of our intellectual property rights. In addition, we manage certain offshore development activities in India. While our experience to date with our offshore development centers has been positive, there is no assurance that this will continue. Specifically, there are a number of risks associated with this activity, including but not limited to the following:

- communications and information flow may be less efficient and accurate as a consequence of the time, distance and language differences between our primary development organization and the foreign based activities, resulting in delays in development or errors in the software developed;
- in addition to the risk of misappropriation of intellectual property from departing personnel, there is a general risk of the potential for misappropriation of our intellectual property that might not be readily discoverable;
- the quality of the development efforts undertaken offshore may not meet our requirements because of language, cultural and experiential differences, resulting in potential product errors and/or delays;
- potential disruption from the involvement of the United States in political and military conflicts around the world; and
- currency exchange rates could fluctuate and adversely impact the cost advantages intended from maintaining these facilities.

There are a number of risks associated with our international operations that could have a material impact on our operations and financial condition.

We derive a significant portion of our revenues from international operations and anticipate continuing to do so. As a result, we are subject to risks of conducting international operations. One of the principal risks associated with international operations is potentially adverse movements of foreign currency exchange rates. Our exposures resulting from fluctuations in foreign currency exchange rates may change over time as our business evolves and could have an adverse impact on our financial condition, cash flows and/or results of operations. We have not entered into any derivative instruments or hedging contracts to reduce exposure to adverse foreign currency changes.

Other potential risks include difficulties associated with staffing and management, reliance on independent distributors, longer payment cycles, potentially unfavorable changes to foreign tax rules, compliance with foreign

regulatory requirements, effects of a variety of foreign laws and regulations, including restrictions on access to personal information, reduced protection of intellectual property rights, variability of foreign economic conditions, governmental currency controls, difficulties in enforcing our contracts in foreign jurisdictions, and general economic and political conditions in the countries where we sell our products and services. Some of our products may contain encrypted technology, the export of which is regulated by the United States government. Changes in U.S. and other applicable export laws and regulations restricting the export of software or encryption technology could result in delays or reductions in our shipments of products internationally. There can be no assurance that we will be able to successfully address these challenges.

In addition, the implementation of the United Kingdom's decision to exit the European Union (referred to as Brexit) could, among other outcomes, disrupt the free movement of goods, services, and people between the U.K. and the E.U., undermine bilateral cooperation in key policy areas, and significantly disrupt trade between the U.K. and the E.U. Unless the E.U. agrees to an extension, the U.K. is scheduled to exit the E.U. on March, 29, 2019, and it is possible that the U.K. may exit without an agreement in place. The uncertainties related to Brexit have cross-border operational, financial and tax implications, among others, and any economic volatility that may arise in the U.K., the E.U., or elsewhere may adversely affect our business.

Global economic conditions could reduce the demand for our products and services or otherwise adversely impact our cash flows, operating results and financial condition.

For the foreseeable future, we expect to derive most of our revenue from products and services we provide to the banking and financial services industries. The global electronic payments industry and the banking and financial services industries depend heavily upon the overall levels of consumer, business and government spending. Adverse economic conditions and the potential for disruptions in these industries as well as the general software sector could result in a decrease in consumers' use of banking services and financial service providers resulting in significant decreases in the demand for our products and services which could adversely affect our business and operating results. A lessening demand in either the overall economy, the banking and financial services industry or the software sector could also result in the implementation by banks and related financial service providers of cost reduction measures or reduced capital spending resulting in longer sales cycles, deferral or delay of purchase commitments for our products and increased price competition which could lead to a material decrease in our future revenues and earnings.

Failure to attract and retain senior management personnel and skilled technical employees could harm our ability to grow

Our senior management team has significant experience in the financial services industry, including Philip Heasley who has been our CEO since March 2005 and has more than 30 years of experience in payment systems and financial services. The loss of this leadership could have an adverse effect on our business, operating results and financial condition. Further, the loss of this leadership may have an adverse impact on senior management's ability to provide effective oversight and strategic direction for all key functions within the Company, which could impact our future business, operating results and financial condition.

Our future success also depends upon our ability to attract and retain highly-skilled technical personnel. Because the development of our solutions and services requires knowledge of computer hardware, operating system software, system management software and application software, our technical personnel must be proficient in a number of disciplines. Competition for such technical personnel is intense, and our failure to hire and retain talented personnel could have a material adverse effect on our business, operating results and financial condition.

Our future growth will also require sales and marketing, financial and administrative personnel to develop and support new solutions and services, to enhance and support current solutions and services and to expand operational and financial systems. There can be no assurance that we will be able to attract and retain the necessary personnel to accomplish our growth strategies and we may experience constraints that could adversely affect our ability to satisfy client demand in a timely fashion.

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Our ability to maintain compliance with applicable laws, rules and regulations and to manage and monitor the risks facing our business relies upon the ability to maintain skilled compliance, security, risk and audit professionals. Competition for such skillsets is intense, and our failure to hire and retain talented personnel could have an adverse effect on our internal control environment and impact our operating results.

The volatility and disruption of the capital and credit markets and adverse changes in the global economy may negatively impact our liquidity and our ability to access financing.

While we intend to finance our operations and growth of our business with existing cash and cash flow from operations, if adverse global economic conditions persist or worsen, we could experience a decrease in cash from operations attributable to reduced demand for our products and services and as a result, we may need to borrow additional amounts under our existing credit facility or we may require additional financing for our continued operation and growth. However, due to the existing uncertainty in the capital and credit markets and the impact of the current economic conditions on our operating results, cash flows and financial conditions, the amount of available unused borrowings under our existing credit facility may be insufficient to meet our needs and/or our access to capital outside of our existing credit facility may not be available on terms acceptable to us or at all. Additionally, if one or more of the financial institutions in our syndicate were to default on its obligation to fund its commitment, the portion of the committed facility provided by such defaulting financial institution would not be available to us. There can be no assurance that alternative financing on acceptable terms would be available to replace any defaulted commitments.

We may become involved in litigation that could materially adversely affect our business financial condition, cash flows and/or results of operations.

From time to time, we are involved in litigation relating to claims arising out of our operations. Any claims, with or without merit, could be time-consuming and result in costly litigation. Failure to successfully defend against these claims could result in a material adverse effect on our business, financial condition, results of operations and/or cash flows.

We may face claims associated with the sale and transition of our Community Financial Services assets and liabilities.

On March 3, 2016, we completed the sale of our CFS related assets and liabilities to Fiserv. In connection with that sale we entered into a transaction agreement and a transition services agreement in which we undertook certain continuing obligations to effect the transition of the assets and liabilities to Fiserv. We could face claims under the transaction agreement, including based on our representations and warranties, covenants and retained liabilities. We could also face claims under the transition services agreement related to our obligations to provide transition services and assistance. Any such claim or claims could result in a material adverse effect on our business, financial condition, results of operations and cash flows.

If we engage in acquisitions, strategic partnerships or significant investments in new business, we will be exposed to risks which could materially adversely affect our business.

As part of our business strategy, we anticipate that we may acquire new products and services or enhance existing products and services through acquisitions of other companies, product lines, technologies and personnel, or through investments in, or strategic partnerships with, other companies. Any acquisition, investment or partnership, is subject to a number of risks. Such risks include the diversion of management time and resources, disruption of our ongoing business, potential overpayment for the acquired company or assets, dilution to existing stockholders if our common stock is issued in consideration for an acquisition or investment, incurring or assuming indebtedness or other liabilities in connection with an acquisition which may increase our interest expense and leverage significantly, lack of familiarity with new markets, and difficulties in supporting new product lines.

Further, even if we successfully complete acquisitions, we may encounter issues not discovered during our due diligence process, including product or service quality issues, intellectual property issues and legal contingencies, the internal control environment of the acquired entity may not be consistent with our standards and may require significant time and resources to improve and we may impair relationships with employees and customers as a result of migrating a business or product line to a new owner. We will also face challenges in integrating any acquired business. These challenges include eliminating redundant operations, facilities and systems, coordinating management and personnel, retaining key employees, customers and business partners, managing different corporate cultures, and achieving cost reductions and cross-selling opportunities. There can be no assurance that we will be able to fully integrate all aspects of acquired businesses successfully, realize synergies expected to result from the acquisition, advance our business strategy or fully realize the potential benefits of bringing the businesses together, and the process of integrating these acquisitions may further disrupt our business and divert our resources.

In addition, under business combination accounting standards pursuant to Accounting Standards Codification (“ASC”) 805, *Business Combinations*, we recognize the identifiable assets acquired, the liabilities assumed and any non-controlling interests in acquired companies generally at their acquisition date fair values and, in each case, separately from goodwill. Goodwill as of the acquisition date is measured as the excess amount of consideration transferred, which is also generally measured at fair value, and the net of the acquisition date amounts of the identifiable assets acquired and the liabilities assumed. Our estimates of fair value are based upon assumptions believed to be reasonable but which are inherently uncertain. After we complete an acquisition, a number of factors could result in material goodwill impairment charges that could adversely affect our operating results.

Our failure to successfully manage acquisitions or investments, or successfully integrate acquisitions could have a material adverse effect on our business, financial condition, cash flows and/or results of operations. Correspondingly, our expectations related to the benefits related to our recent acquisitions, prior acquisitions or any other future acquisition or investment could be inaccurate.

Our balance sheet includes significant amounts of goodwill and intangible assets. The impairment of a significant portion of these assets could negatively affect our financial results.

Our balance sheet includes goodwill and intangible assets that represent a significant portion of our total assets at December 31, 2018. On at least an annual basis, we assess whether there have been impairments in the carrying value of goodwill and intangible assets. If the carrying value of the asset is determined to be impaired, then it is written down to fair value by a charge to operating earnings. An impairment of a significant portion of goodwill or intangible assets could materially negatively affect our results of operations.

Our outstanding debt contains restrictions and other financial covenants that limit our flexibility in operating our business.

Our credit facility and the indenture governing our 5.750% Senior Notes due 2026 (“2026 Notes”) contain customary affirmative and negative covenants for debt of these types that limit our ability to engage in specified types of transactions. These covenants limit our ability, and the ability of our subsidiaries, to, among other things: pay dividends on, repurchase or make distributions in respect of our capital stock or make other restricted payments; make certain investments; sell certain assets; create liens; incur additional indebtedness or issue certain preferred shares; consolidate, merge, sell or otherwise dispose of all or substantially all of our assets; and enter into certain transactions with our affiliates. Our outstanding debt also requires us to meet certain quarterly financial tests, including a maximum leverage ratio and a minimum interest coverage ratio. Our outstanding debt includes customary events of default, including, but not limited to, failure to pay principal or interest, breach of covenants or representations and warranties, cross-default to other indebtedness, judgment default and insolvency. If an event of default occurs, the lenders, trustee, or holders of the 2026 Notes will be entitled to take various actions, including, but not limited to, demanding payment for all amounts outstanding. If adverse global

economic conditions persist or worsen, we could experience decreased revenues from our operations attributable to reduced demand for our products and services and as a result, we could fail to satisfy the financial and other restrictive covenants to which we are subject under our existing debt, resulting in an event of default. If we are unable to cure the default or obtain a waiver, we will not be able to access our credit facility and there can be no assurance that we would be able to obtain alternative financing.

Our existing levels of debt and debt service requirements may adversely affect our financial condition or operational flexibility and prevent us from fulfilling our obligations under our outstanding indebtedness.

Our level of debt could have adverse consequences for our business, financial condition, operating results and operational flexibility, including the following: (i) the debt level may cause us to have difficulty borrowing money in the future for working capital, capital expenditures, acquisitions or other purposes; (ii) our debt level may limit operational flexibility and our ability to pursue business opportunities and implement certain business strategies; (iii) we use a large portion of our operating cash flow to pay principal and interest on our credit facility and the 2026 Notes, which reduces the amount of money available to finance operations, acquisitions and other business activities; (iv) we have a higher level of debt than some of our competitors or potential competitors, which may cause a competitive disadvantage and may reduce flexibility in responding to changing business and economic conditions, including increased competition and vulnerability to general adverse economic and industry conditions; (v) some of our debt has a variable rate of interest, which exposes us to the risk of increased interest rates; (vi) there are significant maturities on our debt that we may not be able to fulfill or that may be refinanced at higher rates; and (vii) if we fail to satisfy our obligations under our outstanding debt or fail to comply with the financial or other restrictive covenants required under our credit facility and the 2026 Notes, an event of default could result that could cause all of our debt to become due and payable and could permit the lenders under our credit facility to foreclose on the assets securing such debt.

Management's backlog estimate may not be accurate and may not generate the predicted revenues.

Estimates of future financial results are inherently unreliable. Our backlog estimates require substantial judgment and are based on a number of assumptions, including management's current assessment of customer and third-party contracts that exist as of the date the estimates are made, as well as revenues from assumed contract renewals, to the extent that we believe that recognition of the related revenue will occur within the corresponding backlog period. A number of factors could result in actual revenues being less than the amounts reflected in backlog. Our customers or third-party partners may attempt to renegotiate or terminate their contracts for a number of reasons, including mergers, changes in their financial condition, or general changes in economic conditions within their industries or geographic locations, or we may experience delays in the development or delivery of products or services specified in customer contracts. Actual renewal rates and amounts may differ from historical experiences used to estimate backlog amounts. Changes in foreign currency exchange rates may also impact the amount of revenue actually recognized in future periods. Accordingly, there can be no assurance that contracts included in backlog will actually generate the specified revenues or that the actual revenues will be generated within a 12-month or 60-month period. Additionally, because backlog estimates are operating metrics, the estimates are not required to be subject to the same level of internal review or controls as a U.S. generally accepted accounting principles ("GAAP") financial measure.

We may face exposure to unknown tax liabilities, which could adversely affect our financial condition, cash flows and/or results of operations.

We are subject to income and non-income based taxes in the United States and in various foreign jurisdictions. Significant judgment is required in determining our worldwide income tax liabilities and other tax liabilities. In addition, we expect to continue to benefit from implemented tax-saving strategies. We believe that these tax-saving strategies comply with applicable tax law. If the governing tax authorities have a different interpretation of the applicable law and successfully challenge any of our tax positions, our financial condition, cash flows and/or results of operations could be adversely affected.

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Our U.S. companies are the subject of an examination by several state tax departments. Some of our foreign subsidiaries are currently the subject of a tax examination by the local taxing authorities. Other foreign subsidiaries could face challenges from various foreign tax authorities. It is not certain that the local authorities will accept our tax positions. We believe our tax positions comply with applicable tax law and intend to vigorously defend our positions. However, differing positions on certain issues could be upheld by foreign tax authorities, which could adversely affect our financial condition and/or results of operations.

Our revenue and earnings are highly cyclical, our quarterly results fluctuate significantly and we have revenue-generating transactions concentrated in the final weeks of a quarter which may prevent accurate forecasting of our financial results and cause our stock price to decline.

Our revenue and earnings are highly cyclical causing significant quarterly fluctuations in our financial results. Revenue and operating results are usually strongest during the third and fourth fiscal quarters ending September 30 and December 31, primarily due to the sales and budgetary cycles of our customers. We experience lower revenues, and possible operating losses, in the first and second quarters ending March 31 and June 30. Our financial results may also fluctuate from quarter to quarter and year to year due to a variety of factors, including changes in product sales mix that affect average selling prices, and the timing of customer renewals (any of which may impact the pattern of revenue recognition).

In addition, large portions of our customer contracts are consummated in the final weeks of each quarter. Before these contracts are consummated, we create and rely on forecasted revenues for planning, modeling and earnings guidance. Forecasts, however, are only estimates and actual results may vary for a particular quarter or longer periods of time. Consequently, significant discrepancies between actual and forecasted results could limit our ability to plan, budget or provide accurate guidance, which could adversely affect our stock price. Any publicly-stated revenue or earnings projections are subject to this risk.

Our stock price may be volatile.

No assurance can be given that operating results will not vary from quarter to quarter, and past performance may not accurately predict future performance. Any fluctuations in quarterly operating results may result in volatility in our stock price. Our stock price may also be volatile, in part, due to external factors such as announcements by third parties or competitors, inherent volatility in the technology sector, variability in demand from our existing customers, failure to meet the expectations of market analysts, the level of our operating expenses and changing market conditions in the software industry. In addition, the financial markets have experienced significant price and volume fluctuations that have particularly affected the stock prices of many technology companies and financial services companies, and these fluctuations sometimes are unrelated to the operating performance of these companies. Broad market fluctuations, as well as industry-specific and general economic conditions may adversely affect the market price of our common stock.

ITEM 1B. UNRESOLVED STAFF COMMENTS

None.

ITEM 2. PROPERTIES

We lease office space in Naples, Florida, for our principal executive headquarters. The Naples lease expires in 2027. We also lease office space in Omaha, Nebraska, for our principal product development group, sales and support groups for the Americas, as well as our corporate, accounting, and administrative functions. The Omaha lease continues through 2028. Our Europe/Middle East/Africa (“EMEA”) headquarters is in Watford, England. The lease for the Watford facility expires at the end of 2023. Our Asia/Pacific headquarters is in Singapore, with the lease for this facility expiring in fiscal 2020. We also lease office space in numerous other locations in the United States as well as in many other countries.

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We believe our current facilities are adequate for our present and short-term foreseeable needs and that additional suitable space will be available as required. We also believe we will be able to renew leases as they expire or secure alternate suitable space. See Note 14, *Commitments and Contingencies*, in the Notes to Consolidated Financial Statements for additional information regarding our obligations under our facilities leases.

ITEM 3. LEGAL PROCEEDINGS

From time to time, we are involved in various litigation matters arising in the ordinary course of our business. We are not currently a party to any legal proceedings, the adverse outcome of which, individually or in the aggregate, we believe would be likely to have a material effect on our financial condition or results of operations.

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 ACIW.

As of February 25, 2019, there were 278 holders of record of our common stock. A substantially greater number of shareholders hold our common stock in “street name”, or as beneficial holders whose shares are held in the name of banks, brokers, or other financial institutions.

Issuer Purchases of Equity Securities

The following table provides information regarding our repurchases of common stock during the three months ended December 31, 2018:

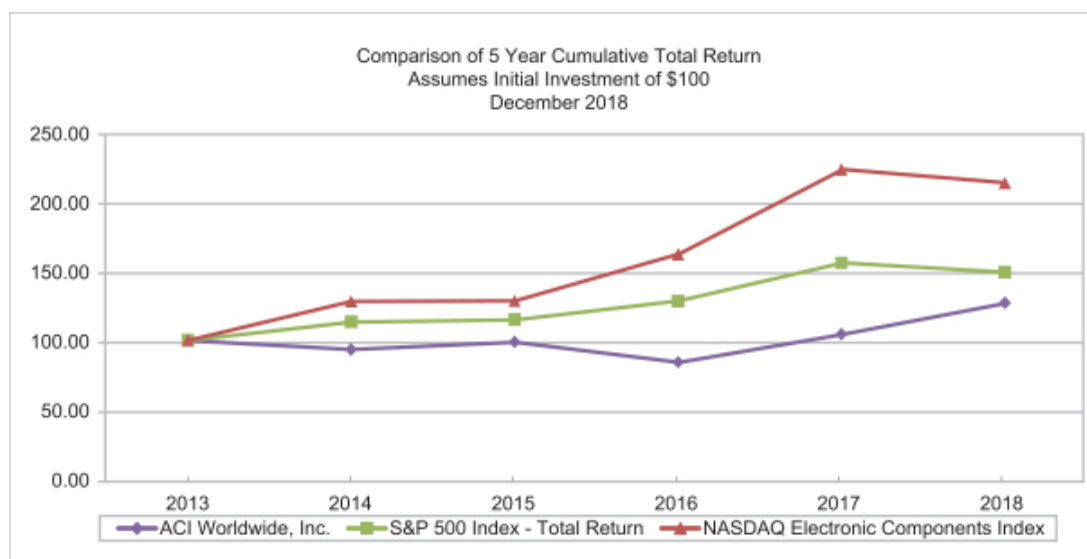
<u>Period</u>	<u>Total Number of Shares Purchased</u>	<u>Average Price Paid per Share</u>	<u>Total Number of Shares Purchased as Part of Publicly Announced Program</u>	<u>Approximate Dollar Value of Shares that May Yet Be Purchased Under the Program</u>
October 1, 2018 through October 31, 2018	—	\$ —	—	\$176,587,000
November 1, 2018 through November 30, 2018	—	—	—	176,587,000
December 1, 2018 through December 31, 2018	—	—	—	176,587,000
Total	—	\$ —	—	

In fiscal 2005, our board approved a stock repurchase program authorizing us, as market and business conditions warrant, to acquire our common stock and periodically authorize additional funds for the program, with the intention of using existing cash and cash equivalents to fund these repurchases. In February 2018, the board approved the repurchase of up to \$200.0 million of our common stock in place of the remaining purchase amounts previously authorized. As of December 31, 2018, the maximum remaining amount authorized for purchase under the stock repurchase program was approximately \$176.6 million.

There is no guarantee as to the exact number of shares we will repurchase. Repurchased shares are returned to the status of authorized but unissued shares of common stock. In March 2005, our board approved a plan under Rule 10b5-1 of the Securities Exchange Act of 1934 to facilitate the repurchase of shares of common stock under the existing stock repurchase program. Under our Rule 10b5-1 plan, we have delegated authority over the timing and amount of repurchases to an independent broker who does not have access to inside information about the Company. Rule 10b5-1 allows us, through the independent broker, to purchase shares at times when we ordinarily would not be in the market because of self-imposed trading blackout periods, such as the time immediately preceding the end of the fiscal quarter through a period of three business days following our quarterly earnings release.

Stock Performance Graph and Cumulative Total Return

The following table shows a line-graph presentation comparing cumulative stockholder return on an indexed basis with a broad equity market index and either a nationally-recognized industry standard or an index of peer companies selected by us. We selected the S&P 500 Index and the NASDAQ Electronic Components Index for comparison.



The graph above assumes that a \$100 investment was made in our common stock and each index on December 31, 2013, and that all dividends were reinvested. Also included are the respective investment returns based upon the stock and index values as of the end of each year during such five-year period. The information was provided by Zacks Investment Research, Inc. of Chicago, Illinois.

The stock performance graph disclosure above is not considered “filed” with the SEC under the Securities and Exchange Act of 1934, as amended, and is not incorporated by reference in any past or future filing by us under the Securities Exchange Act of 1934, as amended, or the Securities Act of 1933, as amended, unless specifically referenced.

ITEM 6. SELECTED FINANCIAL DATA

The following selected financial data has been derived from our consolidated financial statements (in thousands, except per share data). This data should be read together with Item 7, “Management’s Discussion and Analysis of Financial Condition and Results of Operations”, and the consolidated financial statements and related notes included elsewhere in this annual report. The financial information below is not necessarily indicative of the results of future operations. Future results could differ materially from historical results due to many factors, including those discussed in Item 1A, “Risk Factors.”

	Years Ended December 31,				
	2018 (1)	2017 (2)	2016 (3)	2015 (4)	2014 (5)
Income Statement Data:					
Total revenues	\$ 1,009,780	\$ 1,024,191	\$ 1,005,701	\$ 1,045,977	\$ 1,016,149
Net income	68,921	5,135	129,535	85,436	67,560
Earnings per share:					
Basic	\$ 0.59	\$ 0.04	\$ 1.10	\$ 0.73	\$ 0.59
Diluted	\$ 0.59	\$ 0.04	\$ 1.09	\$ 0.72	\$ 0.58
Shares used in computing earnings per share:					
Basic	116,057	118,059	117,533	117,465	114,798
Diluted	117,632	119,444	118,847	118,919	116,771

	December 31,				
	2018 (1)	2017	2016 (3)	2015 (4)	2014 (5)
Balance Sheet Data:					
Working capital	\$ 269,857	\$ 100,039	\$ 31,625	\$ (2,360)	\$ (4,672)
Total assets	2,122,455	1,861,639	1,902,295	1,975,788	1,830,172
Current portion of debt (6)	20,767	17,786	90,323	89,710	81,108
Debt (long-term portion) (6)(7)	658,602	668,356	656,063	845,639	795,194
Stockholders’ equity	1,048,231	764,597	754,917	654,400	581,405

- (1) The consolidated balance sheet and statement of operations for the year ended December 31, 2018, reflects the application of Accounting Standards Update (“ASU”) 2014-09, *Revenue from Contracts with Customers* (codified as “ASC 606”) as discussed in Note 2, *Revenue*, in the Notes to Consolidated Financial Statements, including a cumulative adjustment of \$244.0 million to retained earnings.
- (2) The consolidated statement of operations for the year ended December 31, 2017, reflects the Baldwin Hackett & Meeks, Inc. (“BHMI”) judgment. We recorded \$46.7 million in general and administrative expense and \$1.4 million in interest expense, as discussed in Note 14, *Commitments and Contingencies*, in the Notes to Consolidated Financial Statements.
- (3) The consolidated balance sheet and statement of operations for the year ended December 31, 2016, reflects the sale of CFS assets and liabilities as discussed in Note 3, *Divestiture*, in the Notes to Consolidated Financial Statements.
- (4) The consolidated balance sheet and statement of operations for the year ended December 31, 2015, includes the acquisition of PAY.ON AG and its subsidiaries (“PAY.ON”).
- (5) The consolidated balance sheet and statement of operations for the year ended December 31, 2014, includes the acquisition of Retail Decisions Europe Limited and Retail Decisions, Inc. (collectively “ReD”).
- (6) During the year ended December 31, 2018, we issued \$400.0 million in senior notes due August 15, 2026. We used the net proceeds of these senior notes to redeem our outstanding \$300.0 million senior notes due 2020, which we originally entered in to during the year ended December 31, 2013. During the year ended December 31, 2015, we increased the Revolving Credit Facility by \$181.0 million to fund the acquisition of PAY.ON and related transaction expenses. During the year ended December 31, 2014, we increased the

Term Credit Facility by \$150.0 million to fund the acquisition of ReD. In addition, we drew a net additional \$44.0 million on our Revolving Credit Facility during the year ended December 31, 2014, partially used to fund the acquisition of ReD and the related transaction costs. See Note 5, *Debt*, in the Notes to Consolidated Financial Statements for further discussion.

- (7) During the year ended December 31, 2012, we financed a five-year license agreement for certain internally-used software for \$14.8 million with annual payments through April 2016. During the year ended December 31, 2015, we financed multiple three-year license agreements for certain internally-used software for a total value of \$20.4 million with payments due through November 2018. Of these amounts at December 31, 2016, \$9.0 million remained outstanding with \$7.3 million included in other current liabilities and \$1.7 million included in other non-current liabilities in our consolidated balance sheet. At December 31, 2017, \$1.9 million remained outstanding with \$1.5 million included in other current liabilities and \$0.4 million included in other non-current liabilities in our consolidated balance sheet. During the year ended December 31, 2018, we financed certain multi-year license agreements for internally-used software for \$11.9 million with annual payments through June 2023. Of these amounts at December 31, 2018, \$9.4 million remained outstanding, with \$2.5 million and \$6.9 million included in other current liabilities and other noncurrent liabilities, respectively, in our consolidated balance sheet.

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

Overview

ACI Worldwide, the Universal Payments (“UP”) company, powers electronic payments for more than 5,100 organizations around the world. More than 1,000 of the largest financial institutions and intermediaries, as well as thousands of leading merchants globally, rely on ACI to execute \$14 trillion each day in payments and securities. In addition, thousands of organizations utilize our EBPP services. Through our comprehensive suite of solutions, we deliver real-time, immediate payments capabilities, and enable a complete omni-channel payments experience.

Our products are sold and supported through distribution networks covering three geographic regions – the Americas, EMEA, and Asia/Pacific. Each distribution network has its own globally coordinated sales force and supplements its sales force with independent reseller and/or distributor networks. Our products and solutions are used globally by banks, financial intermediaries, merchants and corporates, such as third-party electronic payment processors, payment associations, switch interchanges and a wide range of transaction-generating endpoints, including ATMs, merchant point-of-sale (“POS”) terminals, bank branches, mobile phones, tablets, corporations, and Internet commerce sites. Accordingly, our business and operating results are influenced by trends such as information technology spending levels, the growth rate of electronic payments, mandated regulatory changes, and changes in the number and type of customers in the financial services industry. Our products are marketed under the ACI Worldwide, ACI Universal Payment, and ACI UP brands.

We derive a majority of our revenues from domestic operations and believe we have large opportunities for growth in international markets as well as continued expansion domestically in the United States. Refining our global infrastructure is a critical component of driving our growth. We have launched a globalization strategy which includes elements intended to streamline our supply chain and maximize expertise in several geographic locations to support a growing international customer base and competitive needs. We utilize our Irish subsidiaries to manage certain of our intellectual property rights and to oversee and manage certain international product development and commercialization efforts. We increased our SaaS and PaaS capabilities with a data center in Ireland allowing our SaaS and PaaS solutions to be more-broadly offered in the European market. We also continue to grow centers of expertise in Timisoara, Romania and Pune and Bangalore in India, as well as key operational centers such as Cape Town, South Africa and in multiple locations in the United States.

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Key trends that currently impact our strategies and operations include:

Increasing electronic payment transaction volumes. Electronic payment volumes continue to increase around the world, taking market share from traditional cash and check transactions. In their World Payments Report, Caggemini predicts that non-cash transaction volumes will grow in volume at an annual rate of 12.7%, from 482.5 billion in 2016 to 876.4 in 2021, with varying growth rates based on the type of payment and part of the world. We leverage the growth in transaction volumes through the licensing of new systems to customers whose older systems cannot handle increased volume and through the sale of capacity upgrades to existing customers.

Adoption of real-time payments. Customer expectations, from both consumers and corporate, are driving the payments world to more real-time delivery. In the U.K., payments sent through the traditional ACH multi-day batch service can now be sent through the Faster Payments service giving almost immediate access to the funds, and this is being considered and implemented in several countries including Australia and the United States. In the U.S. market, National Automated Clearinghouse Association (“NACHA”) implemented phase 2 of Same Day ACH in September 2017. Corporate customers expect real-time information on the status of their payments instead of waiting for an end-of-day report. Regulators expect banks to be monitoring key measures like liquidity in real time. ACI’s focus has always been on the real-time execution of transactions and delivery of information through real-time tools, such as dashboards, so our experience will be valuable in addressing this trend.

Increasing competition. The electronic payments market is highly competitive and subject to rapid change. Our competition comes from in-house information technology departments, third-party electronic payment processors, and third-party software companies located both within and outside of the United States. Many of these companies are significantly larger than us and have significantly greater financial, technical, and marketing resources. As electronic payment transaction volumes increase, third-party processors tend to provide competition to our solutions, particularly among customers that do not seek to differentiate their electronic payment offerings or are eliminating banks from the payments service, reducing the need for our solutions. As consolidation in the financial services industry continues, we anticipate that competition for those customers will intensify.

Adoption of cloud technology. To leverage lower-cost computing technologies, some banks, financial intermediaries, merchants and corporates are seeking to transition their systems to make use of cloud technology. Our investments provide us the grounding to deliver cloud capabilities in the future. Market sizing data from Ovum indicates that spend on SaaS and PaaS payment systems is growing faster than spend on installed applications.

Electronic payments fraud and compliance. As electronic payment transaction volumes increase, organized criminal organizations continue to find ways to commit a growing volume of fraudulent transactions using a wide range of techniques. Banks, financial intermediaries, merchants and corporates continue to seek ways to leverage new technologies to identify and prevent fraudulent transactions and other attacks such as denial of service attacks. Due to concerns with international terrorism and money laundering, banks and financial intermediaries in particular are being faced with increasing scrutiny and regulatory pressures. We continue to see opportunity to offer our fraud detection solutions to help customers manage the growing levels of electronic payments fraud and compliance activity.

Adoption of smartcard technology. In many markets, card issuers are being required to issue new cards with embedded chip technology, with the liability shift having gone into effect in 2015 in the United States. Chip-based cards are more secure, harder to copy, and offer the opportunity for multiple functions on one card (e.g., debit, credit, electronic purse, identification, health records, etc.). This results in greater card-not-present fraud (e.g., fraud at eCommerce sites).

Single Euro Payments Area (SEPA). The SEPA, primarily focused on the European economic community and the U.K., is designed to facilitate lower costs for cross-border payments and reduce timeframes for settling electronic payment transactions. The transition to SEPA payment mechanisms will drive more volume to these

systems with the potential to cause banks to review the capabilities of the systems supporting these payments. Our Retail Payments and Real-Time Payments solutions facilitate key functions that help banks and financial intermediaries address these mandated regulations.

European Payment Service Directive (PSD2). PSD2, which was ratified by the European Parliament in 2015, required member states to implement new payments regulations in 2018. The XS2A provision effectively creates a new market opportunity where banks in European Union member countries must provide open API standards to customer data, thus allowing authorized third-party providers to enter the market.

Financial institution consolidation. Consolidation continues on a national and international basis, as financial institutions seek to add market share and increase overall efficiency. Such consolidations have increased, and may continue to increase, in their number, size, and market impact as a result of recent economic conditions affecting the banking and financial industries. There are several potential negative effects of increased consolidation activity. Continuing consolidation of financial institutions may result in a smaller number of existing and potential customers for our products and services. Consolidation of two of our customers could result in reduced revenues if the combined entity were to negotiate greater volume discounts or discontinue use of certain of our products. Additionally, if a non-customer and a customer combine and the combined entity decides to forego future use of our products, our revenue would decline. Conversely, we could benefit from the combination of a non-customer and a customer when the combined entity continues use of our products and, as a larger combined entity, increases its demand for our products and services. We tend to focus on larger financial institutions as customers, often resulting in our solutions being the solutions that survive in the consolidated entity.

Global vendor sourcing. Global and regional banks, financial intermediaries, merchants and corporates are aiming to reduce the costs in supplier management by picking suppliers who can service them across all their geographies instead of allowing each country operation to choose suppliers independently. Our global footprint from both a customer and a delivery perspective enable us to be successful in this global sourced market. However, projects in these environments tend to be more complex and therefore of higher risk.

Electronic payments convergence. As electronic payment volumes grow and pressures to lower overall cost per transaction increase, banks and financial intermediaries are seeking methods to consolidate their payments processing across the enterprise. We believe that the strategy of using SOA to allow for re-use of common electronic payment functions, such as authentication, authorization, routing and settlement, will become more common. Using these techniques, banks and financial intermediaries will be able to reduce costs, increase overall service levels, enable one-to-one marketing in multiple bank channels, leverage volumes for improved pricing and liquidity, and manage enterprise risk. Our product strategy is, in part, focused on this trend, by creating integrated payment functions that can be re-used by multiple bank channels, across both the consumer and wholesale bank. While this trend presents an opportunity for us, it may also expand the competition from third-party electronic payment technology and service providers specializing in other forms of electronic payments. Many of these providers are larger than us and have significantly greater financial, technical and marketing resources.

Mobile banking and payments. There is a growing demand for the ability to carry out banking services or make payments using a mobile phone. Recent statistics from Javelin Strategy & Research, a subsidiary of Greenwich Associates, show that 50% of adults in the United States use their phone for mobile banking. The use of phones for mobile banking is expected to grow to 81% in 2020. Our customers have been making use of existing products to deploy mobile banking, mobile payments, and mobile commerce solutions for their customers in many countries. In addition, ACI has invested in mobile products of our own and via partnerships to support mobile functionality in the marketplace.

Electronic bill payment and presentment. EBPP encompasses all facets of bill payment, including biller direct, where customers initiate payments on biller websites, the consolidator model, where customers initiate payments

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on a financial institution's website, and walk-in bill payment, as one might find in a convenience store. The EBPP market continues to grow as consumers move away from traditional forms of paper-based payments. Nearly three out of four (73%) online payments are made at the billers' sites rather than through banking websites, up 11% since 2010. The biller-direct solutions are seeing strong growth as billers migrate these services to outsourcers, such as ACI, from legacy systems built in house. We believe that EBPP remains ripe for outsourcing, as a significant amount of biller-direct transactions are still processed in house. As billers seek to manage costs and improve efficiency, we believe that they will continue to look to third-party EBPP vendors that can offer a complete solution for their billing needs.

Several other factors related to our business may have a significant impact on our operating results from year to year. For example, the accounting rules governing the timing of revenue recognition are complex and it can be difficult to estimate when we will recognize revenue generated by a given transaction. Factors such as creditworthiness of the customer and timing of transfer of control or acceptance of our products may cause revenues related to sales generated in one period to be deferred and recognized in later periods. For arrangements in which services revenue is deferred, related direct and incremental costs may also be deferred. Additionally, while the majority of our contracts are denominated in the U.S. dollar, a substantial portion of our sales are made, and some of our expenses are incurred, in the local currency of countries other than the United States. Fluctuations in currency exchange rates in a given period may result in the recognition of gains or losses for that period.

We continue to seek ways to grow through organic sources, partnerships, alliances, and acquisitions. We continually look for potential acquisitions designed to improve our solutions' breadth or provide access to new markets. As part of our acquisition strategy, we seek acquisition candidates that are strategic, capable of being integrated into our operating environment, and accretive to our financial performance.

Divestiture

Community Financial Services

On March 3, 2016, we completed the sale of our CFS related assets and liabilities to Fiserv for \$200.0 million. The sale of CFS, which was not strategic to our long-term strategy, was part of the Company's ongoing efforts to expand as a provider of software products and SaaS-based and PaaS-based solutions facilitating real-time electronic and eCommerce payments for large banks, financial intermediaries, merchants and corporates worldwide. The sale included employee agreements and customer contracts as well as technology assets and intellectual property.

For the year ended December 31, 2016, we recognized a net after-tax gain of \$93.4 million on sale of assets to Fiserv.

Backlog

Backlog is comprised of:

- **Committed Backlog**, which includes (1) contracted revenue that will be recognized in future periods (contracted but not recognized) from software license fees, maintenance fees, services fees, and SaaS and PaaS fees specified in executed contracts (including estimates of variable consideration if required under ASC 606) and included in the transaction price for those contracts, which includes deferred revenue and amounts that will be invoiced and recognized as revenue in future periods and (2) estimated future revenues from software license fees, maintenance fees, services fees, and SaaS and PaaS fees specified in executed contracts.
- **Renewal Backlog**, which includes estimated future revenues from assumed contract renewals to the extent we believe recognition of the related revenue will occur within the corresponding backlog period.

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The adoption of ASC 606 resulted in the following key changes to backlog:

- The introduction of a U.S. GAAP requirement to measure and disclose revenue allocated to remaining performance obligations.
- A shift in license revenue from Committed Backlog to Renewal Backlog due to the acceleration of license revenue recognition and a corresponding change in the renewal assumptions used to estimate Renewal Backlog.
- An adjustment to the amount of license revenue included in Renewal Backlog due to the introduction of the significant financing component concept.

We have historically included assumed renewals in backlog estimates based upon automatic renewal provisions in the executed contract and our historic experience with customer renewal rates.

Our 60-month backlog estimates are derived using the following key assumptions:

- License arrangements are assumed to renew at the end of their committed term or under the renewal option stated in the contract at a rate consistent with historical experience. If the license arrangement includes extended payment terms, the renewal estimate is adjusted for the effects of a significant financing component.
- Maintenance fees are assumed to exist for the duration of the license term for those contracts in which the committed maintenance term is less than the committed license term.
- SaaS and PaaS arrangements are assumed to renew at the end of their committed term at a rate consistent with our historical experiences.
- Foreign currency exchange rates are assumed to remain constant over the 60-month backlog period for those contracts stated in currencies other than the U.S. dollar.
- Our pricing policies and practices are assumed to remain constant over the 60-month backlog period.

In computing our 60-month backlog estimate, the following items are specifically not taken into account:

- Anticipated increases in transaction, account, or processing volumes by our customers.
- Optional annual uplifts or inflationary increases in recurring fees.
- Services engagements, other than SaaS and PaaS arrangements, are not assumed to renew over the 60-month backlog period.
- The potential impact of consolidation activity within our markets and/or customers.

We review our customer renewal experience on an annual basis. The impact of this review and subsequent update may result in a revision to the renewal assumptions used in computing the 60-month backlog estimates. In the event a significant revision to renewal assumptions is determined to be necessary, prior periods will be adjusted for comparability purposes.

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The following table sets forth our 60-month backlog estimate, by reportable segment, as of December 31, 2018; September 30, 2018; June 30, 2018; March 31, 2018; and December 31, 2017 (in millions). Dollar amounts reflect foreign currency exchange rates as of each period end. We included our 60-month backlog estimate without the application of ASC 606. This is a non-GAAP financial measure that is being presented to provide comparability across accounting periods. We believe this measure provides useful information to investors and others in understanding and evaluating our financial performance.

	As Reported	Without Application of ASC 606	As Reported	Without Application of ASC 606	As Reported	Without Application of ASC 606	As Reported	Without Application of ASC 606	December 31, 2017
	December 31, 2018		September 30, 2018		June 30, 2018		March 31, 2018		
ACI On Premise	\$ 1,875	\$ 1,712	\$ 1,775	\$ 1,645	\$ 1,830	\$ 1,681	\$ 1,874	\$ 1,709	\$ 1,700
ACI On Demand	2,299	2,298	2,401	2,400	2,472	2,472	2,513	2,512	2,404
Total	<u>\$ 4,174</u>	<u>\$ 4,010</u>	<u>\$ 4,176</u>	<u>\$ 4,045</u>	<u>\$ 4,302</u>	<u>\$ 4,153</u>	<u>\$ 4,387</u>	<u>\$ 4,221</u>	<u>\$ 4,104</u>

	As Reported	Without Application of ASC 606	As Reported	Without Application of ASC 606	As Reported	Without Application of ASC 606	As Reported	Without Application of ASC 606	December 31, 2017
	December 31, 2018		September 30, 2018		June 30, 2018		March 31, 2018		
Committed	\$ 1,832	\$ 2,066	\$ 1,760	\$ 2,015	\$ 1,769	\$ 2,022	\$ 1,879	\$ 2,138	\$ 2,062
Renewal	2,342	1,944	2,416	2,030	2,533	2,131	2,508	2,083	2,042
Total	<u>\$ 4,174</u>	<u>\$ 4,010</u>	<u>\$ 4,176</u>	<u>\$ 4,045</u>	<u>\$ 4,302</u>	<u>\$ 4,153</u>	<u>\$ 4,387</u>	<u>\$ 4,221</u>	<u>\$ 4,104</u>

Estimates of future financial results require substantial judgment and are based on several assumptions, as described above. These assumptions may turn out to be inaccurate or wrong for reasons outside of management's control. For example, our customers may attempt to renegotiate or terminate their contracts for many reasons, including mergers, changes in their financial condition or general changes in economic conditions in the customer's industry or geographic location. We may also experience delays in the development or delivery of products or services specified in customer contracts, which may cause the actual renewal rates and amounts to differ from historical experiences. Changes in foreign currency exchange rates may also impact the amount of revenue recognized in future periods. Accordingly, there can be no assurance that amounts included in backlog estimates will generate the specified revenues or that the actual revenues will be generated within the corresponding 60-month period. Additionally, because certain components of Committed Backlog and all of Renewal Backlog estimates are operating metrics, the estimates are not required to be subject to the same level of internal review or controls as contracted but not recognized Committed Backlog.

Results of Operations

The following tables present the consolidated statements of operations as well as the percentage relationship to total revenues of items included in our Consolidated Statements of Operations (in thousands):

Year Ended December 31, 2018, Compared to Year Ended December 31, 2017

	2018				2017	
	Amount	% of Total Revenue	\$ Change vs 2017	% Change vs 2017	Amount	% of Total Revenue
Revenues:						
Software as a service and platform as a service	\$ 433,025	43%	\$ 7,453	2%	\$ 425,572	42%
License	280,556	28%	(12,568)	-4%	293,124	29%
Maintenance	219,145	22%	(2,926)	-1%	222,071	22%
Services	77,054	8%	(6,370)	-8%	83,424	8%
Total revenues	<u>1,009,780</u>	<u>100%</u>	<u>(14,411)</u>	<u>-1%</u>	<u>1,024,191</u>	<u>100%</u>
Operating expenses:						
Cost of revenue	430,351	43%	(21,935)	-5%	452,286	44%
Research and development	143,630	14%	6,709	5%	136,921	13%
Selling and marketing	117,881	12%	9,996	9%	107,885	11%
General and administrative	107,422	11%	(45,610)	-30%	153,032	15%
Depreciation and amortization	84,585	8%	(4,842)	-5%	89,427	9%
Total operating expenses	<u>883,869</u>	<u>88%</u>	<u>(55,682)</u>	<u>-6%</u>	<u>939,551</u>	<u>92%</u>
Operating income	125,911	12%	41,271	49%	84,640	8%
Other income (expense):						
Interest expense	(41,530)	-4%	(2,517)	6%	(39,013)	-4%
Interest income	11,142	1%	10,578	1876%	564	0%
Other, net	(3,724)	0%	(1,105)	42%	(2,619)	0%
Total other income (expense)	<u>(34,112)</u>	<u>-3%</u>	<u>6,956</u>	<u>-17%</u>	<u>(41,068)</u>	<u>-4%</u>
Income before income taxes	91,799	9%	48,227	111%	43,572	4%
Income tax expense	22,878	2%	(15,559)	-40%	38,437	4%
Net income	<u>\$ 68,921</u>	<u>7%</u>	<u>\$ 63,786</u>	<u>1242%</u>	<u>\$ 5,135</u>	<u>1%</u>

Revenues

Total revenue for the year ended December 31, 2018, decreased \$14.4 million, or 1%, as compared to the same period in 2017.

The application of ASC 606 resulted in a \$2.5 million decrease in total revenue for the year ended December 31, 2018. Total revenue was \$3.7 million higher for the year ended December 31, 2018, compared to the same period in 2017, due to the impact of foreign currencies strengthening against the U.S. dollar. Excluding the impact of applying ASC 606 and foreign currency, total revenue for the year ended December 31, 2018, decreased \$15.6 million, or 2%, compared to the same period in 2017, primarily as the result of a decrease in license, maintenance and services revenue, partially offset by an increase in SaaS and PaaS revenue.

Software as a Service ("SaaS") and Platform as a Service ("PaaS") Revenue

The Company's SaaS arrangements allow customers to use certain software solutions (without taking possession of the software) in a single-tenant cloud environment on a subscription basis. The Company's PaaS arrangements

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allow customers to use certain software solutions (without taking possession of the software) in a multi-tenant cloud environment on a subscription or consumption basis. Included in SaaS and PaaS revenue are fees paid by our customers for use of our Biller solutions. Biller-related fees may be paid by our clients or directly by their customers and may be a percentage of the underlying transaction amount, a fixed fee per executed transaction or a monthly fee for each customer enrolled. SaaS and PaaS costs include payment card interchange fees, the amounts payable to banks and payment card processing fees, which are included in cost of revenue in the accompanying consolidated statements of operations. All revenue from SaaS and PaaS arrangements that does not qualify for treatment as a distinct performance obligation, which includes set-up fees, implementation or customization services, and product support services, are included in SaaS and PaaS revenue.

SaaS and PaaS revenue increased \$7.5 million, or 2%, during the year ended December 31, 2018, as compared to the same period in 2017. The application of ASC 606 resulted in a \$0.9 million increase in total SaaS and PaaS revenue for the year ended December 31, 2018. Total SaaS and PaaS revenue was \$1.8 million higher for the year ended December 31, 2018, compared to the same period in 2017, due to the impact of foreign currencies strengthening against the U.S. dollar. Excluding the impact of applying ASC 606 and foreign currency, total SaaS and PaaS revenue for the year ended December 31, 2018, increased \$4.7 million, or 1%, compared to the same period in 2017, which is primarily attributable to new customers adopting our SaaS and PaaS offerings and existing customers adding new functionality or increasing transaction volumes.

License Revenue

Customers purchase the right to license ACI software under multi-year, time-based software license arrangements that vary in length but are generally five years. Under these arrangements the software is installed at the customer's location (i.e. on-premise). Within these agreements are specified capacity limits typically based on customer transaction volume. ACI employs measurement tools that monitor the number of transactions processed by customers and if contractually specified limits are exceeded, additional fees are charged for the overage. Capacity overages may occur at varying times throughout the term of the agreement depending on the product, the size of the customer, and the significance of customer transaction volume growth. Depending on specific circumstances, multiple overages or no overages may occur during the term of the agreement.

Included in license revenue are license and capacity fees that are payable at the inception of the agreement or annually (initial license fees). License revenue also includes license and capacity fees payable quarterly or monthly due to negotiated customer payment terms (monthly license fees). Under ASC 606 the Company recognizes revenue in advance of billings for software license arrangements with extended payment terms and adjusted for the effects of the financing component, if significant. Under ASC 605 the Company recognized revenue for those same software license arrangements as the fees became due and payable.

Total license revenue decreased \$12.6 million, or 4%, during the year ended December 31, 2018, as compared to the same period in 2017. The application of ASC 606 resulted in a \$0.8 million decrease in total license revenue for the year ended December 31, 2018. Total license revenue was \$0.9 million higher for the year ended December 31, 2018, compared to the same period in 2017, due to the impact of foreign currencies strengthening against the U.S. dollar. Excluding the impact of applying ASC 606 and foreign currency, total license revenue for the year ended December 31, 2018, decreased \$12.7 million, or 4%, compared to the same period in 2017.

The decrease in total license revenue was primarily driven by the timing and relative size of license and capacity events during the year ended December 31, 2018, as compared to the same period in 2017.

Maintenance Revenue

Maintenance revenue includes standard and premium maintenance and any post contract support fees received from customers for the provision of product support services.

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Maintenance revenue decreased \$2.9 million, or 1%, during the year ended December 31, 2018, as compared to the same period in 2017. The application of ASC 606 resulted in a \$2.0 million decrease in total maintenance revenue for the year ended December 31, 2018. Total maintenance revenue was \$1.2 million higher for the year ended December 31, 2018, as compared to the same period in 2017, due to the impact of foreign currencies strengthening against the U.S. dollar. Excluding the impact of applying ASC 606 and foreign currency, total maintenance revenue for the year ended December 31, 2018, decreased \$2.1 million, or 1%, compared to the same period in 2017.

Services Revenue

Services revenue includes fees earned through implementation services and other professional services. Implementation services include product installations, product configurations, and custom software modifications (“CSMs”). Other professional services include business consultancy, technical consultancy, on-site support services, CSMs, product education, and testing services. These services include new customer implementations as well as existing customer migrations to new products or new releases of existing products.

Services revenue decreased \$6.4 million, or 8%, during the year ended December 31, 2018, as compared to the same period in 2017. The application of ASC 606 resulted in a \$0.5 million decrease in total services revenue for the year ended December 31, 2018. Total services revenue was \$0.3 million lower for the year ended December 31, 2018, as compared to the same period in 2017, due to the impact of certain foreign currencies weakening against the U.S. dollar. Excluding the impact of applying ASC 606 and foreign currency, total services revenue for the year ended December 31, 2018, decreased \$5.5 million, or 7%, compared to the same period in 2017. During the year ended December 31, 2017, we completed or neared completion of several large, complex projects that resulted in recognition of services revenue as the work was performed and the projects were completed. The number and magnitude of such projects was lower during the year ended December 31, 2018.

Operating Expenses

Total operating expenses for the year ended December 31, 2018, decreased \$55.7 million, or 6%, as compared to the same period in 2017.

During the year ended December 31, 2017, there was \$46.7 million of expense recorded related to the BHMI judgment. The application of ASC 606 resulted in a \$7.5 million increase in total operating expenses for the year ended December 31, 2018, primarily due to differences in the timing of expense recognition for sales commissions. Total operating expenses were \$3.0 million higher for the year ended December 31, 2018, compared to the same period in 2017, due to the impact of foreign currencies strengthening against the U.S. dollar. Excluding the impact of the BHMI judgment, applying ASC 606, and foreign currency, total operating expenses for the year ended December 31, 2018, decreased \$19.5 million, or 2%, compared to the same period in 2017, primarily because of lower cost of revenue and depreciation and amortization expenses, partially offset by higher research and development, selling and marketing, and general and administrative expenses.

Cost of Revenue

Cost of revenue includes costs to provide SaaS and PaaS services, third-party royalties, amortization of purchased and developed software for resale, the costs of maintaining our software products, as well as the costs required to deliver, install, and support software at customer sites. SaaS and PaaS service costs include payment card interchange fees, amounts payable to banks, and payment card processing fees. Maintenance costs include the efforts associated with providing the customer with upgrades, 24-hour help desk, post go-live (remote) support, and production-type support for software that was previously installed at a customer location. Service costs include human resource costs and other incidental costs such as travel and training required for both pre go-live and post go-live support. Such efforts include project management, delivery, product customization and implementation, installation support, consulting, configuration, and on-site support.

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Cost of revenue decreased \$21.9 million, or 5%, during the year ended December 31, 2018, compared to the same period in 2017. Cost of revenue was \$0.8 million higher for the year ended December 31, 2018, as compared to the same period in 2017, due to the impact of foreign currencies strengthening against the U.S. dollar. Excluding the impact of foreign currency, cost of revenue decreased \$22.7 million, or 5%, for the year ended December 31, 2018, as compared to the same period in 2017, primarily due to lower personnel and related costs of \$29.5 million, partially offset by a \$6.8 million increase in payment card interchange and processing fees.

Research and Development

Research and development (“R&D”) expenses are primarily human resource costs related to the creation of new products, improvements made to existing products as well as compatibility with new operating system releases and generations of hardware.

R&D expense increased \$6.7 million, or 5%, during the year ended December 31, 2018, as compared to the same period in 2017. R&D expense was \$0.5 million higher for the year ended December 31, 2018, as compared to the same period in 2017, due to the impact of foreign currencies strengthening against the U.S. dollar. Excluding the impact of foreign currency, R&D expense increased \$6.2 million, or 5%, for the year ended December 31, 2018, as compared to the same period in 2017, primarily due to an increase in personnel and related expenses.

Selling and Marketing

Selling and marketing includes both the costs related to selling our products to current and prospective customers as well as the costs related to promoting the Company, its products and the research efforts required to measure customers’ future needs and satisfaction levels. Selling costs are primarily the human resource and travel costs related to the effort expended to license our products and services to current and potential clients within defined territories and/or industries as well as the management of the overall relationship with customer accounts. Selling costs also include the costs associated with assisting distributors in their efforts to sell our products and services in their respective local markets. Marketing costs include costs incurred to promote the Company and its products, perform or acquire market research to help the Company better understand impending changes in customer demand for and of our products, and the costs associated with measuring customers’ opinions toward the Company, our products and personnel.

Selling and marketing expense increased \$10.0 million, or 9%, during the year ended December 31, 2018, as compared to the same period in 2017. The application of ASC 606 resulted in a \$7.5 million increase in selling and marketing expense for the year ended December 31, 2018, as compared to the same period in 2017. Selling and marketing expense was \$0.8 million higher for the year ended December 31, 2018, as compared to the same period in 2017, due to the impact of foreign currencies strengthening against the U.S. dollar. Excluding the impact of applying ASC 606 and foreign currency, selling and marketing expense increased \$1.7 million, or 2%, for the year ended December 31, 2018, as compared to the same period in 2017, due to an increase in personnel and related expenses as the result of an increase in total bookings.

General and Administrative

General and administrative expenses are primarily human resource costs including executive salaries and benefits, personnel administration costs, and the costs of corporate support functions such as legal, administrative, human resources, and finance and accounting.

General and administrative expense decreased \$45.6 million, or 30%, during the year ended December 31, 2018, as compared to the same period in 2017. During the year ended December 31, 2017, there was \$46.7 million of general and administrative expense recorded related to the BHMI judgment. General and administrative expenses were \$0.4 million higher for the year ended December 31, 2018, as compared to the same period in 2017, due to

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the impact of foreign currencies strengthening against the U.S. dollar. Excluding the impact of the BHMI judgment and foreign currency, general and administrative expense increased \$0.7 million, or 1%, for the year ended December 31, 2018, as compared to the same period in 2017, primarily due to an increase in personnel and related expenses.

Depreciation and Amortization

Depreciation and amortization decreased \$4.8 million, or 5%, during the year ended December 31, 2018, as compared to the same period in 2017. Depreciation and amortization was \$0.6 million higher for the year ended December 31, 2018, as compared to the same period in 2017, due to the impact of foreign currencies strengthening against the U.S. dollar. Excluding the impact of foreign currency, depreciation and amortization decreased \$5.5 million, or 6%, for the year ended December 31, 2018, as compared to the same period in 2017.

Other Income and Expense

Interest expense for the year ended December 31, 2018, increased \$2.5 million, or 6%, as compared to the same period in 2017, primarily due to the write-off of \$1.7 million of deferred debt issuance costs from the redemption of our 6.375% Senior Notes due 2020 (the "2020 Notes"), as well as higher interest rates on the Term Credit Facility during 2018.

Interest income includes the portion of software license fees paid by customers under extended payment terms that is attributed to the significant financing component. Interest income for the year ended December 31, 2018, increased \$10.6 million, as compared to the same period in 2017, primarily due to the impact of adopting and applying ASC 606. Excluding the impact of adopting and applying ASC 606, interest income was flat.

Other, net consists of foreign currency loss and other non-operating items. Foreign currency loss for the years ended December 31, 2018 and 2017, was \$3.7 million and \$2.6 million, respectively.

Income Taxes

On December 22, 2017, the Tax Cuts and Jobs Act ("Tax Act") was signed into U.S. Law. In December 2017, the SEC staff issued Staff Accounting Bulletin No. 118, *Income Tax Accounting Implications of the Tax Cuts and Jobs Act* ("SAB 118"), which allowed us to record provisional amounts during a measurement period not to extend beyond one year of the enactment date. As of December 31, 2018, we have completed our accounting for the tax effects of the enactment of the Tax Act. Refer to Note 13, *Income Taxes*, in the Notes to Consolidated Financial Statements in Part IV, Item 15 of this Form 10-K for further discussion.

The effective tax rates for the years ended December 31, 2018 and 2017, were approximately 25% and 88%, respectively. Our effective tax rates vary from our federal statutory rates due to operating in multiple foreign countries where we apply foreign tax laws and rates which differ from those we apply to the income generated from our domestic operations. Of the foreign jurisdictions in which we operate, our December 31, 2018, effective rate was most impacted by our operations in Ireland and Luxembourg, and our December 31, 2017, effective tax rate was most impacted by our operations in Ireland, South Africa, and the United Kingdom. Excluding the impact of the Tax Act, the effective tax rate for the year ended December 31, 2018, was increased by the expensing of withholding taxes that cannot be credited against the recipient's tax liability in the country of residence. Excluding the impact of the Tax Act, the effective tax rate for the year ended December 31, 2017, was increased by the inclusion of certain foreign earnings in our U.S. tax return, offset by the tax benefit from foreign operations that are taxed at lower rates than the domestic rate.

Year Ended December 31, 2017, Compared to Year Ended December 31, 2016

	2017				2016	
	Amount	% of Total Revenue	\$ Change vs 2016	% Change vs 2016	Amount	% of Total Revenue
Revenues:						
Software as a service and platform as a service	\$ 425,572	42%	\$ 14,283	3%	\$ 411,289	41%
Initial license fees (ILFs)	215,002	21%	11,846	6%	203,156	20%
Monthly license fees (MLFs)	78,122	8%	7,812	11%	70,310	7%
License	293,124	29%	19,658	7%	273,466	27%
Maintenance	222,071	22%	(11,405)	-5%	233,476	23%
Services	83,424	8%	(4,046)	-5%	87,470	9%
Total revenues	1,024,191	100%	18,490	2%	1,005,701	100%
Operating expenses:						
Cost of revenue	452,286	44%	7,372	2%	444,914	44%
Research and development	136,921	13%	(32,979)	-19%	169,900	17%
Selling and marketing	107,885	11%	(10,197)	-9%	118,082	12%
General and administrative	153,032	15%	39,415	35%	113,617	11%
Gain on sale of CFS assets	—	0%	151,463	100%	(151,463)	-15%
Depreciation and amortization	89,427	9%	(94)	0%	89,521	9%
Total operating expenses	939,551	92%	154,980	20%	784,571	78%
Operating income	84,640	8%	(136,490)	-62%	221,130	22%
Other income (expense):						
Interest expense	(39,013)	-4%	1,171	-3%	(40,184)	-4%
Interest income	564	0%	34	6%	530	0%
Other, net	(2,619)	0%	(6,724)	-164%	4,105	0%
Total other income (expense)	(41,068)	-4%	(5,519)	16%	(35,549)	-4%
Income before income taxes	43,572	4%	(142,009)	-77%	185,581	18%
Income tax expense	38,437	4%	(17,609)	-31%	56,046	6%
Net income	\$ 5,135	1%	\$(124,400)	-96%	\$ 129,535	13%

Revenues

Total revenue for the year ended December 31, 2017, increased \$18.5 million, or 2%, as compared to the same period in 2016. The increase is the result of a \$19.7 million, or 7%, increase in license revenue and a \$14.3 million, or 3%, increase in SaaS and PaaS revenue, partially offset by an \$11.4 million, or 5%, decrease in maintenance revenue, and a \$4.1 million, or 5%, decrease in services revenue.

The CFS divestiture resulted in a \$15.4 million decrease in total revenue for the year ended December 31, 2017, as compared to the same period in 2016. Total revenue was \$5.0 million higher for the year ended December 31, 2017, compared to the same period in 2016 due to the impact of foreign currencies strengthening against the U.S. dollar. Excluding the impact of CFS and foreign currency, total revenue for the year ended December 31, 2017, increased \$28.9 million, or 3%, compared to the same period in 2016 primarily as a result of increases in license and SaaS and PaaS revenue partially offset by decreases in maintenance and services revenue.

SaaS and PaaS Revenue

SaaS and PaaS revenue increased \$14.3 million, or 3%, during the year ended December 31, 2017, as compared to the same period in 2016. The CFS divestiture resulted in a \$13.5 million decrease in SaaS and PaaS revenue

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during the year ended December 31, 2017. The impact of foreign currencies on SaaS and PaaS revenue during the year ended December 31, 2017, was neutral. Excluding the impact of CFS, total SaaS and PaaS revenue for year ended December 31, 2017, increased \$27.8 million, or 7%, compared to the same period in 2016, which is primarily attributable to new customers adopting our SaaS and PaaS-based offerings and existing customers adding new functionality or increasing transaction volumes.

Initial License Revenue

Initial license revenue includes license and capacity revenues that do not recur on a monthly or quarterly basis. Included in initial license revenue are license and capacity fees that are recognizable at the inception of the agreement and license and capacity fees that are recognizable at interim points during the term of the agreement, including those that are recognizable annually due to negotiated customer payment terms.

Initial license revenue increased \$11.8 million, or 6%, during the year ended December 31, 2017, as compared to the same period in 2016. Initial license revenue was \$4.5 million higher for year ended December 31, 2017, compared to the same period in 2016 due to the impact of foreign currencies strengthening against the U.S. dollar. Excluding the impact of foreign currency, initial license revenue for the year ended December 31, 2017, increased \$7.3 million, or 4%, compared to the same period in 2016.

The increase in initial license revenue was primarily driven by an increase in non-capacity-related license revenue of \$18.5 million partially offset by a decrease in capacity-related license revenue of \$11.3 million during the year ended December 31, 2017, compared to the same period in 2016. The changes in non-capacity-related and capacity-related license revenue were attributable to the timing and relative size of license renewal arrangements that were signed and capacity events that occurred during the year ended December 31, 2017, as compared to the same period in 2016.

Monthly License Revenue

Monthly license revenue is license and capacity revenue that is paid monthly or quarterly due to negotiated customer payment terms as well as initial license and capacity fees that are recognized as revenue ratably over an extended period.

Monthly license revenue increased \$7.8 million, or 11%, during the year ended December 31, 2017, as compared to the same period in 2016. The CFS divestiture resulted in decreased monthly license revenue of \$0.4 million during the year ended December 31, 2017. Total monthly license revenue was \$0.4 million lower for the year ended December 31, 2017, compared to the same period in 2016 due to the impact of certain foreign currencies weakening against the U.S. dollar. Excluding the impact of CFS and foreign currency, monthly license revenue for the year ended December 31, 2017, increased \$8.5 million, or 12%, compared to the same period in 2016.

The increase in monthly license revenue is primarily attributable to the timing and relative size of license renewal arrangements that were signed during the years ended December 31, 2016 and 2017.

Maintenance Revenue

Maintenance revenue decreased \$11.4 million, or 5%, during the year ended December 31, 2017, as compared to the same period in 2016. The CFS divestiture resulted in decreased maintenance revenue of \$0.4 million during the year ended December 31, 2017. Total maintenance revenue was \$0.3 million higher for the year ended December 31, 2017, as compared to the same period in 2016 due to the impact of foreign currencies strengthening against the U.S. dollar. Excluding the impact of CFS and foreign currency, total maintenance revenue for the year ended December 31, 2017, decreased \$11.3 million, or 5%, compared to the same period in 2016.

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The decrease in maintenance revenue is primarily attributable to the recognition of cumulative deferred maintenance revenue for certain customer contracts due to meeting required revenue recognition criteria during the year ended December 31, 2016, and certain customers electing to cancel premium maintenance prior to the year ended December 31, 2017. These decreases were partially offset by maintenance revenue from sales of licensed products to new and existing customers prior to and during the year ended December 31, 2017.

Services Revenue

Services revenue decreased \$4.1 million, or 5%, during the year ended December 31, 2017, as compared to the same period in 2016. The CFS divestiture resulted in decreased services revenue of \$1.1 million during the year ended December 31, 2017. Total services revenue was \$0.6 million higher for the year ended December 31, 2017, as compared to the same period in 2016 due to the impact of foreign currencies strengthening against the U.S. dollar. Excluding the impact of CFS and foreign currency, total services revenue for the year ended December 31, 2017, decreased \$3.5 million, or 4%, compared to the same period in 2016.

During the year ended December 31, 2016, we completed or neared completion of several large, complex projects that resulted in recognition of services revenue as the work was performed and the projects were completed. The number and magnitude of such projects was lower during the year ended December 31, 2017. Additionally, our customers continue to transition from on-premise to on-demand software solutions. Services work performed in relation to our on-demand software solutions is recognized over a longer service period and is classified as SaaS and PaaS revenue.

Operating Expenses

Total operating expenses during the year ended December 31, 2017, increased \$3.5 million as compared to the same period in 2016, excluding the gain on sale of CFS assets.

The CFS divestiture resulted in a \$15.2 million decrease in total operating expenses for the year ended December 31, 2017, compared to the same period in 2016. In the year ended December 31, 2017, there was \$46.7 million of expense recorded in relation to the BHMI judgment. Total operating expenses were \$2.1 million higher for the year ended December 31, 2017, compared to the same period in 2016, due to the impact of foreign currencies strengthening against the U.S. dollar. Excluding the impact of CFS, the BHMI judgment, and foreign currency, operating expenses decreased \$30.1 million, or 3%, for the year ended December 31, 2017, compared to the same period in 2016, principally reflecting decreases in research and development expense and selling and marketing expense, partially offset by an increase in cost of revenue, general and administrative expense, and depreciation and amortization expense.

Cost of Revenue

Cost of revenue increased \$7.4 million, or 2%, during the year ended December 31, 2017, compared to the same period in 2016. The CFS divestiture resulted in a decrease of \$10.4 million in cost of revenue for the year ended December 31, 2017. Cost of revenue was approximately \$0.2 million higher due to the impact of foreign currencies strengthening against the U.S. dollar. Excluding the impact of CFS and foreign currency, cost of revenue increased \$17.6 million, or 4%, for the year ended December 31, 2017, compared to the same period in 2016, primarily due to a \$19.8 million increase in payment card interchange and processing fees.

Research and Development

Research and development expense decreased \$33.0 million, or 19%, during the year ended December 31, 2017, as compared to the same period in 2016. The CFS divestiture resulted in a decrease of \$1.6 million in research and development expense for the year ended December 31, 2017. Research and development expenses were \$1.0 million higher for the year ended December 31, 2017, compared to the same period in 2016, due to the

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impact of foreign currencies strengthening against the U.S. dollar. Excluding the impact of CFS and foreign currency, research and development expenses decreased \$32.4 million, or 19%, for the year ended December 31, 2017, compared to the same period in 2016, primarily due to a decrease in personnel and related expenses, including a \$12.3 million decrease in stock-based compensation. Research and development costs were also lower due to a \$4.1 million increase in net deferred expenses and a \$2.5 million decrease in third-party contractor costs.

Selling and Marketing

Selling and marketing expense decreased \$10.2 million, or 9%, during the year ended December 31, 2017, as compared to the same period in 2016. The CFS divestiture resulted in a decrease of \$1.6 million in selling and marketing expense for the year ended December 31, 2017. Selling and marketing expense was \$0.1 million higher for the year ended December 31, 2017, as compared to the same period in 2016, due to the impact of foreign currencies strengthening against the U.S. dollar. Excluding the impact of CFS and foreign currency, selling and marketing expense decreased \$8.7 million, or 7%, for the year ended December 31, 2017, compared to the same period in 2016, primarily due to a decrease in personnel and related expenses as a result of a decrease in new bookings and a \$4.0 million decrease in stock-based compensation expense.

General and Administrative

General and administrative expense increased \$39.4 million, or 35%, during the year ended December 31, 2017, as compared to the same period in 2016. For the year ended December 31, 2017, \$46.7 million of expense was recorded in relation to the BHMI judgment. The CFS divestiture resulted in a decrease in general and administrative expenses of \$1.0 million for the year ended December 31, 2017. General and administrative expense was approximately \$0.6 million higher for the year ended December 31, 2017, as compared to the same period in 2016, due to the impact of foreign currencies strengthening against the U.S. dollar. Excluding the impact of CFS, the BHMI judgment, and foreign currency, general and administrative expense decreased \$6.9 million, or 6%, for the year ended December 31, 2017, compared to the same period in 2016.

Gain on Sale of CFS Assets

On March 3, 2016, we completed the sale of our CFS related assets and liabilities to Fiserv for \$200.0 million and recognized a pre-tax gain of \$151.5 million for the year ended December 31, 2016.

Depreciation and Amortization

Depreciation and amortization decreased \$0.1 million during the year ended December 31, 2017, as compared to the same period in 2016. The CFS divestiture resulted in a \$0.6 million decrease in depreciation and amortization for the year ended December 31, 2017. Depreciation and amortization expense were approximately \$0.2 million higher for the year ended December 31, 2017, as compared to the same period in 2016, due to the impact of foreign currencies strengthening against the U.S. dollar. Excluding the impact of CFS and foreign currency, depreciation and amortization expense increased \$0.3 million for the year ended December 31, 2017, compared to the same period in 2016.

Other Income and Expense

Interest expense for the year ended December 31, 2017, decreased \$1.2 million, or 3%, as compared to the same period in 2016 primarily due to lower comparative debt balances. Interest income was flat year over year.

Other, net consists of foreign currency gain (loss). Foreign currency gain (loss) for the years ended December 31, 2017 and 2016, were a \$2.6 million loss and a \$4.1 million gain, respectively.

Income Taxes

On December 22, 2017, the Tax Act was signed into U.S. law, which made broad and complex changes to the U.S. tax code affecting 2017 and later years. On December 22, 2017, the SEC staff issued SAB 118, providing guidance on accounting for the tax effects of the Tax Act. SAB 118 provides a measurement period that should not extend beyond one year from the Tax Act enactment date for companies to complete the accounting under ASC 740, *Income Taxes*.

The Tax Act reduced the U.S. federal corporate income tax rate from 35% to 21%, effective January 1, 2018. We recorded a \$15.0 million provisional tax charge for the year ended December 31, 2017, resulting from remeasuring net deferred tax assets and liabilities. We also recorded a \$20.9 million provisional tax charge for the year ended December 31, 2017, related to a one-time transition tax on certain unremitted foreign earnings as required by the Tax Act.

The effective tax rates for the years ended December 31, 2017 and 2016, were approximately 88% and 30%, respectively. The effective tax rates vary from our federal statutory rates due to operating in multiple foreign countries where we apply foreign tax laws and rates which differ from those we apply to the income generated from our domestic operations. Of the foreign jurisdictions in which we operate, our December 31, 2017 and 2016, effective tax rates were most impacted by our operations in Ireland, South Africa, and the United Kingdom. Excluding the impact of the Tax Act, the effective tax rate for the year ended December 31, 2017, was increased by the inclusion of certain foreign earnings in our U.S. tax return, offset by the tax benefit from foreign operations that are taxed at lower rates than the domestic rate. The effective tax rate for the year ended December 31, 2016, was increased by the inclusion of certain foreign earnings in our U.S. tax return, offset by the tax benefit from foreign operations that are taxed at lower rates than the domestic rate. The effective tax rate for the year ended December 31, 2016, was also reduced by net release of \$9.0 million in valuation allowance primarily related to U.S. foreign tax credits.

Segment Results

We report financial performance based on our segments, ACI On Premise and ACI On Demand, and analyze Segment Adjusted EBITDA as a measure of segment profitability.

Our Chief Executive Officer is also our chief operating decision maker, or CODM. The CODM, together with other senior management personnel, focus their review on consolidated financial information and the allocation of resources based on operating results, including revenues and Segment Adjusted EBITDA, for each segment, separate from corporate operations.

ACI On Premise serves customers who manage their software on site. These on-premise customers use the Company's software to develop sophisticated solutions, which are often part of a larger system located and managed at the customer specified site. These customers require a level of control and flexibility that ACI On Premise solutions can offer, and they have the resources and expertise to take a lead role in managing these solutions.

ACI On Demand serves the needs of banks, merchants and corporates who use payments to facilitate their core business. These on-demand solutions are maintained and delivered through the cloud via our global data centers and are available in either a single-tenant environment, SaaS offerings, or in a multi-tenant environment, PaaS offerings.

Revenue is attributed to the reportable segments based upon the product sold and mechanism for delivery to the customer. Expenses are attributed to the reportable segments in one of three methods, (1) direct costs of the segment, (2) labor costs that can be attributed based upon time tracking for individual products, or (3) costs that are allocated. Allocated costs are generally marketing and sales related activities as well as information technology and facilities related expense for which multiple segments benefit. The Company also allocates certain depreciation costs to the segments.

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Segment Adjusted EBITDA is the measure reported to the CODM for purposes of making decisions on allocating resources and assessing the performance of the Company's segments and, therefore, Segment Adjusted EBITDA is presented in conformity with ASC 280, *Segment Reporting*. Segment Adjusted EBITDA is defined as earnings (loss) from operations before interest, income tax expense (benefit), depreciation and amortization ("EBITDA") adjusted to exclude stock-based compensation, and net other income (expense). During the first quarter of 2018, we changed the presentation of our segment measure of profit and loss. As a result, the 2017 and 2016 segment disclosures have been recast to conform with the 2018 presentation.

Corporate and unallocated expenses consists of the corporate overhead costs that are not allocated to reportable segments. These overhead costs relate to human resources, finance, legal, accounting, merger and acquisition activity, and other costs that are not considered when management evaluates segment performance.

The following is selected financial data for the Company's reportable segments for the periods indicated (in thousands):

	Years Ended December 31,		
	2018	2017	2016
Revenues			
ACI On Premise	\$ 576,755	\$ 598,590	\$ 591,252
ACI On Demand	433,025	425,601	399,033
Corporate and other	—	—	15,416
Total revenue	\$ 1,009,780	\$ 1,024,191	\$ 1,005,701
Segment Adjusted EBITDA			
ACI On Premise	\$ 323,902	\$ 347,094	\$ 312,188
ACI On Demand	12,015	(1,832)	(2,624)
Depreciation and amortization	(97,350)	(102,224)	(103,454)
Stock-based compensation expense	(20,360)	(13,683)	(43,613)
Corporate and unallocated expenses	(92,296)	(144,715)	58,633
Interest, net	(30,388)	(38,449)	(39,654)
Other, net	(3,724)	(2,619)	4,105
Income before income taxes	\$ 91,799	\$ 43,572	\$ 185,581
Depreciation and amortization			
ACI On Premise	\$ 11,634	\$ 13,094	\$ 14,581
ACI On Demand	31,541	34,171	29,385
Corporate	54,175	54,959	59,488
Total depreciation and amortization	\$ 97,350	\$ 102,224	\$ 103,454
Stock-based compensation expense			
ACI On Premise	\$ 4,348	\$ 2,234	\$ 6,894
ACI On Demand	4,338	2,230	6,876
Corporate and other	11,674	9,219	29,843
Total stock-based compensation expense	\$ 20,360	\$ 13,683	\$ 43,613

ACI On Premise Segment Adjusted EBITDA decreased \$23.2 million for the year ended December 31, 2018, compared to the same period in 2017. The application of ASC 606 resulted in a \$3.8 million decrease in Segment Adjusted EBITDA. Excluding the impact of applying ASC 606, ACI On Premise Segment Adjusted EBITDA decreased \$19.4 million primarily due to a \$18.5 million decrease in revenue and a \$1.6 million increase in operating expenses.

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ACI On Demand Segment Adjusted EBITDA increased \$13.8 million for the year ended December 31, 2018, compared to the same period in 2017. The application of ASC 606 resulted in a \$3.6 million decrease in Segment Adjustment EBITDA. Excluding the impact of applying ASC 606, ACI On Demand Segment Adjusted EBITDA increased \$17.5 million primarily due to a \$6.5 million increase in revenues and a \$11.4 million decrease in operating expenses.

ACI On Premise Segment Adjusted EBITDA increased \$34.9 million for the year ended December 31, 2017, compared to the same period in 2016, primarily due to a \$19.7 million increase in license revenue, partially offset by a \$11.4 million decrease in maintenance revenue, and a \$27.7 million decrease in operating expenses.

ACI On Demand Segment Adjusted EBITDA increased \$0.8 million for the year ended December 31, 2017, compared to the same period in 2016, primarily due to a \$26.6 million increase in revenue, offset by a \$25.9 million increase in operating expenses.

Corporate and unallocated expenses included 1) the BHMI judgment of \$46.7 million recognized during the year ended December 31, 2017, and 2) revenue and operating income and the gain on sale of CFS assets and liabilities of \$15.4 million and \$151.7 million, respectively, recognized during the year ended December 31, 2016.

Liquidity and Capital Resources

General

Our primary liquidity needs are: (i) to fund normal operating expenses; (ii) to meet the interest and principal requirements of our outstanding indebtedness; and (iii) to fund acquisitions, capital expenditures and lease payments. We believe these needs will be satisfied using cash flow generated by our operations, cash and cash equivalents, and available borrowings under our revolving credit facility.

Available Liquidity

The following table sets forth our available liquidity for the periods indicated (in thousands):

	December 31,	
	2018	2017
Cash and cash equivalents	\$ 148,502	\$ 69,710
Availability under revolving credit facility	500,000	498,000
Total liquidity	<u>\$ 648,502</u>	<u>\$ 567,710</u>

The increase in total liquidity is primarily attributable to positive operating cash flows of \$183.9 million, offset by repurchases of common stock of \$54.5 million and \$43.9 million of payments to purchase property and equipment and software and distribution rights.

Cash and cash equivalents consist of highly liquid investments with original maturities of three months or less. As of December 31, 2018, we had \$148.5 million in cash and cash equivalents, of which \$80.8 million was held by our foreign subsidiaries. If these funds were needed for our operations in the U.S., we may potentially be required to pay foreign and U.S. state income taxes to repatriate these funds. As of December 21, 2018, we considered only the earnings in our Indian foreign subsidiaries to be indefinitely reinvested. We consider the earnings of all other foreign entities to be no longer indefinitely reinvested. In addition to the Indian foreign earnings, we are also permanently reinvested for outside book/tax basis difference related to foreign subsidiaries. These outside basis differences could reverse through sales of the foreign subsidiaries, as well as various other events, none of which are considered probable as of December 31, 2018.

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Cash Flows

The following table sets forth summary cash flow data for the periods indicated (in thousands).

	Years Ended December 31,		
	2018	2017	2016
Net cash provided by (used in):			
Operating activities	\$ 183,932	\$ 146,197	\$ 99,830
Investing activities	(45,360)	(54,414)	129,633
Financing activities	(57,704)	(98,148)	(251,076)

2018 compared to 2017

Cash Flow from Operating Activities

Net cash flows provided by operating activities for the year ended December 31, 2018, was \$183.9 million compared to \$146.2 million during the same period in 2017. The comparative period increase was primarily due to the payment of the BHMI judgment in 2017 that did not repeat in 2018, as well as timing of customer billings and receipts for the year ended December 31, 2018, compared to the same period in 2017. Our current policy is to use our operating cash flow primarily for funding capital expenditures, lease payments, stock repurchases, and acquisitions.

Cash Flow from Investing Activities

Net cash flows used by investing activities for the year ended December 31, 2018, was \$45.4 million compared to \$54.4 million during the same period in 2017. During 2018, we used cash of \$43.9 million to purchase software, property and equipment compared to \$54.4 million during the same period in 2017.

Cash Flow from Financing Activities

Net cash flows used by financing activities for the year ended December 31, 2018, was \$57.7 million compared to \$98.1 million during the same period in 2017. During 2018, we received proceeds of \$400.0 million from the issuance of the 2026 Notes. We used \$300.0 million of the proceeds to redeem, in full, the Company's outstanding 6.375% Senior Notes due 2020 ("2020 Notes") and repaid \$109.3 million on the Term Credit Facility. In addition, during 2018, we received proceeds of \$22.8 million from the exercises of stock options and the issuance of common stock under our 2017 Employee Stock Purchase Plan and used \$2.6 million for the repurchase of restricted stock for tax withholdings. During 2018, we also used \$54.5 million to repurchase common stock. During 2017, we received net proceeds of \$29.0 million on the Term Credit Facility and repaid a net of \$86.0 million on the Revolving Credit Facility. In addition, during 2017, we used \$37.4 million to repurchase shares of common stock. During 2017, we also received proceeds of \$16.8 million from the exercises of stock options and issuance of common stock under our 2017 Employee Stock Purchase Plan, and used \$5.3 million for the repurchase of restricted stock for tax withholdings.

2017 compared to 2016

Cash Flow from Operating Activities

Net cash flows provided by operating activities for the year ended December 31, 2017, was \$146.2 million compared to \$99.8 million during the same period in 2016. The comparative period increase was primarily due to the timing of customer billings and receipts for the year ended December 31, 2017, compared to the same period in 2016.

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Cash Flow from Investing Activities

During 2017, we used cash of \$54.4 million to purchase software, property and equipment compared to \$63.1 million during the same period in 2016. During 2016, we received net proceeds of \$199.5 million from the sale of the CFS related assets and liabilities.

Cash Flow from Financing Activities

Net cash flows used by financing activities for the year ended December 31, 2017, was \$98.1 million compared to \$251.1 million during the same period in 2016. During 2017, we received net proceeds of \$29.0 million on the Term Credit Facility and repaid a net of \$86.0 million on the Revolving Credit Facility. We used \$37.4 million to repurchase shares of common stock during the year ended December 31, 2017. In addition, during the year ended December 31, 2017, we received proceeds of \$16.8 million from the exercises of stock options and issuance of common stock under our 2017 Employee Stock Purchase Plan, and used \$5.3 million for the repurchase of restricted stock for tax withholdings. During 2016, we used the proceeds from the CFS divestiture to partially fund the repayment of \$166.0 million on the revolver portion of the Credit Facility and \$95.3 million of the term portion of the Credit Facility. Additionally, we used \$60.1 million to repurchase shares of common stock during the year ended December 31, 2016. In addition, during the year ended December 31, 2016, we received proceeds of \$12.3 million from the exercises of stock options and the issuance of common stock under our 1999 Employee Stock Purchase Plan, as amended, and used \$3.0 million for the repurchase of restricted stock and performance shares for tax withholdings.

Debt

Credit Agreement

As of December 31, 2018, we had \$285.0 million outstanding under our Term Credit Facility, with up to \$500.0 million of unused borrowings under the Revolving Credit Facility portion of the Credit Agreement, as amended. The amount of unused borrowings available varies in accordance with the terms of the agreement. The Credit Agreement contains certain affirmative and negative covenants, including limitations on the incurrence of indebtedness, asset dispositions, acquisitions, investments, dividends, and other restricted payments, liens, and transactions with affiliates. The Credit Agreement also contains financial covenants related to the maximum permitted leverage ratio and the minimum interest coverage ratio. The facility does not contain any subjective acceleration features, does not have any required payment or principal reduction schedules, and is included as a long-term liability in our consolidated balance sheet. At December 31, 2018, (and at all times during this period) we were in compliance with our debt covenants. The interest rate in effect at December 31, 2018, was 4.27%.

Senior Notes

On August 21, 2018, we completed a \$400.0 million offering of the 2026 Notes at an issue price of 100% of the principal amount in a private placement for resale to qualified institutional buyers. The 2026 Notes bear interest at an annual rate of 5.750%, payable semi-annually in arrears on February 15 and August 15 of each year, commencing on February 15, 2019. Interest accrued from August 21, 2018. The 2026 Notes will mature on August 15, 2026.

We used the net proceeds of the offering described above to redeem, in full, our outstanding 2020 Notes, including accrued interest, and repaid a portion of the outstanding amount under the Term Credit Facility.

Stock Repurchase Program

In 2005, our board approved a stock repurchase program authorizing us, as market and business conditions warrant, to acquire our common stock and periodically authorize additional funds for the program. In February 2018, the board approved the repurchase of up to \$200.0 million of our common stock in place of the remaining purchase amounts previously authorized.

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We repurchased 2,346,427 shares for \$54.5 million under the program during the year ended December 31, 2018. Under the program to date, we have repurchased 44,129,393 shares for approximately \$547.8 million. As of December 31, 2018, the maximum remaining amount authorized for purchase under the stock repurchase program was approximately \$176.6 million.

There is no guarantee as to the exact number of shares we will repurchase. Repurchased shares are returned to the status of authorized but unissued shares of common stock. In March 2005, our board approved a plan under Rule 10b5-1 of the Securities Exchange Act of 1934 to facilitate the repurchase of shares of common stock under the existing stock repurchase program. Under our Rule 10b5-1 plan, we have delegated authority over the timing and amount of repurchases to an independent broker who does not have access to inside information about the Company. Rule 10b5-1 allows us, through the independent broker, to purchase shares at times when we ordinarily would not be in the market because of self-imposed trading blackout periods, such as the time immediately preceding the end of the fiscal quarter through a period of three business days following our quarterly earnings release.

Contractual Obligations and Commercial Commitments

We lease office space and equipment under operating leases that run through October 2028. Additionally, we have entered into a Credit Agreement that matures in 2022 and have issued Senior Notes that mature in 2026.

Contractual obligations as of December 31, 2018, are as follows (in thousands):

	Payments Due by Period				
	Total	Less than 1 year	1-3 years	3-5 years	More than 5 years
Operating lease obligations	\$ 77,578	\$ 16,925	\$ 24,750	\$ 14,707	\$ 21,196
Term credit facility	284,959	23,747	55,409	205,803	—
Senior notes	400,000	—	—	—	400,000
Term credit facility interest (1)	33,659	11,788	20,406	1,465	—
Senior notes interest (2)	172,500	23,000	46,000	46,000	57,500
Financed internally used software (3)	9,376	2,500	4,688	2,188	—
Total	<u>\$ 978,072</u>	<u>\$ 77,960</u>	<u>\$ 151,253</u>	<u>\$ 270,163</u>	<u>\$ 478,696</u>

- (1) Based upon the Credit Facility debt outstanding and interest rate in effect at December 31, 2018, of 4.27%.
- (2) Based upon 2026 Notes issued of \$400.0 million with an annual interest rate of 5.750%.
- (3) During the year ended December 31, 2018, we financed certain internally-used software multi-year license agreements for \$11.9 million with annual payments through June 2023. As of December 31, 2018, \$9.4 million is outstanding, of which \$2.5 million and \$6.9 million is included in other current liabilities and other noncurrent liabilities, respectively, in our consolidated balance sheet as of December 31, 2018.

We are unable to reasonably estimate the ultimate amount or timing of settlement of our reserves for income taxes under ASC 740, *Income Taxes*. The liability for unrecognized tax benefits at December 31, 2018, is \$28.4 million.

Off-Balance Sheet Arrangements

Settlement Accounts

We enter into agreements with certain clients to process payment funds on their behalf. When an automated clearing house or automated teller machine network payment transaction is processed, a transaction is initiated to withdraw funds from the designated source account and deposit them into a settlement account, which is a trust

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account maintained for the benefit of our clients. A simultaneous transaction is initiated to transfer funds from the settlement account to the intended destination account. These “back to back” transactions are designed to settle at the same time, usually overnight, such that we receive the funds from the source at the same time as it sends the funds to their destination. However, due to the transactions being with various financial institutions there may be timing differences that result in float balances. These funds are maintained in accounts for the benefit of our clients which are separate from our corporate assets. As we do not take ownership of the funds, the settlement accounts are not included in our balance sheet. We are entitled to interest earned on the fund balances. The collection of interest on these settlement accounts is considered in our determination of our fee structure for clients and represents a portion of the payment for services performed by us. The amount of settlement funds as of December 31, 2018 and 2017, were \$256.5 million and \$238.9 million, respectively.

We do not have any other obligations that meet the definition of an off-balance sheet arrangement and that have or are reasonably likely to have a material effect on our consolidated financial statements.

Critical Accounting Policies and Estimates

The preparation of the consolidated financial statements requires that we make estimates and assumptions that affect the reported amounts of assets, liabilities, revenues and expenses, and related disclosure of contingent assets and liabilities. We base our estimates on historical experience and other assumptions that we believe to be proper and reasonable under the circumstances. We continually evaluate the appropriateness of estimates and assumptions used in the preparation of our consolidated financial statements. Actual results could differ from those estimates.

The following key accounting policies are impacted significantly by judgments, assumptions and estimates used in the preparation of the consolidated financial statements. See Note 1, *Nature of Business and Summary of Significant Accounting Policies*, in the Notes to Consolidated Financial Statements for a further discussion of revenue recognition and other significant accounting policies.

Revenue Recognition

In accordance with ASC 606, revenue is recognized upon transfer of control of promised products and/or services to customers in an amount that reflects the consideration the Company expects to receive in exchange for those products and services.

The Company’s software license arrangements provide the customer with the right to use functional intellectual property for the duration of the contract term. Implementation, support, and other services are typically considered distinct performance obligations when sold with a software license unless these services are determined to significantly modify the software. Significant judgment is required to determine the stand-alone selling price (“SSP”) for each performance obligation, the amount allocated to each performance obligation and whether it depicts the amount that the Company expects to receive in exchange for the related product and/or service. As the selling prices of the Company’s software licenses are highly variable, the Company estimates SSP of its software licenses using the residual approach when the software license is sold with other services and observable SSPs exist for the other services. The Company uses a range of amounts to estimate SSP for maintenance and services. These ranges are based on standalone sales and vary based on the type of service and geographic region. If the SSP of a performance obligation is not directly observable, the Company will maximize observable inputs to determine its SSP.

When a software license arrangement contains payment terms that are extended beyond one year, a significant financing component may exist. The significant financing component is calculated as the difference between the stated value and present value of the software license fees and is recognized as interest income over the extended payment period. Judgment is used in determining: (1) whether the financing component in a software license agreement is significant and, if so, (2) the discount rate used in calculating the significant financing component.

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The Company assesses the significance of the financing component based on the ratio of license fees paid over time to total license fees. If determined to be significant, the financing component is calculated using a rate that discounts the license fees to the cash selling price.

The Company's SaaS-based and PaaS-based arrangements represent a single promise to provide continuous access to its software solutions and their processing capabilities in the form of a service through one of the Company's data centers. These arrangements may include fixed and/or variable consideration. Fixed consideration is recognized over the term of the arrangement and variable consideration, which is a function of transaction volume or another usage-based measure, generally meets the direct allocation method and revenue is recognized as the usage occurs.

The Company applies judgment in determining the customer's ability and intention to pay, which is based on a variety of factors including the creditworthiness of the customer, economic conditions in the customer's industry and geographic location, and general economic conditions.

Certain of our arrangements are through unrelated distributors or sales agents. For software license arrangements in which the Company acts as a distributor of another company's product, and in certain circumstances, modifies or enhances the product, revenues are recorded on a gross basis. These include arrangements in which the Company takes control of the products and is responsible for providing the product or service. For software license arrangements in which the Company acts as a sales agent for another company's product, revenues are recorded on a net basis. Judgment is required in evaluating the facts and circumstances of our relationship with the distributor or sales agent as well as our operating history and practices that can impact the timing of revenue recognition related to these arrangements. For software license arrangements in which the Company utilizes a third-party distributor or sales agent, the Company recognizes revenue upon transfer of control of the software license(s) to the third-party distributor or sales agent.

We may execute more than one contract or agreement with a single customer. The separate contracts or agreements may be viewed as one combined arrangement or separate agreements for revenue recognition purposes. We evaluate whether the agreements were negotiated as a package with a single commercial objective, whether the products or services promised in the agreements represent a single performance obligation, or whether the amount of consideration to be paid in one agreement depends on the price and/or performance of another agreement to reach appropriate conclusions regarding whether such arrangements are related or separate. The conclusions reached can impact the allocation of the transaction price to each performance obligation and the timing of revenue recognition related to those arrangements.

Allowance for Doubtful Accounts

We maintain a general allowance for doubtful accounts based on our historical experience, along with additional customer-specific allowances. We regularly monitor credit risk exposures in our consolidated receivables. In estimating the necessary level of our allowance for doubtful accounts, management considers the aging of our accounts receivable, the creditworthiness of our customers, economic conditions within the customer's industry, and general economic conditions, among other factors. Should any of these factors change, the estimates made by management would also change, which in turn would impact the level of our future provision for doubtful accounts. Specifically, if the financial condition of our customers were to deteriorate, affecting their ability to make payments, additional customer-specific provisions for doubtful accounts may be required. Also, should deterioration occur in general economic conditions, or within a particular industry or region in which we have a number of customers, additional provisions for doubtful accounts may be recorded to reserve for potential future losses. Any such additional provisions would reduce operating income in the periods in which they were recorded.

Intangible Assets and Goodwill

Our business acquisitions typically result in the recording of intangible assets. As of December 31, 2018 and 2017, our intangible assets, excluding goodwill, net of accumulated amortization, were \$168.1 million and

\$191.3 million, respectively. The determination of the value of such intangible assets requires management to make estimates and assumptions that affect the consolidated financial statements. We assess potential impairments to intangible assets when there is evidence that events or changes in circumstances indicate the carrying amount of an asset may not be recovered. Judgments regarding the existence of impairment indicators and future cash flows related to intangible assets are based on operational performance of our businesses, market conditions, and other factors. Although there are inherent uncertainties in this assessment process, the estimates and assumptions used, including estimates of future cash flows, volumes, market penetration and discount rates, are consistent with our internal planning. If these estimates or their related assumptions change in the future, we may be required to record an impairment charge on all or a portion of our intangible assets. Furthermore, we cannot predict the occurrence of future impairment-triggering events nor the impact such events might have on our reported asset values. Future events could cause us to conclude that impairment indicators exist and that intangible assets associated with acquired businesses are impaired. Any resulting impairment loss could have an impact on our results of operations.

Other intangible assets are amortized using the straight-line method over periods ranging from three years to 20 years.

As of December 31, 2018 and 2017, our goodwill was \$909.7 million. In accordance with ASC 350, *Intangibles – Goodwill and Other*, we assess goodwill for impairment annually during the fourth quarter of our fiscal year using October 1 balances, or when there is evidence that events or changes in circumstances indicate that the carrying amount of the asset may not be recovered. We evaluate goodwill at the reporting unit level and have identified our reportable segments, ACI On Premise and ACI On Demand, as our reporting units. Recoverability of goodwill is measured using a discounted cash flow model incorporating discount rates commensurate with the risks involved. Use of a discounted cash flow model is common practice in impairment testing in the absence of available transactional market evidence to determine the fair value.

The key assumptions used in the discounted cash flow valuation model include discount rates, growth rates, cash flow projections, and terminal value rates. Discount rates, growth rates, and cash flow projections are the most sensitive and susceptible to change, as they require significant management judgment. Discount rates are determined by using a weighted average cost of capital (“WACC”). The WACC considers market and industry data, as well as Company-specific risk factors. Operational management, considering industry and Company-specific historical and projected data, develops growth rates and cash flow projections for each reporting unit. Terminal value rate determination follows common methodology of capturing the present value of perpetual cash flow estimates beyond the last projected period assuming a constant WACC and low long-term growth rates. If the calculated fair value is less than the current carrying value, impairment of the reporting unit may exist. The implied fair value of goodwill is determined in a manner similar to how goodwill is calculated in a business combination. If the implied fair value of goodwill exceeds the carrying value of goodwill assigned to the reporting unit, there is no impairment. If the carrying value of goodwill assigned to a reporting unit exceeds the implied fair value of the goodwill, an impairment charge is recorded to write down the carrying value. The calculated fair value substantially exceeds the current carrying value for all reporting units. No reporting units were deemed to be at risk of failing Step 1 of the goodwill impairment test under ASC 350.

Business Combinations

We apply the provisions of ASC 805, *Business Combinations*, in the accounting for our acquisitions. It requires us to recognize separately from goodwill the assets acquired and the liabilities assumed at their acquisition date fair values. Goodwill as of the acquisition date is measured as the excess of consideration transferred and the net of the acquisition date fair values of the assets acquired and the liabilities assumed. While we use our best estimates and assumptions to accurately value assets acquired and liabilities assumed at the acquisition date, our estimates are inherently uncertain and subject to refinement. As a result, during the measurement period, which may be up to one year from the acquisition date, we record adjustments to the assets acquired and liabilities assumed with the corresponding offset to goodwill. Upon the conclusion of the measurement period or final determination of the values of assets acquired or liabilities assumed, whichever comes first, any subsequent adjustments are recorded to our consolidated statements of operations.

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Critical estimates in valuing certain intangible assets include but are not limited to future expected cash flows from customer relationships, covenants not to compete and acquired developed technologies; brand awareness and market position, as well as assumptions about the period of time the brand will continue to be used in our product portfolio; and discount rates. Management's estimates of fair value are based upon assumptions believed to be reasonable, but which are inherently uncertain and unpredictable and, as a result, actual results may differ from estimates.

Other estimates associated with the accounting for acquisitions may change as additional information becomes available regarding the assets acquired and liabilities assumed.

Stock-Based Compensation

On March 23, 2016, our board approved the 2016 Equity and Performance Incentive Plan (the "2016 Incentive Plan"). The 2016 Incentive Plan is intended to meet our objective of balancing stockholder concerns about dilution with the need to provide appropriate incentives to achieve Company performance objectives. The 2016 Incentive Plan was adopted by the stockholders on June 14, 2016. Following the adoption of the 2016 Incentive Plan, the 2005 Equity and Performance Incentive Plan, as amended, (the "2005 Incentive Plan") was terminated. Termination of the 2005 Incentive Plan did not affect any equity awards outstanding under the 2005 Incentive Plan.

In accordance with ASC 718, *Compensation – Stock Compensation*, stock-based compensation expense for stock option awards is estimated at the grant date based on the award's fair value, as calculated by the Black-Scholes option-pricing model, and is recognized as expense ratably over the requisite service period. The Black-Scholes option-pricing model requires various highly judgmental assumptions, including volatility and expected option life. If any assumptions used in the Black-Scholes option-pricing model change significantly, stock-based compensation expense may differ materially for future awards from that recorded for existing awards.

Supplemental stock options granted pursuant to the 2005 Incentive Plan were granted at an exercise price not less than the market value per share of our common stock on the date of grant. These options vest, if at all, based upon (i) tranche one – any time after the third anniversary date if the stock has traded at 133% of the exercise price for at least 20 consecutive trading days, (ii) tranche two – any time after the fourth anniversary date if the stock has traded at 167% of the exercise price for at least 20 consecutive trading days, and (iii) tranche three – any time after the fifth anniversary date if the stock has traded at 200% of the exercise price for at least 20 consecutive trading days. The employees must remain employed with us as of the anniversary date for supplemental stock options to vest. The exercise price of these options is the closing market price on the date the awards were granted. To determine the grant date fair value of the supplemental stock options, a Monte Carlo simulation model was used.

Long-term incentive program performance share awards ("LTIP performance shares") are earned, if at all, based on the achievement over a specified period of performance goals related to certain performance metrics. We estimate the fair value of LTIPs based upon the market price of our stock on the date of grant. On a quarterly basis, management evaluates the probability that the threshold performance goals will be achieved, if at all, and the anticipated level of attainment to determine the amount of compensation expense to record in the consolidated financial statements.

Restricted share awards ("RSAs") generally have requisite service periods of three years and vest in increments of 33% on the anniversary of the grant dates. Under each arrangement, shares are issued without direct cost to the employee. We estimate the fair value of RSAs based upon the market price of our stock on the date of grant. The RSA grants provide for the payment of dividends on our common stock, if any, to the participant during the requisite service period, and the participant has voting rights for each share of common stock.

Total shareholder return awards ("TSRs") are performance shares that are earned, if at all, based upon our total shareholder return as compared to a group of peer companies over a three-year performance period. The award

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payout can range from 0% to 200%. To determine the grant date fair value of TSRs, a Monte Carlo simulation model is used. We recognize compensation expense for the TSRs over a three-year performance period based on the grant date fair value.

Restricted share unit awards (“RSUs”) generally have requisite service periods of three years and vest in increments of 33% on the anniversary of the grant dates. Under each arrangement, RSUs are issued without direct cost to the employee on the vesting date. We estimate the fair value of RSUs based upon the market price of our stock on the date of grant. We recognize compensation expense for RSUs on a straight-line basis over the requisite service period.

The assumptions utilized in the Black-Scholes option-pricing and Monte Carlo simulation models, as well as the description of the plans the stock-based awards are granted under are described in further detail in Note 11, *Stock-Based Compensation Plans*, in the Notes to Consolidated Financial Statements.

Accounting for Income Taxes

Accounting for income taxes requires significant judgments in the development of estimates used in income tax calculations. Such judgments include, but are not limited to, the likelihood we would realize the benefits of net operating loss carryforwards and/or foreign tax credit carryforwards, the adequacy of valuation allowances, and the rates used to measure transactions with foreign subsidiaries. As part of the process of preparing our consolidated financial statements, we are required to estimate our income taxes in each of the jurisdictions in which we operate. The judgments and estimates used are subject to challenge by domestic and foreign taxing authorities.

We account for income taxes in accordance with ASC 740, *Income Taxes*. As part of our process of determining current tax liability, we exercise judgment in evaluating positions we have taken in our tax returns. We periodically assess our tax exposures and establish, or adjust, estimated unrecognized benefits for probable assessments by taxing authorities, including the IRS, and various foreign and state authorities. Such unrecognized tax benefits represent the estimated provision for income taxes expected to ultimately be paid. It is possible that either domestic or foreign taxing authorities could challenge those judgments or positions and draw conclusions that would cause us to incur tax liabilities in excess of, or realize benefits less than, those currently recorded. In addition, changes in the geographical mix or estimated amount of annual pretax income could impact our overall effective tax rate.

To the extent recovery of deferred tax assets is not more likely than not, we record a valuation allowance to reduce our deferred tax assets to the amount that is more likely than not to be realized. Although we have considered future taxable income along with prudent and feasible tax planning strategies in assessing the need for a valuation allowance, if we should determine that we would not be able to realize all or part of our deferred tax assets in the future, an adjustment to deferred tax assets would be charged to income in the period any such determination was made. Likewise, in the event we are able to realize our deferred tax assets in the future in excess of the net recorded amount, an adjustment to deferred tax assets would increase income in the period any such determination was made.

New Accounting Standards Recently Adopted

For information with respect to recent accounting pronouncements and the impact of these pronouncements on our consolidated financial statements see Note 1, *Nature of Business and Summary of Significant Accounting Policies*, in the Notes to Consolidated Financial Statements.

ITEM 7A. QUANTITATIVE AND QUALITATIVE DISCLOSURES ABOUT MARKET RISK

Excluding the impact of changes in interest rates and the uncertainty in the global financial markets, there have been no material changes to our market risk for the year ended December 31, 2018. We conduct business in all parts of the world and are thereby exposed to market risks related to fluctuations in foreign currency exchange rates. The U.S. dollar is the single largest currency in which our revenue contracts are denominated. Any decline in the value of local foreign currencies against the U.S. dollar results in our products and services being more expensive to a potential foreign customer. In those instances where our goods and services have already been sold, receivables may be more difficult to collect. Additionally, in jurisdictions where the revenue contracts are denominated in U.S. dollars and operating expenses are incurred in the local currency, any decline in the value of the U.S. dollar will have an unfavorable impact to operating margins. At times, we enter into revenue contracts that are denominated in the country's local currency, primarily in Australia, Canada, the United Kingdom, and other European countries. This practice serves as a natural hedge to finance the local currency expenses incurred in those locations. We have not entered into any foreign currency hedging transactions. We do not purchase or hold any derivative financial instruments for speculation or arbitrage.

The primary objective of our cash investment policy is to preserve principal without significantly increasing risk. If we maintained similar cash investments for a period of one year based on our cash investments and interest rates at December 31, 2018, a hypothetical ten percent increase or decrease in effective interest rates would increase or decrease interest income by approximately \$0.1 million annually.

We had approximately \$685.0 million of debt outstanding at December 31, 2018, with \$400.0 million in Senior Notes and \$285.0 million outstanding under our Credit Facility. Our 2026 Notes are fixed-rate long-term debt obligations with a 5.750% interest rate. Our Credit Facility has a floating rate, which was 4.27% at December 31, 2018. A hypothetical ten percent increase or decrease in effective interest rates would increase or decrease interest expense related to the Credit Facility by approximately \$1.2 million.

ITEM 8. FINANCIAL STATEMENTS AND SUPPLEMENTARY DATA

The required consolidated financial statements and notes thereto are included in this annual report and are listed in Part IV, Item 15.

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

None.

ITEM 9A. CONTROLS AND PROCEDURES

Evaluation of Disclosure Controls and Procedures

Our management, under the supervision of and with the participation of the Chief Executive Officer and Chief Financial Officer, performed an evaluation of the effectiveness of our disclosure controls and procedures (as defined in Rules 13a-15(e) and 15d-15(e) under the Securities Exchange Act of 1934 (the "Exchange Act")) as of the end of the period covered by this report, December 31, 2018.

In connection with our evaluation of disclosure controls and procedures, we have concluded that our disclosure controls and procedures are effective as of December 31, 2018.

Management's Report on Internal Control over Financial Reporting

Our management is responsible for establishing and maintaining adequate internal control over financial reporting to provide reasonable assurance regarding the reliability of our financial reporting and the preparation of our consolidated financial statements for external purposes in accordance with U.S. GAAP. Under the supervision of, and with the participation of our Chief Executive Officer and Chief Financial Officer, management assessed the effectiveness of internal control over financial reporting as of December 31, 2018.

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Management based its assessment on criteria established 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, 2018.

The effectiveness of our internal control over financial reporting as of December 31, 2018, has been audited by Deloitte & Touche, LLP, an independent registered public accounting firm, and Deloitte & Touche, LLP has issued an attestation report on our internal control over financial reporting.

Changes in Internal Control over Financial Reporting

On October 1, 2018, as part of a phased implementation, we upgraded our financial enterprise resource planning (“ERP”) system, which required management to modify existing internal controls over financial reporting during the quarter ended December 31, 2018. This included modifications to our existing internal controls over billing and revenue recognition for a subset of our PaaS business. Management will continue to evaluate its internal control over financial reporting as the implementation of the financial ERP system is fully executed.

There have been no additional changes during our quarter ended December 31, 2018, in our internal control over financial reporting (as defined in Rules 13a-15(f) under the Exchange Act) that have materially affected, or are reasonably likely to materially affect, our internal control over financial reporting.

REPORT OF INDEPENDENT REGISTERED PUBLIC ACCOUNTING FIRM

To the Board of Directors and Stockholders of
ACI Worldwide, Inc.

Opinion on Internal Control over Financial Reporting

We have audited the internal control over financial reporting of ACI Worldwide, Inc. and subsidiaries (the “Company”) as of December 31, 2018, based on criteria established in *Internal Control – Integrated Framework (2013)* issued by the Committee of Sponsoring Organizations of the Treadway Commission (COSO). In our opinion, the Company maintained, in all material respects, effective internal control over financial reporting as of December 31, 2018, based on criteria established in *Internal Control – Integrated Framework (2013)* issued by COSO.

We have also audited, in accordance with the standards of the Public Company Accounting Oversight Board (United States) (PCAOB), the consolidated financial statements as of and for the year ended December 31, 2018, of the Company and our report dated February 28, 2019, expressed an unqualified opinion on those financial statements and included an explanatory paragraph regarding the Company’s adoption of FASB Accounting Standards Update 2014-09, *Revenue from Contracts with Customers*, effective January 1, 2018.

Basis for Opinion

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

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

Definition and Limitations of Internal Control over Financial Reporting

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

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

/s/ DELOITTE & TOUCHE LLP

Omaha, Nebraska
February 28, 2019

ITEM 9B. OTHER INFORMATION

None.

PART III

ITEM 10. DIRECTORS, EXECUTIVE OFFICERS AND CORPORATE GOVERNANCE

The information under the heading “Executive Officers of the Registrant” in Part 1, Item 1 of this Form 10-K is incorporated herein by reference.

The information required by this item with respect to our directors is included in the section entitled “Nominees” under “Proposal 1 – Election of Directors” in our Proxy Statement for the Annual Meeting of Stockholders to be held on June 11, 2019 (the “2019 Proxy Statement”), and is incorporated herein by reference.

Information included in the section entitled “Section 16(a) Beneficial Ownership Reporting Compliance” in our 2019 Proxy Statement is incorporated herein by reference.

Information related to the audit committee and the audit committee financial expert is included in the section entitled “Report of Audit Committee” in our 2019 Proxy Statement and is incorporated herein by reference. In addition, the information included in the sections entitled “Board Committees and Committee Meetings,” “Shareholder Recommendations for Director Nominees,” and “Shareholder Nomination Process” within the “Corporate Governance” section of our 2018 Proxy Statement is incorporated herein by reference.

Code of Business Conduct and Code of Ethics

We have adopted a Code of Business Conduct and Ethics for our directors, officers (including our principal executive officer, principal financial officer, principal accounting officer, and controller), and employees. We have also adopted a Code of Ethics for the Chief Executive Officer and Senior Financial Officers (the “Code of Ethics”), which applies to our Chief Executive Officer, our Chief Financial Officer, our Chief Accounting Officer, Controller, and persons performing similar functions. The full text of both the Code of Business Conduct and Ethics and Code of Ethics is published on our website at www.aciworldwide.com in the “Investors – Corporate Governance” section. We intend to disclose future amendments to, or waivers from, certain provisions of the Code of Business Conduct and Ethics and the Code of Ethics on our website promptly following the adoption of such amendment or waiver.

ITEM 11. EXECUTIVE COMPENSATION

Information included in the sections entitled “Director Compensation,” “Compensation Discussion and Analysis,” “Compensation Committee Report,” “Executive Compensation,” and “Compensation Committee Interlocks and Insider Participation” in our 2019 Proxy Statement is incorporated herein by reference.

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

Information included in the sections entitled “Information Regarding Security Ownership” in our 2019 Proxy Statement is incorporated herein by reference.

Information included in the section entitled “Information Regarding Equity Compensation Plans” in our 2019 Proxy Statement is incorporated herein by reference.

ITEM 13. CERTAIN RELATIONSHIPS AND RELATED TRANSACTIONS AND DIRECTOR INDEPENDENCE

Information included in the section entitled “Certain Relationships and Related Transactions” in our 2019 Proxy Statement is incorporated herein by reference.

Information included in the sections entitled “Director Independence” and “Board Committees and Committee Meetings” in the “Corporate Governance” section of our 2019 Proxy Statement is incorporated by reference.

ITEM 14. PRINCIPAL ACCOUNTING FEES AND SERVICES

Information included in the sections entitled “Independent Registered Public Accounting Firm Fees” and “Pre-Approval of Audit and Non-Audit Services” under “Proposal 2 – Ratification of Appointment of the Company’s Independent Registered Public Accounting Firm” in our 2019 Proxy Statement is incorporated herein by reference.

PART IV

ITEM 15. EXHIBITS, FINANCIAL STATEMENT SCHEDULES

Documents filed as part of this annual report on Form 10-K:

(1) Financial Statements. The following index lists consolidated financial statements and notes thereto filed as part of this annual report on Form 10-K:

	<u>Page</u>
Report of Independent Registered Public Accounting Firm – Deloitte & Touche LLP	65
Consolidated Balance Sheets as of December 31, 2018 and 2017	66
Consolidated Statements of Operations for each of the three years in the period ended December 31, 2018	67
Consolidated Statements of Comprehensive Income (Loss) for each of the three years in the period ended December 31, 2018	68
Consolidated Statements of Stockholders' Equity for each of the three years in the period ended December 31, 2018	69
Consolidated Statements of Cash Flows for each of the three years in the period ended December 31, 2018	70
Notes to Consolidated Financial Statements	71

(2) Financial Statement Schedules. All schedules have been omitted because they are not applicable or the required information is included in the consolidated financial statements or notes thereto.

(3) Exhibits. A list of exhibits filed or furnished with this report on Form 10-K (or incorporated by reference to exhibits previously filed by ACI) is provided in the accompanying Exhibit Index.

REPORT OF INDEPENDENT REGISTERED PUBLIC ACCOUNTING FIRM

To the Board of Directors and Stockholders of
ACI Worldwide, Inc.

Opinion on the Financial Statements

We have audited the accompanying consolidated balance sheets of ACI Worldwide, Inc. and subsidiaries (the “Company”) as of December 31, 2018 and 2017, the related consolidated statements of operations, comprehensive income, stockholders’ equity, and cash flows for each of the three years in the period ended December 31, 2018, and the related notes (collectively referred to as the “financial statements”). In our opinion, the financial statements present fairly, in all material respects, the financial position of the Company as of December 31, 2018 and 2017, and the results of its operations and its cash flows for each of the three years in the period ended December 31, 2018, in conformity with accounting principles generally accepted in the United States of America.

We have also audited, in accordance with the standards of the Public Company Accounting Oversight Board (United States) (PCAOB), the Company’s internal control over financial reporting as of December 31, 2018, based on criteria established in *Internal Control — Integrated Framework (2013)* issued by the Committee of Sponsoring Organizations of the Treadway Commission and our report dated February 28, 2019, expressed an unqualified opinion on the Company’s internal control over financial reporting.

Change in Accounting Principle

As discussed in Note 1 to the financial statements, effective January 1, 2018, the Company adopted FASB Accounting Standards Update 2014-09, *Revenue from Contracts with Customers*, using the modified retrospective approach.

Basis for Opinion

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

We conducted our audits in accordance with the standards of the PCAOB. Those standards require that we plan and perform the audit to obtain reasonable assurance about whether the financial statements are free of material misstatement, whether due to error or fraud. Our audits included performing procedures to assess the risks of material misstatement of the 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 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 financial statements. We believe that our audits provide a reasonable basis for our opinion.

/s/ DELOITTE & TOUCHE LLP

Omaha, Nebraska
February 28, 2019

We have served as the Company’s auditor since 2009.

ACI WORLDWIDE, INC. AND SUBSIDIARIES
CONSOLIDATED BALANCE SHEETS
(in thousands, except share and per share amounts)

	December 31,	
	2018	2017
ASSETS		
Current assets		
Cash and cash equivalents	\$ 148,502	\$ 69,710
Receivables, net of allowances of \$3,912 and \$4,799, respectively	348,182	262,845
Recoverable income taxes	6,686	7,921
Prepaid expenses	23,277	23,219
Other current assets	39,830	58,126
Total current assets	<u>566,477</u>	<u>421,821</u>
Noncurrent assets		
Accrued receivables, net	189,010	—
Property and equipment, net	72,729	80,228
Software, net	137,228	155,386
Goodwill	909,691	909,691
Intangible assets, net	168,127	191,281
Deferred income taxes, net	27,048	66,749
Other noncurrent assets	52,145	36,483
TOTAL ASSETS	<u>\$2,122,455</u>	<u>\$1,861,639</u>
LIABILITIES AND STOCKHOLDERS' EQUITY		
Current liabilities		
Accounts payable	\$ 39,602	\$ 34,718
Employee compensation	38,115	48,933
Current portion of long-term debt	20,767	17,786
Deferred revenue	104,843	107,543
Income taxes payable	5,239	9,898
Other current liabilities	88,054	102,904
Total current liabilities	<u>296,620</u>	<u>321,782</u>
Noncurrent liabilities		
Deferred revenue	51,292	51,967
Long-term debt	650,989	667,943
Deferred income taxes, net	31,715	16,910
Other noncurrent liabilities	43,608	38,440
Total liabilities	<u>1,074,224</u>	<u>1,097,042</u>
Commitments and contingencies (Note 14)		
Stockholders' equity		
Preferred stock; \$0.01 par value; 5,000,000 shares authorized; no shares issued at December 31, 2018 and 2017	—	—
Common stock; \$0.005 par value; 280,000,000 shares authorized; 140,525,055 shares issued at December 31, 2018 and 2017	702	702
Additional paid-in capital	632,235	610,345
Retained earnings	863,768	550,866
Treasury stock, at cost, 24,401,694 and 23,428,324 shares at December 31, 2018 and 2017, respectively	(355,857)	(319,960)
Accumulated other comprehensive loss	(92,617)	(77,356)
Total stockholders' equity	<u>1,048,231</u>	<u>764,597</u>
TOTAL LIABILITIES AND STOCKHOLDERS' EQUITY	<u>\$2,122,455</u>	<u>\$1,861,639</u>

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

ACI WORLDWIDE, INC. AND SUBSIDIARIES
CONSOLIDATED STATEMENTS OF OPERATIONS
(in thousands, except per share amounts)

	For the Years Ended December 31,		
	2018	2017	2016
Revenues			
Software as a service and platform as a service	\$ 433,025	\$ 425,572	\$ 411,289
License	280,556	293,124	273,466
Maintenance	219,145	222,071	233,476
Services	77,054	83,424	87,470
Total revenues	<u>1,009,780</u>	<u>1,024,191</u>	<u>1,005,701</u>
Operating expenses			
Cost of revenue (1)	430,351	452,286	444,914
Research and development	143,630	136,921	169,900
Selling and marketing	117,881	107,885	118,082
General and administrative	107,422	153,032	113,617
Gain on sale of CFS assets	—	—	(151,463)
Depreciation and amortization	84,585	89,427	89,521
Total operating expenses	<u>883,869</u>	<u>939,551</u>	<u>784,571</u>
Operating income	<u>125,911</u>	<u>84,640</u>	<u>221,130</u>
Other income (expense)			
Interest expense	(41,530)	(39,013)	(40,184)
Interest income	11,142	564	530
Other, net	(3,724)	(2,619)	4,105
Total other income (expense)	<u>(34,112)</u>	<u>(41,068)</u>	<u>(35,549)</u>
Income before income taxes	<u>91,799</u>	<u>43,572</u>	<u>185,581</u>
Income tax expense	22,878	38,437	56,046
Net income	<u>\$ 68,921</u>	<u>\$ 5,135</u>	<u>\$ 129,535</u>
Earnings per common share			
Basic	\$ 0.59	\$ 0.04	\$ 1.10
Diluted	\$ 0.59	\$ 0.04	\$ 1.09
Weighted average common shares outstanding			
Basic	116,057	118,059	117,533
Diluted	117,632	119,444	118,847

(1) The cost of revenue excludes charges for depreciation but includes amortization of purchased and developed software for resale.

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

ACI WORLDWIDE, INC. AND SUBSIDIARIES
CONSOLIDATED STATEMENTS OF COMPREHENSIVE INCOME
(in thousands)

	<u>For the Years Ended December 31,</u>		
	<u>2018</u>	<u>2017</u>	<u>2016</u>
Net income	\$ 68,921	\$ 5,135	\$ 129,535
Other comprehensive income (loss):			
Foreign currency translation adjustments, net of income taxes	(15,261)	16,744	(22,524)
Total other comprehensive income (loss):	<u>(15,261)</u>	<u>16,744</u>	<u>(22,524)</u>
Comprehensive income	<u><u>\$ 53,660</u></u>	<u><u>\$ 21,879</u></u>	<u><u>\$ 107,011</u></u>

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

ACI WORLDWIDE, INC. AND SUBSIDIARIES
CONSOLIDATED STATEMENTS OF STOCKHOLDERS' EQUITY
(in thousands, except share amounts)

	Common Stock	Additional Paid-in Capital	Retained Earnings	Treasury Stock	Accumulated Other Comprehensive Income (Loss)	Total
Balance as of December 31, 2015	\$ 702	\$ 561,379	\$ 416,851	\$ (252,956)	\$ (71,576)	\$ 654,400
Net income	—	—	129,535	—	—	129,535
Other comprehensive loss	—	—	—	—	(22,524)	(22,524)
Stock-based compensation	—	43,613	—	—	—	43,613
Shares issued and forfeited, net, under stock plans including income tax benefits	—	(5,204)	—	18,260	—	13,056
Repurchase of 3,020,926 shares of common stock	—	—	—	(60,089)	—	(60,089)
Repurchase of restricted stock for tax withholdings	—	—	—	(2,975)	—	(2,975)
Cumulative effect of accounting change, ASU 2016-09	—	556	(655)	—	—	(99)
Balance as of December 31, 2016	<u>702</u>	<u>600,344</u>	<u>545,731</u>	<u>(297,760)</u>	<u>(94,100)</u>	<u>754,917</u>
Net income	—	—	5,135	—	—	5,135
Other comprehensive income	—	—	—	—	16,744	16,744
Stock-based compensation	—	13,683	—	—	—	13,683
Shares issued and forfeited, net, under stock plans including income tax benefits	—	(3,682)	—	20,498	—	16,816
Repurchase of 1,653,573 shares of common stock	—	—	—	(37,387)	—	(37,387)
Repurchase of restricted stock for tax withholdings	—	—	—	(5,311)	—	(5,311)
Balance as of December 31, 2017	<u>702</u>	<u>610,345</u>	<u>550,866</u>	<u>(319,960)</u>	<u>(77,356)</u>	<u>764,597</u>
Net income	—	—	68,921	—	—	68,921
Other comprehensive loss	—	—	—	—	(15,261)	(15,261)
Stock-based compensation	—	20,360	—	—	—	20,360
Shares issued and forfeited, net, under stock plans including income tax benefits	—	1,530	—	21,218	—	22,748
Repurchase of 2,346,427 shares of common stock	—	—	—	(54,527)	—	(54,527)
Repurchase of restricted stock for tax withholdings	—	—	—	(2,588)	—	(2,588)
Cumulative effect of accounting change, ASC 606	—	—	243,981	—	—	243,981
Balance as of December 31, 2018	<u>\$ 702</u>	<u>\$ 632,235</u>	<u>\$ 863,768</u>	<u>\$ (355,857)</u>	<u>\$ (92,617)</u>	<u>\$ 1,048,231</u>

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

ACI WORLDWIDE, INC. AND SUBSIDIARIES
CONSOLIDATED STATEMENTS OF CASH FLOWS
(in thousands)

	For the Years Ended December 31,		
	2018	2017	2016
Cash flows from operating activities:			
Net income	\$ 68,921	\$ 5,135	\$ 129,535
Adjustments to reconcile net income to net cash flows from operating activities:			
Depreciation	23,805	24,871	22,584
Amortization	73,545	77,353	80,870
Amortization of deferred debt issuance costs	4,637	4,286	5,567
Deferred income taxes	(5,734)	21,660	17,702
Stock-based compensation expense	20,360	13,683	43,613
Gain on sale of CFS assets	—	—	(151,463)
Other	2,007	435	806
Changes in operating assets and liabilities, net of impact of acquisitions:			
Receivables	(14,760)	(8,243)	(76,460)
Accounts payable	5,766	(1,700)	(13,920)
Accrued employee compensation	(9,684)	94	18,060
Current income taxes	(5,115)	(4,227)	14,510
Deferred revenue	14,219	439	3,015
Other current and noncurrent assets and liabilities	5,965	12,411	5,411
Net cash flows from operating activities	<u>183,932</u>	<u>146,197</u>	<u>99,830</u>
Cash flows from investing activities:			
Purchases of property and equipment	(18,265)	(25,717)	(40,812)
Purchases of software and distribution rights	(25,628)	(28,697)	(22,268)
Proceeds from sale of CFS assets	—	—	199,481
Acquisition of businesses, net of cash acquired	—	—	232
Other	(1,467)	—	(7,000)
Net cash flows from investing activities	<u>(45,360)</u>	<u>(54,414)</u>	<u>129,633</u>
Cash flows from financing activities:			
Proceeds from issuance of common stock	3,098	2,958	2,987
Proceeds from exercises of stock options	19,674	13,872	9,325
Repurchase of restricted stock for tax withholdings	(2,588)	(5,311)	(2,975)
Repurchases of common stock	(54,527)	(37,387)	(60,089)
Proceeds from senior notes	400,000	—	—
Redemption of senior notes	(300,000)	—	—
Proceeds from revolving credit facility	109,000	67,000	76,000
Repayments of revolving credit facility	(111,000)	(153,000)	(166,000)
Proceeds from term portion of credit agreement	—	415,000	—
Repayments of term portion of credit agreement	(109,289)	(386,040)	(95,293)
Payment for debt issuance costs	(7,319)	(5,340)	(655)
Payments on other debt and capital leases	(4,753)	(9,900)	(14,376)
Net cash flows from financing activities	<u>(57,704)</u>	<u>(98,148)</u>	<u>(251,076)</u>
Effect of exchange rate fluctuations on cash	(2,076)	322	(4,873)
Net increase (decrease) in cash and cash equivalents	78,792	(6,043)	(26,486)
Cash and cash equivalents, beginning of period	69,710	75,753	102,239
Cash and cash equivalents, end of period	<u>\$ 148,502</u>	<u>\$ 69,710</u>	<u>\$ 75,753</u>
Supplemental cash flow information			
Income taxes paid, net	\$ 32,205	\$ 37,817	\$ 19,081
Interest paid	\$ 35,300	\$ 34,976	\$ 35,053

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

NOTES TO CONSOLIDATED FINANCIAL STATEMENTS

1. Nature of Business and Summary of Significant Accounting Policies

Nature of Business

ACI Worldwide, Inc., a Delaware corporation, and its subsidiaries (collectively referred to as “ACI” or the “Company”) develop, market, install, and support a broad line of software products and services primarily focused on facilitating electronic payments. In addition to its own products, the Company distributes or acts as a sales agent for software developed by third parties. These products and services are used principally by banks, financial intermediaries, merchants and corporates, both in domestic and international markets.

Consolidated Financial Statements

The consolidated financial statements include the accounts of the Company and its wholly-owned subsidiaries. All intercompany balances and transactions have been eliminated.

Capital Stock

The Company’s outstanding capital stock consists of a single class of common stock. Each share of common stock is entitled to one vote for each matter subject to a stockholder’s vote and to dividends, if and when declared by the board of directors (the “board”).

Use of Estimates

The preparation of consolidated financial statements in conformity with accounting principles generally accepted in the United States (“U.S. GAAP”) requires management to make estimates and assumptions that affect the reported amounts of assets and liabilities and disclosure of contingent assets and liabilities at the date of the consolidated financial statements and the reported amounts of revenues and expenses during the reporting period. Actual results could differ from those estimates.

Cash and Cash Equivalents

The Company considers all highly liquid investments with original maturities of three months or less to be cash equivalents. The Company’s cash and cash equivalents includes holdings in checking, savings, money market, and overnight sweep accounts, all of which have daily maturities, as well as time deposits with maturities of three months or less at the date of purchase. The carrying amounts of cash and cash equivalents on the consolidated balance sheets approximate fair value.

Other Current Assets and Other Current Liabilities

<u>(in thousands)</u>	<u>December 31,</u>	
	<u>2018</u>	<u>2017</u>
Settlement deposits	\$ 23,651	\$ 22,282
Settlement receivables	8,605	30,063
Other	7,574	5,781
Total other current assets	<u>\$ 39,830</u>	<u>\$ 58,126</u>

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(in thousands)	December 31,	
	2018	2017
Settlement payables	\$ 31,605	\$ 48,953
Accrued interest	8,407	7,291
Vendor financed licenses	3,551	1,862
Royalties payable	11,318	9,264
Other	33,173	35,534
Total other current liabilities	<u>\$ 88,054</u>	<u>\$ 102,904</u>

Individuals and businesses settle their obligations to the Company's various clients, primarily utility and other public-sector clients, using credit or debit cards or via automated clearing house ("ACH") payments. The Company creates a receivable for the amount due from the credit or debit card company and an offsetting payable to the client. Once confirmation is received that the funds have been received, the Company settles the obligation to the client. Due to timing, in some instances, the Company may receive the funds into bank accounts controlled by and in the Company's name that are not disbursed to its clients by the end of the day resulting in a settlement deposit on the Company's books.

Off Balance Sheet Settlement Accounts

The Company also enters into agreements with certain clients to process payment funds on their behalf. When an ACH or automated teller machine network payment transaction is processed, a transaction is initiated to withdraw funds from the designated source account and deposit them into a settlement account, which is a trust account maintained for the benefit of the Company's clients. A simultaneous transaction is initiated to transfer funds from the settlement account to the intended destination account. These "back to back" transactions are designed to settle at the same time, usually overnight, such that the Company receives the funds from the source at the same time as it sends the funds to their destination. However, due to the transactions being with various financial institutions there may be timing differences that result in float balances. These funds are maintained in accounts for the benefit of the client which is separate from the Company's corporate assets. As the Company does not take ownership of the funds, the settlement accounts are not included in the Company's balance sheet. The Company is entitled to interest earned on the fund balances. The collection of interest on these settlement accounts is considered in the Company's determination of its fee structure for clients and represents a portion of the payment for services performed by the Company. The amount of settlement funds as of December 31, 2018 and 2017, were \$256.5 million and \$238.9 million, respectively.

Property and Equipment

Property and equipment are stated at cost. Depreciation of these assets is generally computed using the straight-line method over their estimated useful lives based on asset class. As of December 31, 2018 and 2017, net property and equipment consisted of the following (in thousands):

	Useful Lives	2018	2017
Computer and office equipment	3 - 5 years	\$ 129,359	\$ 123,804
Leasehold improvements	Lesser of useful life of improvement or remaining life of lease	32,096	32,364
Furniture and fixtures	7 years	12,500	12,158
Building and improvements	7 - 30 years	14,381	12,651
Land	Non depreciable	1,785	1,785
		190,121	182,762
Less: accumulated depreciation		(117,392)	(102,534)
Property and equipment, net		<u>\$ 72,729</u>	<u>\$ 80,228</u>

Software

Software may be for internal use or available for sale. Costs related to certain software, which is available for sale, are capitalized in accordance with Accounting Standards Codification (“ASC”) 985-20, *Costs of Software to be Sold, Leased, or Marketed*, when the resulting product reaches technological feasibility. The Company generally determines technological feasibility when it has a detailed program design that takes product function, feature and technical requirements to their most detailed, logical form and is ready for coding. The Company does not typically capitalize costs related to software available for sale as technological feasibility generally coincides with general availability of the software. The Company capitalizes the costs of software developed or obtained for internal use in accordance with ASC 350-40, *Internal Use Software*. The Company expenses all costs incurred during the preliminary project stage of its development and capitalizes the costs incurred during the application development stage. Costs incurred relating to upgrades and enhancements to the software are capitalized if it is determined that these upgrades or enhancements add additional functionality to the software. Costs incurred during the application development stage include purchased software licenses, implementation costs, consulting costs, and payroll-related costs for projects that qualify for capitalization. All other costs, primarily related to maintenance and minor software fixes, are expensed as incurred.

Amortization of software costs to be sold or marketed externally is determined on a product-by-product basis and begins when the product is available for licensing to customers. The annual amortization shall be the greater of the amount computed using (a) the ratio of current gross revenues for a product 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. Due to competitive pressures, it may be possible that the estimates of anticipated future gross revenue or remaining estimated economic life of the software product will be reduced significantly. As a result, the carrying amount of the software product may be reduced accordingly. Amortization of internal-use software is generally computed using the straight-line method over estimated useful lives of three to ten years.

Business Combinations

The Company applies the provisions of ASC 805, *Business Combinations*, in the accounting for its acquisitions. It requires the Company to recognize separately from goodwill the assets acquired and the liabilities assumed at their acquisition date fair values. Goodwill as of the acquisition date is measured as the excess of consideration transferred and the net of the acquisition date fair values of the assets acquired and the liabilities assumed. While the Company uses its best estimates and assumptions to accurately value assets acquired and liabilities assumed at the acquisition date, its estimates are inherently uncertain and subject to refinement. As a result, during the measurement period, which may be up to one year from the acquisition date, it records adjustments to the assets acquired and liabilities assumed with the corresponding offset to goodwill. Upon the conclusion of the measurement period or final determination of the values of assets acquired or liabilities assumed, whichever comes first, any subsequent adjustments are recorded to our consolidated statements of operations.

Critical estimates in valuing certain intangible assets include but are not limited to future expected cash flows from customer relationships, covenants not to compete and acquired developed technologies, brand awareness and market position, as well as assumptions about the period of time the brand will continue to be used in our product portfolio, and discount rates. Management’s estimates of fair value are based upon assumptions believed to be reasonable, but which are inherently uncertain and unpredictable and, as a result, actual results may differ from estimates.

Other estimates associated with the accounting for acquisitions may change as additional information becomes available regarding the assets acquired and liabilities assumed.

Fair Value

ASC 820, *Fair Value Measurements and Disclosures*, (“ASC 820”) defines fair value as the price that would be received to sell an asset or paid to transfer a liability in an orderly transaction between market participants. ASC

820 establishes a fair value hierarchy for valuation inputs that gives the highest priority to quoted prices in active markets for identical assets or liabilities and the lowest priority to unobservable inputs. The fair value hierarchy is as follows:

- Level 1 Inputs – Unadjusted quoted prices in active markets for identical assets or liabilities that the reporting entity has the ability to access at the measurement date.
- Level 2 Inputs – Inputs other than quoted prices included in Level 1 that are observable for the asset or liability, either directly or indirectly. These might include quoted prices for similar assets or liabilities in active markets, quoted prices for identical or similar assets or liabilities in markets that are not active, inputs other than quoted prices that are observable for the asset or liability (such as interest rates, volatilities, prepayment speeds, credit risks, etc.) or inputs that are derived principally from or corroborated by market data by correlation or other means.
- Level 3 Inputs – Unobservable inputs for determining the fair values of assets or liabilities that reflect an entity’s own assumptions about the assumptions that market participants would use in pricing the assets or liabilities.

The fair value of the Company’s Credit Agreement approximates the carrying value due to the floating interest rate (Level 2 of the fair value hierarchy). The Company measures the fair value of its Senior Notes based on Level 2 inputs, which include quoted market prices and interest rate spreads of similar securities. The fair value of the Company’s 5.750% Senior Notes due 2026 (“2026 Notes”) was \$395.0 million as of December 31, 2018. The fair value of the Company’s 6.375% Senior Notes due 2020 (“2020 Notes”) was \$305.7 million as of December 31, 2017.

The fair values of cash and cash equivalents approximate the carrying values due to the short period of time to maturity (Level 2 of the fair value hierarchy).

Goodwill and Other Intangibles

In accordance with ASC 350, *Intangibles – Goodwill and Other*, the Company assesses goodwill for impairment annually during the fourth quarter of its fiscal year using October 1 balances or when there is evidence that events or changes in circumstances indicate that the carrying amount of the asset may not be recovered. The Company evaluates goodwill at the reporting unit level using the discounted cash flow valuation model and allocates goodwill to these reporting units using a relative fair value approach. During this assessment, management relies on a number of factors, including operating results, business plans, and anticipated future cash flows. The Company has identified its reportable segments, ACI On Premise and ACI On Demand, as the reporting units. As of December 31, 2018 and 2017, the Company’s goodwill of \$909.7 million was allocated to its two reporting units, with \$725.9 allocated to ACI On Premise and \$183.8 million allocated to ACI On Demand.

The key assumptions used in the discounted cash flow valuation model include discount rates, growth rates, cash flow projections and terminal value rates. Discount rates, growth rates, and cash flow projections are the most sensitive and susceptible to change as they require significant management judgment. Discount rates are determined by using a weighted average cost of capital (“WACC”). The WACC considers market and industry data as well as company-specific risk factors. Operational management, considering industry and company-specific historical and projected data, develops growth rates and cash flow projections for each reporting unit. Terminal value rate determination follows common methodology of capturing the present value of perpetual cash flow estimates beyond the last projected period, assuming a constant WACC and low, long-term growth rates. If the recoverability test indicates potential impairment, the Company calculates an implied fair value of goodwill for the reporting unit. The implied fair value of goodwill is determined in a manner similar to how goodwill is calculated in a business combination. If the implied fair value of goodwill exceeds the carrying value of goodwill assigned to the reporting unit, there is no impairment. If the carrying value of goodwill assigned to a reporting unit exceeds the implied fair value of the goodwill, an impairment charge is recorded to write down the carrying

value. The calculated fair value substantially exceeded the current carrying value for all reporting units for all periods.

Other intangible assets, which include customer relationships and trademarks and trade names, are amortized using the straight-line method over periods ranging from three years to 20 years. The Company reviews its other intangible assets for impairment whenever events or changes in circumstances indicate that the carrying amount may not be recoverable.

Impairment of Long-Lived Assets

The Company reviews its long-lived assets for impairment whenever events or changes in circumstances indicate that the carrying amount of a long-lived asset group may not be recoverable. An impairment loss is recorded if the sum of the future cash flows expected to result from the use of the asset (undiscounted and without interest charges) is less than the carrying amount of the asset. The amount of the impairment charge is measured based upon the fair value of the asset group.

Treasury Stock

The Company accounts for shares of its common stock that are repurchased without intent to retire as treasury stock. Such shares are recorded at cost and reflected separately on the consolidated balance sheets as a reduction of stockholders' equity. The Company issues shares of treasury stock upon exercise of stock options, issuance of restricted share awards and restricted share units, payment of earned performance shares, and for issuances of common stock pursuant to the Company's employee stock purchase plan. For purposes of determining the cost of the treasury shares re-issued, the Company uses the average cost method.

Stock-Based Compensation Plans

In accordance with ASC 718, *Compensation – Stock Compensation*, the Company recognizes stock-based compensation expense for awards that are probable of vesting on a straight-line basis over the requisite service period of the award, which is generally the vesting term. Stock-based compensation expense is recorded in operating expenses depending on where the respective individual's compensation is recorded. The Company generally utilizes the Black-Scholes option-pricing model to determine the fair value of stock options on the date of grant. To determine the grant date fair value of the supplemental stock options and total shareholder return awards ("TSRs"), a Monte Carlo simulation model was used. The assumptions utilized in the Black-Scholes option-pricing and Monte Carlo simulation models, as well as the description of the plans the stock-based awards are granted under, are described in further detail in Note 11, *Stock-Based Compensation Plans*.

Translation of Foreign Currencies

The Company's foreign subsidiaries typically use the local currency of the countries in which they are located as their functional currency. Their assets and liabilities are translated into U.S. dollars at the exchange rates in effect at the balance sheet date. Revenues and expenses are translated at the average exchange rates during the period. Translation gains and losses are reflected in the consolidated financial statements as a component of accumulated other comprehensive income (loss). Transaction gains and losses, including those related to intercompany accounts, that are not considered to be of a long-term investment nature are included in the determination of net income. Transaction gains and losses, including those related to intercompany accounts, that are considered to be of a long-term investment nature are reflected in the consolidated financial statements as a component of accumulated other comprehensive income (loss).

Income Taxes

The provision for income taxes is computed using the asset and liability method, under which deferred tax assets and liabilities are recognized for the expected future tax consequences of temporary differences between the

financial reporting and tax bases of assets and liabilities. Deferred tax assets are reduced by a valuation allowance when it is more likely than not that some portion or all of the deferred tax assets will not be realized.

The Company periodically assesses its tax exposures and establishes, or adjusts, estimated unrecognized tax benefits for probable assessments by taxing authorities, including the Internal Revenue Service (“IRS”), and various foreign and state authorities. Such unrecognized tax benefits represent the estimated provision for income taxes expected to ultimately be paid.

New Accounting Standards Recently Adopted

In May 2014, the Financial Accounting Standards Board (“FASB”) issued Accounting Standards Update (“ASU”) 2014-09, *Revenue from Contracts with Customers* (codified as “ASC 606”) as well as other clarifications and technical guidance related to this new revenue standard, including ASC 340-40, *Other Assets and Deferred Costs – Contracts with Customers*. ASC 606 superseded the revenue recognition requirements in ASC 605, *Revenue Recognition*, and most industry-specific guidance. The Company adopted ASC 606 and ASC 340-40 on January 1, 2018 (the effective date) using the modified retrospective transition method which required an adjustment to retained earnings for the cumulative effect of applying ASC 606 to active contracts as of the adoption date. For active contracts that were modified before the effective date, the Company reflected the aggregate effect of all modifications when identifying performance obligations and allocating the transaction price in accordance with the practical expedient permitted under ASC 606. The cumulative effect of applying ASC 606 to active contracts as of the adoption date was an increase to retained earnings of \$244.0 million.

In August 2016, the FASB issued ASU 2016-15, *Statement of Cash Flows – Classification of Certain Cash Receipts and Cash Payments*, an update that addresses how certain cash receipts and cash payments are presented and classified in the statement of cash flows. Among the cash flow matters addressed in the update are payments for costs related to debt prepayments or extinguishments, payments related to settlement of certain types of debt instruments, payments of contingent consideration made after a business combination, proceeds from insurance claims and corporate-owned life insurance policies, and distributions received from equity method investees, among others. The amendments are applied using a retrospective transition method to each period presented, unless impracticable for specific cash flow matters, in which case the amendments would be applied prospectively as of the earliest date practicable. The Company adopted ASU 2016-15 as of January 1, 2018. The adoption of ASU 2016-15 was not material to the consolidated statement of cash flows.

In October 2016, the FASB issued ASU 2016-16, *Intra-Entity Transfers of Assets Other than Inventory*, to simplify the accounting for the income tax consequences of intra-entity transfers of assets other than inventory. Previously, U.S. GAAP prohibited the recognition of current and deferred income taxes for an intra-entity asset transfer until the asset has been sold to an outside party. This prohibition on recognition was an exception to the principle of comprehensive recognition of current and deferred income taxes in U.S. GAAP. The limited amount of authoritative guidance about the exception led to diversity in practice and is a source of complexity in financial reporting, particularly for an intra-entity transfer of intellectual property. Under the amendments of ASU 2016-16, an entity should recognize the income tax consequences of an intra-entity transfer of an asset other than inventory when the transfer occurs. Consequently, this amendment eliminates the exception for an intra-entity transfer of an asset other than inventory. The amendments to this ASU should be applied on a modified retrospective basis through a cumulative-effect adjustment directly to retained earnings as of the beginning of the period of adoption. The Company adopted ASU 2016-16 as of January 1, 2018. The adoption of ASU 2016-16 had no impact on the consolidated balance sheet, results of operations, or statement of cash flows.

In June 2018, the FASB issued ASU 2018-07, *Improvements to Nonemployee Share-Based Payment Accounting*, as a part of its simplification initiative. ASU 2018-07 expands the scope of ASC 718, *Compensation – Stock Compensation*, to include share-based payment transactions for acquiring goods and services from nonemployees. The Company elected to early adopt ASU 2018-07, the adoption of which was not material to the consolidated balance sheet, results of operations, or statement of cash flows.

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In August 2018, the FASB issued ASU 2018-05, *Intangibles – Goodwill and Other – Internal-Use Software: Customer’s Accounting for Fees Paid in a Cloud Computing Arrangement* (“ASU 2018-05”). The purpose of the update was to reduce potential diversity in practice and provide specific guidance on how to account for implementation costs incurred in a cloud computing arrangement. ASU 2018-05 applies the same guidance in ASC 350-40, *Intangibles – Goodwill and Other – Internal-Use Software*, to determine implementation costs to capitalize versus costs that are to be expensed as incurred. This ASU will be effective for fiscal years beginning after December 15, 2019, with early adoption permitted. The Company elected to early adopt ASU 2018-05 during the year ended December 31, 2018. The adoption had no impact on the consolidated balance sheet, results of operations, or statement of cash flows.

Recently Issued Accounting Standards Not Yet Effective

In February 2016, the FASB issued ASU 2016-02, *Leases* (codified as “ASC 842”). ASC 842 requires lessees to recognize right-of-use (“ROU”) assets and lease liabilities on the balance sheet for all leases with lease terms of more than 12 months. In addition, this standard requires both lessees and lessors to disclose certain key information about lease transactions. The Company will adopt the standard effective January 1, 2019 (the effective date) using the optional transition method to not apply the new lease standard in the comparative periods presented and will elect the ‘practical expedient package’, which permits the Company to not reassess prior conclusions about lease identification, lease classification, and initial direct costs. ASC 842 also provides practical expedients for the Company’s ongoing accounting. We currently expect to elect the short-term lease recognition exemption for all leases that qualify. As such, for those leases that qualify, we will not recognize ROU assets or lease liabilities as part of the transition adjustment or in the future. The Company also expects to elect the practical expedient to not separate lease and non-lease components for all our leases.

The Company established a cross-functional project team to assess implementing changes to its systems, processes, and controls, in conjunction with a comprehensive review of existing lease agreements. To determine ACI’s lease population, the team reviewed leases included in the current ASC 840 minimum lease payments disclosure as well as supplier contracts, including cloud computing, print, mail services and colocation agreements for potential embedded leases. The Company has determined that the adoption of ASC 842 primarily relates to its real estate leases for office and datacenter facilities.

The Company expects the adoption of ASC 842 will have a material impact on its consolidated balance sheet as its rights and obligations from its existing operating leases will be recognized on the balance sheet as assets and liabilities. As of December 31, 2018, the Company’s undiscounted minimum commitments under noncancelable operating leases was approximately \$77.6 million. The Company does not expect the adoption of ASC 842 to have a material effect on its results of operations, stockholders’ equity, or statement of cash flows.

Based on currently available information, the Company expects to recognize operating lease liabilities and ROU assets of \$65 million – \$75 million and \$60 million – \$70 million, respectively. The expected operating lease liabilities were calculated based on the present value of the remaining minimum lease payments for existing operating leases as of December 31, 2018. The expected ROU assets will reflect adjustments for derecognition of deferred leasing incentives and prepaid rents.

In February 2018, the FASB issued ASU 2018-02, *Income Statement-Reporting Comprehensive Income: Reclassification of Certain Tax Effects from Accumulated Other Comprehensive Income*. This ASU provides an option to reclassify stranded tax effects within accumulated other comprehensive income (“AOCI”) to retained earnings in each period in which the effect of the change in the U.S. federal corporate income tax rate in the 2017 U.S. Tax Cuts and Jobs Act (or portion thereof) is recorded. This ASU requires disclosure of a description of the accounting policy for releasing income tax effects from AOCI; whether election is made to reclassify the stranded income tax effects from the 2017 U.S. Tax Cuts and Jobs Act; and information about the income tax effects that are reclassified. This ASU is effective for annual and interim periods beginning after December 15, 2018. The Company does not expect the adoption of ASU 2018-02 to have a material effect on its consolidated balance sheet, results of operations, or statement of cash flows.

2. Revenue

Revenue Recognition

In accordance with ASC 606, revenue is recognized upon transfer of control of promised products and/or services to customers in an amount that reflects the consideration the Company expects to receive in exchange for those products and services. Revenue is recognized net of any taxes collected from customers and subsequently remitted to governmental authorities.

Contract Combination. The Company may execute more than one contract or agreement with a single customer. The separate contracts or agreements may be viewed as one combined arrangement or separate agreements for revenue recognition purposes. In order to reach appropriate conclusions regarding whether such agreements should be combined, the Company evaluates whether the agreements were negotiated as a package with a single commercial objective, whether the amount of consideration to be paid in one agreement depends on the price and/or performance of another agreement, or whether the product(s) or services promised in the agreements represent a single performance obligation. The conclusions reached can impact the allocation of the transaction price to each performance obligation and the timing of revenue recognition related to those arrangements.

Software as a Service (“SaaS”) and Platform as a Service (“PaaS”) Arrangements. The Company’s SaaS-based and PaaS-based arrangements, including implementation, support and other services, represent a single promise to provide continuous access (i.e. a stand-ready performance obligation) to its software solutions and their processing capabilities in the form of a service through one of the Company’s data centers. As each day of providing access to the software solution(s) is substantially the same and the customer simultaneously receives and consumes the benefits as access is provided, the Company’s single promise under its SaaS-based and PaaS-based arrangements is comprised of a series of distinct service periods. The Company’s SaaS-based and PaaS-based arrangements may include fixed consideration, variable consideration, or a combination of the two. Fixed consideration is recognized over the term of the arrangement or longer if the fixed consideration relates to a material right. A material right would be a separate performance obligation. The Company estimates the standalone selling price for a material right by reference to the services expected to be provided and the corresponding expected consideration. Variable consideration in these arrangements is typically a function of transaction volume or another usage-based measure. Depending upon the structure of a particular arrangement, the Company: (1) allocates the variable amount to each distinct service period within the series and recognizes revenue as each distinct service period is performed (i.e. direct allocation), (2) estimates total variable consideration at contract inception (giving consideration to any constraints that may apply and updating the estimates as new information becomes available) and recognizes the total transaction price over the period to which it relates, or (3) applies the ‘right to invoice’ practical expedient and recognizes revenue based on the amount invoiced to the customer during the period.

License Arrangements. The Company’s software license arrangements provide the customer with the right to use functional intellectual property (as it exists at the point in time at which the license is granted) for the duration of the contract term. Implementation, support, and other services are typically considered distinct performance obligations when sold with a software license unless these services are determined to significantly modify the software.

Payment terms for the Company’s software license arrangements generally include fixed license and capacity fees that are payable up front or over time. These arrangements may also include incremental usage-based fees that are payable when the customer exceeds its contracted license capacity limits. The Company accounts for capacity overages as a usage-based royalty that is recognized when the usage occurs.

When a software license arrangement contains payment terms that are extended beyond one year, a significant financing component may exist. The significant financing component is calculated as the difference between the stated value and present value of the software license fees and is recognized as interest income over the extended payment period. The total fixed software license fee net of the significant financing component is recognized as revenue at the point in time when the software is transferred to the customer.

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For those software license arrangements that include customer-specific acceptance provisions, such provisions are generally presumed to be substantive and the Company does not recognize revenue until the earlier of the receipt of a written customer acceptance, objective demonstration that the delivered product meets the customer-specific acceptance criteria, or the expiration of the acceptance period. The Company recognizes revenues on such arrangements upon the earlier of receipt of written acceptance or the first production use of the software by the customer.

For software license arrangements in which the Company acts as a distributor of another company's product, and in certain circumstances, modifies or enhances the product, revenues are recorded on a gross basis. These include arrangements in which the Company takes control of the products and is responsible for providing the product or service. For software license arrangements in which the Company acts as a sales agent for another company's product, revenues are recorded on a net basis. These include arrangements in which the Company does not take control of products and is not responsible for providing the product or service.

For software license arrangements in which the Company utilizes a third-party distributor or sales agent, the Company recognizes revenue upon transfer of control of the software license(s) to the third-party distributor or sales agent.

The Company's software license arrangements typically provide the customer with a standard 90-day assurance-type warranty. These warranties do not represent an additional performance obligation as services beyond assuring that the software license complies with agreed-upon specifications are not provided.

Software license arrangements typically include an initial post contract customer support (maintenance or "PCS") term of one year with subsequent renewals for additional years within the initial license period. The Company's promise to those customers who elect to purchase PCS represents a stand-ready performance obligation that is distinct from the license performance obligation and recognized over the PCS term.

The Company also provides various professional services to customers with software licenses. These include project management, software implementation, and software modification services. Revenues from arrangements to provide professional services are generally distinct from the other promises in the contract(s) and are recognized as the related services are performed. Consideration payable under these arrangements is either fixed fee or on a time-and-materials basis, which represents variable consideration that must be estimated using the most likely amount based on the range of hours expected to be incurred in providing the services.

The Company estimates the standalone selling price ("SSP") for maintenance and professional services based on observable standalone sales. The Company applies the residual approach to estimate the SSP for software licenses.

Refer to Note 10, *Segment Information*, for further details, including disaggregation of revenue based on primary solution category and geographic location.

Significant Judgments

The Company applies judgment in determining the customer's ability and intention to pay, which is based on a variety of factors including the customer's historical payment experience or, in the case of a new customer, published credit and financial information.

The Company also applies judgment in determining the term of an arrangement when early termination rights are provided to the customer.

The Company's software license arrangements with its customers often include multiple promises to transfer licensed software products and services. Determining whether the products and/or services are distinct performance obligations that should be accounted for separately may require significant judgment.

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The Company's SaaS and PaaS arrangements may include variable consideration in the form of usage-based fees. If the arrangement that includes variable consideration in the form of usage-based fees does not meet the allocation exception for variable consideration, the Company estimates the amount of variable consideration at the outset of the arrangement using either the expected value or most likely amount method, depending on the specifics of each arrangement. These estimates are constrained to the extent that it is probable that a significant reversal of incremental revenue will not occur and are updated each reporting period as additional information becomes available.

Judgment is used in determining: (1) whether the financing component in a software license agreement is significant and, if so, (2) the discount rate used in calculating the significant financing component. The Company assesses the significance of the financing component based on the ratio of license fees paid over time to total license fees. If determined to be significant, the financing component is calculated using a rate that discounts the license fees to the cash selling price.

Judgment is also used in assessing whether the extension of payment terms in a software license arrangement results in variable consideration and, if so, the amount to be included in the transaction price. The Company applies the portfolio approach to estimating the amount of variable consideration in these arrangements using the most likely amount method that is based on the Company's historical collection experience under similar arrangements.

Significant judgment is required to determine the SSP for each performance obligation, the amount allocated to each performance obligation and whether it depicts the amount that the Company expects to receive in exchange for the related product and/or service. As the selling prices of the Company's software licenses are highly variable, the Company estimates SSP of its software licenses using the residual approach when the software license is sold with other services and observable SSPs exist for the other services. The Company uses a range of amounts to estimate SSP for maintenance and services. These ranges are based on standalone sales and vary based on the type of service and geographic region. If the SSP of a performance obligation is not directly observable, the Company will maximize observable inputs to determine its SSP.

Contract Balances

Timing of revenue recognition may differ from the timing of invoicing to customers. The Company records an accrued receivable when revenue is recognized prior to invoicing and the Company's right to consideration only requires the passage of time, or deferred revenue when revenue is recognized subsequent to invoicing.

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Total receivables represent amounts billed and amounts earned that are to be billed in the future (i.e., accrued receivables). Included in accrued receivables are services and SaaS and PaaS revenues earned in the current period but billed in the following period and amounts due under multi-year software license arrangements with extended payment terms for which the Company has an unconditional right to invoice and receive payment subsequent to invoicing.

(in thousands)	December 31,	
	2018	2017
Billed receivables	\$239,275	\$240,137
Allowance for doubtful accounts	(3,912)	(4,799)
Billed receivables, net	\$235,363	\$235,338
Accrued receivables	336,858	27,507
Significant financing component	(35,029)	—
Total accrued receivables, net	301,829	27,507
Less current accrued receivables	123,053	27,507
Less current significant financing component	(10,234)	—
Total long-term accrued receivables, net	\$189,010	\$ —
Total receivables, net	\$537,192	\$262,845

No customer accounted for more than 10% of the Company's consolidated receivables balance as of December 31, 2018 and 2017.

The Company maintains a general allowance for doubtful accounts based on historical experience, along with additional customer -specific allowances. The Company regularly monitors credit risk exposures in consolidated receivables. In estimating the necessary level of our allowance for doubtful accounts, management considers the aging of accounts receivable, the creditworthiness of customers, economic conditions within the customer's industry, and general economic conditions, among other factors.

The following reflects activity in the Company's allowance for doubtful accounts receivable for the periods indicated (in thousands):

	Years Ended December 31,		
	2018	2017	2016
Balance, beginning of period	\$(4,799)	\$(3,873)	\$(5,045)
Provision increase	(1,505)	(2,086)	(1,595)
Amounts written off, net of recoveries	2,269	1,305	2,551
Foreign currency translation adjustments and other	123	(145)	216
Balance, end of period	\$(3,912)	\$(4,799)	\$(3,873)

Provision increases recorded in general and administrative expense during the years ended December 31, 2018, 2017, and 2016, reflect increases in the allowance for doubtful accounts based upon collection experience in the geographic regions in which the Company conducts business, net of collection of customer-specific receivables that were previously reserved for as doubtful of collection.

Deferred revenue includes amounts due or received from customers for software licenses, maintenance, services, and/or SaaS and PaaS services in advance of recording the related revenue.

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Changes in deferred revenue were as follows (in thousands):

	<u>Deferred Revenue</u>
Balance, January 1, 2018	\$ 145,344
Deferral of revenue	215,188
Recognition of deferred revenue	(200,061)
Foreign currency translation	(4,336)
Balance, December 31, 2018	<u>\$ 156,135</u>

Revenue allocated to remaining performance obligations represents contracted revenue that will be recognized in future periods, which is comprised of deferred revenue and amounts that will be invoiced and recognized as revenue in future periods. This does not include:

- Revenue that will be recognized in future periods from capacity overages that are accounted for as a usage-based royalty.
- SaaS and PaaS revenue from variable consideration that will be recognized in accordance with the 'right to invoice' practical expedient.
- SaaS and PaaS revenue from variable consideration that will be recognized in accordance with the direct allocation method.

Revenue allocated to remaining performance obligations was \$666.4 million as of December 31, 2018, of which the Company expects to recognize approximately 48% over the next 12 months and the remainder thereafter.

During the year ended December 31, 2018, the revenue recognized by the Company from performance obligations satisfied in previous periods was \$29.6 million.

Costs to Obtain and Fulfill a Contract

The Company accounts for costs to obtain and fulfill its contracts in accordance with ASC 340-40.

The Company capitalizes certain of its sales commissions that meet the definition of incremental costs of obtaining a contract and for which the amortization period is greater than one year. The costs associated with those sales commissions is capitalized during the period in which the Company becomes obligated to pay the commissions and is amortized over the period in which the related products or services are transferred to the customer. As of December 31, 2018, \$1.3 million and \$11.7 million of these costs are included in other current assets and other non-current assets, respectively, on the consolidated balance sheets. During the year ended December 31, 2018, the Company recognized \$8.4 million of sales commission expense related to the amortization of these costs, which is included in selling and marketing expense.

The Company capitalizes costs incurred to fulfill its contracts that: (1) relate directly to the arrangement, (2) are expected to generate resources that will be used to satisfy the Company's performance obligation under the arrangement, and (3) are expected to be recovered through revenue generated under the arrangement. Contract fulfillment costs are expensed as the Company transfers the related services to the customer. As of December 31, 2018, \$0.2 million and \$12.6 million of these costs are included in other current assets and other non-current assets, respectively, on the consolidated balance sheets. The amounts capitalized primarily relate to direct costs that enhance resources under the Company's SaaS and PaaS arrangements. During the year ended December 31, 2018, the Company recognized \$4.7 million of expense related to the amortization of these costs, which is included in cost of revenue.

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Financial Statement Effect of Applying ASC 606

As the modified retrospective transition method does not result in recast of the prior year financial statements, ASC 606 requires the Company to provide additional disclosures for the amount by which each financial statement line item is affected by adoption of the standard and explanation of the reasons for significant changes.

The financial statement line items affected by adoption of ASC 606 are as follows (in thousands):

	December 31, 2018		
	As Reported	Without Application of ASC 606	Effect of Change Higher / (Lower)
Assets			
Receivables, net of allowances	\$ 348,182	\$ 272,409	\$ 75,773
Recoverable income taxes	6,686	13,539	(6,853)
Prepaid expenses	23,277	24,018	(741)
Other current assets	39,830	38,717	1,113
Accrued receivables, net	189,010	—	189,010
Deferred income taxes, net	27,048	61,554	(34,506)
Other noncurrent assets	52,145	41,590	10,555
Liabilities			
Deferred revenue	104,843	134,565	(29,722)
Income taxes payable	5,239	5,472	(233)
Other current liabilities	88,054	88,288	(234)
Deferred income taxes, net	31,715	10,178	21,537
Stockholders' equity			
Total stockholders' equity	1,048,231	805,228	243,003

	Year Ended December 31, 2018		
	As Reported	Without Application of ASC 606	Effect of Change Higher / (Lower)
Revenues			
Software as a service and platform as a service	\$ 433,025	\$ 432,095	\$ 930
License	280,556	281,355	(799)
Maintenance	219,145	221,189	(2,044)
Services	77,054	77,595	(541)
Operating expenses			
Selling and marketing	117,881	110,417	7,464
Other income (expense)			
Interest income	11,142	831	10,311
Other, net	(3,724)	(3,274)	(450)
Income tax provision			
Income tax expense (benefit)	22,878	22,981	(103)

The following summarizes the significant changes resulting from the adoption of ASC 606 compared to if the Company had continued to recognize revenues under ASC 985-605, *Revenue Recognition: Software* (ASC 605).

Receivables, Deferred Revenue, License and Maintenance Revenue, and Interest Income

The change in receivables, deferred revenue, license and maintenance revenue, and interest income is due to a change in the timing and the amount of recognition for software license revenues under ASC 606.

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Under ASC 605, the Company recognized revenue upon delivery provided (i) there is persuasive evidence of an arrangement, (ii) collection of the fee is considered probable, and (iii) the fee is fixed or determinable. For software license arrangements in which a significant portion of the fee is due more than 12 months after delivery or when payment terms are significantly beyond the Company's standard business practice, the license fee is deemed not fixed or determinable. For software license arrangements in which the fee is not considered fixed or determinable, the license is recognized as revenue as payments become due and payable, provided all other conditions for revenue recognition have been met.

License revenue under ASC 605 includes revenue from software license arrangements with extended payment terms for which the due and payable pattern of recognition was applied and revenue from renewals of software license arrangements in the period during which the renewal is signed. Under ASC 606, license revenue from these software license arrangements with extended payment terms is accelerated (i.e. upfront recognition) and adjusted for the effects of the financing component, if significant. The significant financing component in these software license arrangements is recognized as interest income over the extended payment period. As many of these software license arrangements were active as of the date the Company adopted ASC 606, the license fees are included in the Company's cumulative adjustment to retained earnings. Under ASC 606, revenue for license renewals is recognized when the customer can begin to use and benefit from the license, which is generally at the commencement of the license renewal period.

Other Current Assets, Other Noncurrent Assets, and Selling and Marketing

Under ASC 606, certain of the Company's sales commissions meet the definition of incremental costs of obtaining a contract. Accordingly, these costs are capitalized and the expense is recognized as the related goods or services are transferred to the customer. Prior to the adoption of ASC 606, the Company recognized sales commission expenses as they were incurred.

Deferred Income Taxes, Net

The change in deferred income taxes is primarily due to the deferred tax effects resulting from the adjustment to retained earnings for the cumulative effect of applying ASC 606 to active contracts as of the adoption date.

The adoption of ASC 606 had no impact in total on the Company's cash flows from operations.

3. Divestiture

Community Financial Services

On March 3, 2016, the Company completed the sale of its Community Financial Services ("CFS") related assets and liabilities to Fiserv, Inc. ("Fiserv") for \$200.0 million. The sale of CFS, which was not strategic to the Company's long-term strategy, is part of the Company's ongoing efforts to expand as a provider of software products, SaaS-based solutions, and PaaS-based solutions facilitating real-time electronic and eCommerce payments for large banks, financial intermediaries, and merchants and corporates worldwide. The sale included employee agreements and customer contracts, as well as technology assets and intellectual property.

For the year ended December 31, 2016, the Company recognized a net after-tax gain of \$93.4 million on the sale of assets to Fiserv. This gain includes final post-closing adjustments pursuant to the definitive transaction agreement of \$0.5 million recognized during the year ended December 31, 2016.

The Company and Fiserv also entered into a Transition Services Agreement ("TSA"), whereby the Company continues to perform certain functions on Fiserv's behalf during a migration period. The TSA is meant to reimburse the Company for direct costs incurred to provide such functions, which are no longer generating revenue for the Company.

4. Software and Other Intangible Assets

At December 31, 2018, software net book value totaled \$137.2 million, net of \$252.2 million of accumulated amortization. Included in this net book value amount is software for resale of \$27.5 million and software acquired or developed for internal use of \$109.7 million.

At December 31, 2017, software net book value totaled \$155.4 million, net of \$230.7 million of accumulated amortization. Included in this net book value amount is software for resale of \$40.9 million and software acquired or developed for internal use of \$114.5 million.

Amortization of software for resale is computed using the greater of (a) the ratio of current revenues to total current and future revenues expected to be derived from the software or (b) the straight-line method over an estimated useful life of generally three to ten years. Software for resale amortization expense totaled \$12.8 million during both the years ended December 31, 2018 and 2017, and totaled \$13.9 million for the year ended December 31, 2016. These software amortization expense amounts are reflected in cost of revenue in the consolidated statements of operations.

Amortization of software for internal use is computed using the straight-line method over an estimated useful life of generally three to ten years. Software for internal use amortization expense recorded during the years ended December 31, 2018, 2017, and 2016, totaled \$41.7 million, \$45.2 million, and \$45.7 million, respectively. These software amortization expense amounts are reflected in depreciation and amortization in the consolidated statements of operations.

The carrying amount and accumulated amortization of the Company's other intangible assets subject to amortization at each balance sheet date are as follows (in thousands):

	December 31, 2018			December 31, 2017		
	Gross Carrying Amount	Accumulated Amortization	Net Balance	Gross Carrying Amount	Accumulated Amortization	Net Balance
Customer relationships	\$ 297,991	\$ (131,187)	\$ 166,804	\$ 305,218	\$ (116,677)	\$ 188,541
Trademarks and tradenames	16,348	(15,025)	1,323	16,646	(13,906)	2,740
	<u>\$ 314,339</u>	<u>\$ (146,212)</u>	<u>\$ 168,127</u>	<u>\$ 321,864</u>	<u>\$ (130,583)</u>	<u>\$ 191,281</u>

Other intangible assets amortization expense recorded during the years ended December 31, 2018, 2017, and 2016, totaled \$19.0 million, \$19.4 million, and \$21.2 million, respectively.

Based on capitalized intangible assets at December 31, 2018, and assuming no impairment of these intangible assets, estimated amortization expense amounts in future fiscal years are as follows (in thousands):

Fiscal Year Ending December 31,	Software Amortization	Other Intangible Assets Amortization
2019	\$ 49,229	\$ 21,825
2020	39,014	20,944
2021	25,382	20,451
2022	12,228	20,303
2023	6,349	20,000
Thereafter	5,026	64,604
Total	<u>\$ 137,228</u>	<u>\$ 168,127</u>

5. Debt

As of December 31, 2018, the Company had \$285.0 million and \$400.0 million outstanding under its Term Credit Facility and Senior Notes, respectively, with up to \$500.0 million of unused borrowings under the Revolving Credit Facility portion of the Credit Agreement, as amended.

Credit Agreement

On February 24, 2017, the Company entered into an amended and restated credit agreement (the “Credit Agreement”), replacing the existing agreement, with a syndicate of financial institutions, as lenders, and Bank of America, N.A., as Administrative Agent, providing for revolving loans, swingline loans, letters of credit, and a term loan. The Credit Agreement consists of (a) a five-year \$500.0 million senior secured revolving credit facility (the “Revolving Credit Facility”), which includes sublimits for (1) the issuance of standby letters of credit and (2) swingline loans, and (b) a five-year \$415.0 million senior secured term loan facility (the “Term Credit Facility” and, together with the Revolving Credit Facility, the “Credit Facility”). The Credit Agreement also allows the Company to request optional incremental term loans and increases in the revolving commitment.

The loans under the Credit Facility may be made to the Company, and the letters of credit under the Revolving Credit Facility may be issued on behalf of the Company. On February 24, 2017, the Company borrowed an aggregate principal amount of \$12.0 million under the Revolving Credit Facility and borrowed \$415.0 million under the Term Credit Facility.

At the Company’s option, borrowings under the Credit Facility bear interest at an annual rate equal to either (a) a base rate determined by reference to the highest of (1) the annual interest rate publicly announced by the Administrative Agent as its Prime Rate, (2) the federal funds effective rate plus 1/2 of 1% or (3) a LIBOR rate determined by reference to the costs of funds for U.S. dollar deposits for a one-month interest period, adjusted for certain additional costs plus 1% or (b) a LIBOR rate determined by reference to the costs of funds for U.S. dollar deposits for the interest period relevant to such borrowings, adjusted for certain additional costs plus an applicable margin. Based on the calculation of the applicable consolidated total leverage ratio, the applicable margin for borrowings under the Credit Facility is, between 0.25% to 1.25% with respect to base rate borrowings and between 1.25% and 2.25% with respect to LIBOR rate borrowings. Interest is due and payable monthly. The interest rate in effect at December 31, 2018, for the Credit Facility was 4.27%.

The Company is also required to pay (a) a commitment fee related to the unutilized commitments under the Revolving Credit Facility, payable quarterly in arrears, (b) letter of credit fees on the maximum amount available to be drawn under all outstanding letters of credit in an amount equal to the applicable margin on LIBOR rate borrowings under the Revolving Credit Facility on an annual basis, payable quarterly in arrears, and (c) customary fronting fees for the issuance of letters of credit fees and agency fees.

The Company’s obligations under the Credit Facility and cash management arrangements entered into with lenders under the Credit Facility (or affiliates thereof) and the obligations of the subsidiary guarantors are secured by first-priority security interests in substantially all assets of the Company and any guarantor, including 100% of the capital stock of ACI Worldwide Corp. and each domestic subsidiary of the Company, each domestic subsidiary of any guarantor, and 65% of the voting capital stock of each foreign subsidiary of the Company that is directly owned by the Company or a guarantor, in each case subject to certain exclusions set forth in the credit documentation governing the Credit Facility. On October 9, 2018, the Company entered into the first amendment to the collateral agreement of the Credit Agreement. This amendment released the lien on certain assets of Official Payments Corporation (“OPAY”), our electronic bill presentment and payment affiliate, to allow OPAY to comply with certain eligible securities and unencumbered asset requirements related to money transmitter or transfer license rules and regulations.

The Credit Agreement contains a number of covenants that, among other things and subject to certain exceptions, restrict the Company’s ability and, as applicable, the ability of its subsidiaries to: create, incur, assume or suffer

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to exist any additional indebtedness; create, incur, assume or suffer to exist any liens; enter into agreements and other arrangements that include negative pledge clauses; pay dividends on capital stock or redeem, repurchase or retire capital stock or subordinated indebtedness; create restrictions on the payment of dividends or other distributions by subsidiaries; make investments, loans, advances and acquisitions; merge, consolidate or enter into any similar combination or sell assets, including equity interests of the subsidiaries; enter into sale and leaseback transactions; directly or indirectly engage in transactions with affiliates; alter in any material respect the character or conduct of the business; enter into amendments of or waivers under subordinated indebtedness, organizational documents and certain other material agreements; and hold certain assets and incur certain liabilities.

Senior Notes

On August 21, 2018, the Company completed a \$400.0 million offering of the 2026 Notes at an issue price of 100% of the principal amount in a private placement for resale to qualified institutional buyers. The 2026 Notes bear interest at an annual rate of 5.750%, payable semi-annually in arrears on February 15 and August 15 of each year, commencing on February 15, 2019. Interest accrued from August 21, 2018. The 2026 Notes will mature on August 15, 2026. In connection with the issuance of the 2026 Notes, the Company incurred and paid debt issuance costs of \$7.3 million as of December 31, 2018.

The Company used the net proceeds of the offering described above to redeem, in full, the Company's outstanding 2020 Notes, including accrued interest, and repaid a portion of the outstanding amount under the Term Credit Facility.

Maturities on long-term debt outstanding at December 31, 2018, are as follows (in thousands):

<u>Fiscal year ending December 31,</u>	
2019	\$ 23,747
2020	23,747
2021	31,662
2022	205,803
2023	—
Thereafter	400,000
Total	\$ 684,959

The Credit Agreement and 2026 Notes also contain certain customary mandatory prepayment provisions. As specified in the Credit Agreement and 2026 Notes agreement, if certain events shall occur, the Company may be required to repay all or a portion of the amounts outstanding under the Credit Facility or 2026 Notes.

The Credit Facility will mature on February 24, 2022, and the 2026 Notes will mature on August 15, 2026. The Revolving Credit Facility and 2026 Notes do not amortize. The Term Credit Facility does amortize, with principal payable in consecutive quarterly installments.

The Credit Agreement and 2026 Notes contain certain customary affirmative covenants and negative covenants that limit or restrict, subject to certain exceptions, the incurrence of liens, indebtedness of subsidiaries, mergers, advances, investments, acquisitions, transactions with affiliates, change in nature of business, and the sale of the assets. The Company is also required to maintain a consolidated leverage ratio at or below a specified amount and an interest coverage ratio at or above a specified amount. As specified in the Credit Agreement and 2026 Notes agreement, if an event of default shall occur and be continuing, the Company may be required to repay all amounts outstanding under the Credit Facility and 2026 Notes. As of December 31, 2018, and at all times during the period, the Company was in compliance with its financial debt covenants.

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Total debt is comprised of the following (in thousands):

	December 31, 2018	December 31, 2017
Term credit facility	\$ 284,959	\$ 394,250
Revolving credit facility	—	2,000
5.750% Senior Notes, due August 2026	400,000	—
6.375% Senior Notes, due August 2020	—	300,000
Debt issuance costs	(13,203)	(10,521)
Total debt	671,756	685,729
Less current portion of term credit facility	23,747	20,750
Less current portion of debt issuance costs	(2,980)	(2,964)
Total long-term debt	<u>\$ 650,989</u>	<u>\$ 667,943</u>

Other

During the year ended December 31, 2018, the Company financed certain multi-year license agreements for internally-used software for \$11.9 million with annual payments through June 2023. As of December 31, 2018, \$9.4 million is outstanding, of which \$2.5 million and \$6.9 million is included in other current liabilities and other noncurrent liabilities, respectively, in the accompanying consolidated balance sheet as of December 31, 2018. These arrangements have been treated as a non-cash investing and financing activity for purposes of the consolidated statement of cash flows.

6. Corporate Restructuring and Other Organizational Changes

Lease Terminations

During the year ended December 31, 2017, the Company ceased use of a portion of its leased facilities in Edison, NJ; Chantilly, VA; Charlotte, NC; Parsippany, NJ; and Waltham, MA. As a result, the Company recorded additional expense of \$2.4 million, which was recorded in general and administrative expenses in the consolidated statements of operations for the year ended December 31, 2017.

During the year ended December 31, 2016, the Company ceased use of a portion of its leased facilities in Watford, U.K.; Providence, RI; Chantilly, VA; and West Hills, CA. As a result, the Company recorded additional expense of \$5.0 million, which was recorded in general and administrative expenses in the consolidated statements of operations for the year ended December 31, 2016.

The components of corporate restructuring and other reorganization activities from the acquisitions are included in the following table (in thousands):

	Facility Closures
Balance, December 31, 2016	\$ 4,559
Restructuring charges (adjustments) incurred, net	2,447
Amounts paid during the period	(1,285)
Foreign currency translation adjustments	224
Balance, December 31, 2017	\$ 5,945
Amounts paid during the period	(1,732)
Foreign currency translation adjustments	(86)
Balance, December 31, 2018	<u>\$ 4,127</u>

Of the \$4.1 million facility closure liability, \$1.6 million and \$2.5 million is recorded in other current liabilities and other noncurrent liabilities, respectively, in the consolidated balance sheet at December 31, 2018.

7. Common Stock and Treasury Stock

In 2005, the Company's board approved a stock repurchase program authorizing the Company, as market and business conditions warrant, to acquire its common stock and periodically authorize additional funds for the program. In February 2018, the board approved the repurchase of up to \$200.0 million of the Company's common stock, in place of the remaining purchase amounts previously authorized.

The Company repurchased 2,346,427 shares for \$54.5 million under the program for the year ended December 31, 2018. Under the program to date, the Company has repurchased 44,129,393 shares for approximately \$547.8 million. As of December 31, 2018, the maximum remaining amount authorized for purchase under the stock repurchase program was \$176.6 million.

During the year ended September 30, 2006, the Company began to issue shares of treasury stock upon exercise of stock options, payment of earned performance shares, issuance of restricted share awards ("RSAs"), vesting of restricted share units ("RSUs"), and for issuances of common stock pursuant to the Company's employee stock purchase plan. Treasury shares issued during the year ended December 31, 2016, included 797,140; 148,322; and 470,029 shares issued pursuant to stock option exercises, RSA grants, and retention restricted share award ("retention RSA") grants, respectively. Treasury shares issued during the year ended December 31, 2017, included 1,204,559 and 560,174 shares issued pursuant to stock option exercises and RSA grants, respectively. Treasury shares issued during the year ended December 31, 2018, included 1,379,704 and 10,000 shares issued pursuant to stock option exercises and RSUs vested, respectively.

8. Earnings Per Share

Basic earnings per share is computed in accordance with ASC 260, *Earnings per Share*, based on weighted average outstanding common shares. Diluted earnings per share is computed based on basic weighted average outstanding common shares adjusted for the dilutive effect of stock options and RSUs.

The following table reconciles the weighted average share amounts used to compute both basic and diluted earnings per share (in thousands):

	Years Ended December 31,		
	2018	2017	2016
Weighted average shares outstanding:			
Basic weighted average shares outstanding	116,057	118,059	117,533
Add: Dilutive effect of stock options and RSUs	1,575	1,385	1,314
Diluted weighted average shares outstanding	<u>117,632</u>	<u>119,444</u>	<u>118,847</u>

The diluted earnings per share computation excludes 2.2 million, 3.9 million, and 6.1 million options to purchase shares and contingently issuable shares during the years ended December 31, 2018, 2017, and 2016, respectively, as their effect would be anti-dilutive.

Common stock outstanding as of December 31, 2018 and 2017, was 116,123,361 and 117,096,731, respectively.

9. Other, Net

Other, net is comprised of foreign currency transaction losses of \$3.7 million and \$2.6 million for the years ended December 31, 2018 and 2017, respectively, and foreign currency transaction gains of \$4.1 million for the year ended December 31, 2016.

10. Segment Information

The Company reports financial performance based on its segments, ACI On Premise and ACI On Demand, and analyzes Segment Adjusted EBITDA as a measure of segment profitability.

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The Company's Chief Executive Officer is also the chief operating decision maker, or CODM. The CODM, together with other senior management personnel, focus their review on consolidated financial information and the allocation of resources based on operating results, including revenues and Segment Adjusted EBITDA, for each segment, separate from Corporate operations.

ACI On Premise serves customers who manage their software on site. These on-premise customers use the Company's software to develop sophisticated solutions, which are often part of a larger system located and managed at the customer specified site. These customers require a level of control and flexibility that ACI On Premise solutions can offer, and they have the resources and expertise to take a lead role in managing these solutions.

ACI On Demand serves the needs of banks and merchants and corporates who use payments to facilitate their core business. These on-demand solutions are maintained and delivered through the cloud via our global data centers and are available in either a single-tenant environment, SaaS offerings, or in a multi-tenant environment, PaaS offerings.

Revenue is attributed to the reportable segments based upon the product sold and mechanism for delivery to the customer. Expenses are attributed to the reportable segments in one of three methods, (1) direct costs of the segment, (2) labor costs that can be attributed based upon time tracking for individual products, or (3) costs that are allocated. Allocated costs are generally marketing and sales related activities as well as information technology and facilities related expense for which multiple segments benefit. The Company also allocates certain depreciation costs to the segments.

Segment Adjusted EBITDA is the measure reported to the CODM for purposes of making decisions on allocating resources and assessing the performance of the Company's segments and, therefore, Segment Adjusted EBITDA is presented in conformity with ASC 280, *Segment Reporting*. Segment Adjusted EBITDA is defined as earnings (loss) from operations before interest, income tax expense (benefit), depreciation and amortization ("EBITDA") adjusted to exclude stock-based compensation, and net other income (expense). During the first quarter of 2018, the Company changed the presentation of its segment measure of profit and loss. As a result, the 2017 and 2016 segment disclosures have been recast to conform with the 2018 presentation.

Corporate and unallocated expenses consists of the corporate overhead costs that are not allocated to reportable segments. These overhead costs relate to human resources, finance, legal, accounting, merger and acquisition activity, and other costs that are not considered when management evaluates segment performance. For the year ended December 31, 2017, Corporate and unallocated expenses included \$46.7 million of general and administrative expense for the legal judgment discussed in Note 14. For the year ended December 31, 2016, Corporate and unallocated expenses includes revenue and operating income from the operations and sale of CFS related assets and liabilities of \$15.4 million and \$151.7 million, respectively.

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The following is selected financial data for the Company's reportable segments for the periods indicated (in thousands):

	Years Ended December 31,		
	2018	2017	2016
Revenues			
ACI On Premise	\$ 576,755	\$ 598,590	\$ 591,252
ACI On Demand	433,025	425,601	399,033
Corporate and other	—	—	15,416
Total revenue	<u>\$ 1,009,780</u>	<u>\$ 1,024,191</u>	<u>\$ 1,005,701</u>
Segment Adjusted EBITDA			
ACI On Premise	\$ 323,902	\$ 347,094	\$ 312,188
ACI On Demand	12,015	(1,832)	(2,624)
Depreciation and amortization	(97,350)	(102,224)	(103,454)
Stock-based compensation expense	(20,360)	(13,683)	(43,613)
Corporate and unallocated expenses	(92,296)	(144,715)	58,633
Interest, net	(30,388)	(38,449)	(39,654)
Other, net	(3,724)	(2,619)	4,105
Income before income taxes	<u>\$ 91,799</u>	<u>\$ 43,572</u>	<u>\$ 185,581</u>
Depreciation and amortization			
ACI On Premise	\$ 11,634	\$ 13,094	\$ 14,581
ACI On Demand	31,541	34,171	29,385
Corporate	54,175	54,959	59,488
Total depreciation and amortization	<u>\$ 97,350</u>	<u>\$ 102,224</u>	<u>\$ 103,454</u>
Stock-based compensation expense			
ACI On Premise	\$ 4,348	\$ 2,234	\$ 6,894
ACI On Demand	4,338	2,230	6,876
Corporate	11,674	9,219	29,843
Total stock-based compensation expense	<u>\$ 20,360</u>	<u>\$ 13,683</u>	<u>\$ 43,613</u>

Assets are not allocated to segments, and the Company's CODM does not evaluate operating segments using discrete asset information.

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The following is revenue by primary geographic market and primary solution category for the Company's reportable segments for the periods indicated (in thousands):

	Year Ended December 31, 2018			Year Ended December 31, 2017			
	ACI On Premise	ACI On Demand	Total	ACI On Premise	ACI On Demand	Total	
Primary Geographic Markets							
Americas - United States	\$ 131,382	\$ 369,097	\$ 500,479	\$ 175,682	\$ 365,553	\$ 541,235	
Americas - Other	61,969	9,577	71,546	72,802	9,429	82,231	
EMEA	296,157	48,889	345,046	270,388	47,872	318,260	
Asia Pacific	87,247	5,462	92,709	79,718	2,747	82,465	
Total	<u>\$ 576,755</u>	<u>\$ 433,025</u>	<u>\$ 1,009,780</u>	<u>\$ 598,590</u>	<u>\$ 425,601</u>	<u>\$ 1,024,191</u>	
Primary Solution Categories							
Bill Payments	\$ —	\$ 275,526	\$ 275,526	\$ —	\$ 271,421	\$ 271,421	
Digital Channels	35,231	40,342	75,573	47,973	46,063	94,036	
Merchant Payments	30,153	59,789	89,942	26,430	50,523	76,953	
Payments Intelligence	42,647	46,497	89,144	33,203	47,123	80,326	
Real-Time Payments	92,068	2,193	94,261	70,087	2,785	72,872	
Retail Payments	376,656	8,678	385,334	420,897	7,686	428,583	
Total	<u>\$ 576,755</u>	<u>\$ 433,025</u>	<u>\$ 1,009,780</u>	<u>\$ 598,590</u>	<u>\$ 425,601</u>	<u>\$ 1,024,191</u>	
				Year Ended December 31, 2016			
				ACI On Premise	ACI On Demand	Other Corporate	Total
Primary Geographic Markets							
Americas - United States			\$ 164,058	\$ 347,957	\$ 15,416	\$ 527,431	
Americas - Other			110,463	6,255	—	116,718	
EMEA			217,576	43,584	—	261,160	
Asia Pacific			99,155	1,237	—	100,392	
Total			<u>\$ 591,252</u>	<u>\$ 399,033</u>	<u>\$ 15,416</u>	<u>\$ 1,005,701</u>	
Primary Solution Categories							
Bill Payments			\$ —	\$ 255,540	\$ —	\$ 255,540	
Digital Channels			49,617	59,597	15,416	124,630	
Merchant Payments			29,311	35,315	—	64,626	
Payments Intelligence			24,665	42,984	—	67,649	
Real-Time Payments			70,289	705	—	70,994	
Retail Payments			417,370	4,892	—	422,262	
Total			<u>\$ 591,252</u>	<u>\$ 399,033</u>	<u>\$ 15,416</u>	<u>\$ 1,005,701</u>	

Digital Channels revenue includes \$15.4 million from CFS-related assets for the year ended December 31, 2016.

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The following is the Company's long-lived assets by geographic location for the periods indicated (in thousands):

	December 31,	
	2018	2017
Long lived assets		
United States	\$ 811,435	\$ 759,513
Other	717,495	613,556
	<u>\$ 1,528,930</u>	<u>\$ 1,373,069</u>

No single customer accounted for more than 10% of the Company's consolidated revenues during the years ended December 31, 2018, 2017, and 2016. No other country outside the United States accounted for more than 10% of the Company's consolidated revenues during the years ended December 31, 2018, 2017, and 2016.

11. Stock-Based Compensation Plans

Employee Stock Purchase Plan

On April 6, 2017, the board approved the 2017 Employee Stock Purchase Plan ("2017 ESPP"), which was approved by shareholders at the 2017 Annual Shareholder meeting. The 2017 ESPP provides employees with an opportunity to purchase shares of the Company's common stock. The 1999 Employee Stock Purchase Plan terminated upon the August 1, 2017, effective date of the 2017 ESPP. Under the Company's 2017 ESPP, a total of 3,000,000 shares of the Company's common stock have been reserved for issuance to eligible employees. Participating employees are permitted to designate up to the lesser of \$25,000 or 10% of their annual base compensation for the purchase of common stock under the ESPP. Purchases under the ESPP are made one calendar month after the end of each fiscal quarter. The price for shares of common stock purchased under the ESPP is 85% of the stock's fair market value on the last business day of the three-month participation period. Shares issued under the ESPP during the years ended December 31, 2018, 2017, and 2016, totaled 148,520; 158,194; and 188,453, respectively.

Additionally, the discount offered pursuant to the Company's ESPP discussed above is 15%, which exceeds the 5% non-compensatory guideline in ASC 718 and exceeds the Company's estimated cost of raising capital. Consequently, the entire 15% discount to employees is deemed to be compensatory for purposes of calculating expense using a fair value method. Compensation expense related to the ESPP for each of the years ended December 31, 2018, 2017, and 2016, was approximately \$0.5 million.

Stock Incentive Plans – Active Plans

2016 Equity and Performance Incentive Plan

On March 23, 2016, the board approved the 2016 Equity and Performance Incentive Plan (the "2016 Incentive Plan"). The 2016 Incentive Plan is intended to meet the Company's objective of balancing stockholder concerns about dilution with the need to provide appropriate incentives to achieve Company performance objectives. The 2016 Incentive Plan was adopted by the stockholders on June 14, 2016. Following the adoption of the 2016 Incentive Plan, the 2005 Equity and Performance Incentive Plan, as amended (the "2005 Incentive Plan") was terminated. Termination of the 2005 Incentive Plan did not affect any equity awards outstanding under the 2005 Incentive Plan.

The 2016 Incentive Plan provides for the grant of incentive stock options, nonqualified stock options, stock appreciation rights, restricted share and restricted share units, performance shares and performance units, and other awards ("awards"). Subject to adjustment in certain circumstances, the maximum number of shares of common stock that may be issued or transferred in connection with awards granted under the 2016 Incentive Plan

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will be the sum of (i) 8,000,000 shares of common stock and (ii) any shares of common stock that are represented by options previously granted under the 2005 Incentive Plan which are forfeited, expire, or are canceled without delivery of common stock or which result in the forfeiture or relinquishment of common stock back to the Company. To the extent awards granted under the 2016 Incentive Plan terminate, expire, are canceled without being exercised, are forfeited or lapse for any reason, the shares of common stock subject to such award will again become available for grants under the 2016 Incentive Plan.

The 2016 Incentive Plan expressly prohibits re-pricing stock options and appreciation rights. The 2016 Incentive Plan also, subject to certain limited exceptions, expressly requires a one-year vesting period for all stock options and appreciation rights.

No eligible person selected by the board to receive awards (“participant”) will receive stock options, stock appreciation rights, restricted share awards, restricted share units, and other awards under the 2016 Incentive Plan, during any calendar year, for more than 3,000,000 shares of common stock. In addition, no participant may receive performance shares or performance units having an aggregate value on the date of grant in excess of \$9,000,000 during any calendar year. Each of the limits described above may be adjusted equitably to accommodate a change in the capital structure of the Company.

2005 Equity and Performance Incentive Plan

The Company had a 2005 Incentive Plan, as amended, under which shares of the Company’s common stock were reserved for issuance to eligible employees or non-employee directors of the Company. The 2005 Incentive Plan provided for the grant of incentive stock options, nonqualified stock options, stock appreciation rights, restricted stock awards, performance awards, and other awards. The maximum number of shares of the Company’s common stock that was issued or transferred in connection with awards granted under the 2005 Incentive Plan was the sum of (i) 23,250,000 shares and (ii) any shares represented by outstanding options that had been granted under designated terminated stock option plans that were subsequently forfeited, expired, or are canceled without delivery of the Company’s common stock.

Stock Options

Stock options granted pursuant to the 2016 Incentive Plan are granted at an exercise price not less than the market value per share of the Company’s common stock on the date of grant. Under the 2016 Incentive Plan, the term of the outstanding options may not exceed ten years nor be less than one year. Vesting of options is determined by the compensation committee of the board and the administrator of the 2016 Incentive Plan and can vary based upon the individual award agreements. In addition, outstanding options do not have dividend equivalent rights associated with them under the 2016 Incentive Plan.

A summary of stock option activity under the various stock incentive plans previously described is as follows:

<u>Stock Options</u>	<u>Number of Shares</u>	<u>Weighted-Average Exercise Price (\$)</u>	<u>Weighted-Average Remaining Contractual Term (Years)</u>	<u>Aggregate Intrinsic Value of In-the-Money Options (\$)</u>
Outstanding, December 31, 2017	6,162,717	\$ 16.83		
Granted	170,455	23.36		
Exercised	(1,379,704)	14.26		
Forfeited	(88,632)	18.56		
Outstanding, December 31, 2018	<u>4,864,836</u>	<u>\$ 17.76</u>	<u>6.09</u>	<u>\$48,214,530</u>
Exercisable, December 31, 2018	<u>3,416,715</u>	<u>\$ 17.04</u>	<u>5.43</u>	<u>\$36,309,807</u>

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The weighted-average grant date fair value of stock options granted during the years ended December 31, 2018, 2017, and 2016, was \$7.03, \$6.24, and \$5.59, respectively. The total intrinsic value of stock options exercised during the years ended December 31, 2018, 2017, and 2016, was \$15.8 million, \$13.4 million, and \$6.8 million, respectively.

The fair value of options granted in the respective fiscal years are estimated on the date of grant using the Black-Scholes option-pricing model, acceptable under ASC 718, with the following weighted-average assumptions:

	Years Ended December 31,		
	2018	2017	2016
Expected life (years)	5.6	5.6	5.9
Risk-free interest rate	2.7%	1.9%	1.2%
Expected volatility	26.4%	29.4%	29.7%
Expected dividend yield	—	—	—

Expected volatilities are based on the Company's historical common stock volatility, derived from historical stock price data for periods commensurate with the options' expected life. The expected life of options granted represents the period of time options are expected to be outstanding, based primarily on historical employee option exercise behavior. The risk-free interest rate is based on the implied yield currently available on U.S. Treasury zero coupon bonds issued with a term equal to the expected life at the date of grant of the options. The expected dividend yield is zero, as the Company has historically paid no dividends and does not anticipate dividends to be paid in the future.

During the year ended December 31, 2016, the Company granted supplemental stock options with three tranches at a grant date fair value of \$7.46, \$7.06, and \$6.50, respectively, per share. These options vest, if at all, based upon (i) tranche one – any time after the third anniversary date if the stock has traded at 133% of the exercise price for at least 20 consecutive trading days, (ii) tranche two – any time after the fourth anniversary date if the stock has traded at 167% of the exercise price for at least 20 consecutive trading days, and (iii) tranche three – any time after the fifth anniversary date if the stock has traded at 200% of the exercise price for at least 20 consecutive trading days. The employees must remain employed with the Company as of the anniversary date for the supplemental stock options to vest. The exercise price of these options is the closing market price on the date the awards were granted. With respect to supplemental stock options granted that vest based on the achievement of certain market conditions, the grant date fair value was estimated using a Monte Carlo simulation model with the following weighted-average assumptions:

	Year Ended
	December 31, 2016
Expected life (years)	7.5
Risk-free interest rate	1.6%
Expected volatility	41.6%
Expected dividend yield	—

Long-term Incentive Program Performance Share Awards

During the years ended December 31, 2017 and 2016, pursuant to the Company's 2016 Incentive Plan and 2005 Incentive Plan, the Company granted long-term incentive program performance share awards ("LTIP performance shares"). These LTIP performance shares are earned, if at all, based upon the achievement, over a specified period that must not be less than one year and is typically a three-year performance period, of performance goals related to (i) the compound annual growth over the performance period in the sales for the Company as determined by the Company, and (ii) the cumulative operating income or EBITDA over the performance period as determined by the Company. Up to 200% of the LTIP performance shares may be earned

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upon achievement of performance goals equal to or exceeding the maximum target levels for the performance goals over the performance period. On a quarterly basis, management must evaluate the probability that the threshold performance goals will be achieved, if at all, and the anticipated level of attainment to determine the amount of compensation expense to record in the consolidated financial statements.

During the fourth quarter of the year ended December 31, 2017, the Company revised the expected attainment rates for the awards granted in fiscal 2015 and 2016 from 100% to 0% and 65%, respectively, due to changes in actual and forecasted sales and operating income. During the fourth quarter of the year ended December 31, 2018, the Company revised the expected attainment rates for the awards granted in fiscal year 2016, excluding the 2016 supplemental awards, from 65% to 0%. The expected attainment rate for the 2017 grants remains at 100%.

A summary of the nonvested LTIP performance shares are as follows:

<u>Nonvested LTIP Performance Shares</u>	<u>Number of Shares at Expected Attainment</u>	<u>Weighted-Average Grant Date Fair Value</u>
Nonvested at December 31, 2017	1,125,035	\$ 18.94
Forfeited	(93,147)	19.26
Change in expected attainment for 2016 grants	(491,191)	17.91
Nonvested at December 31, 2018	<u>540,697</u>	<u>\$ 19.83</u>

Restricted Share Awards

During the years ended December 31, 2017 and 2016, pursuant to the Company's 2016 Incentive Plan and 2005 Incentive Plan, the Company granted RSAs. The awards have requisite service periods of three years and vest in increments of 33% on the anniversary of the grant dates. Under each arrangement, shares are issued without direct cost to the employee. RSAs granted to our board vest one year from grant or as of the next annual shareholders meeting, whichever is earlier. The Company estimates the fair value of the RSAs based upon the market price of the Company's stock at the date of grant. The RSA grants provide for the payment of dividends on the Company's common stock, if any, to the participant during the requisite service period, and the participant has voting rights for each share of common stock. The Company recognizes compensation expense for RSAs on a straight-line basis over the requisite service period.

A summary of nonvested RSAs are as follows:

<u>Nonvested Restricted Share Awards</u>	<u>Number of Shares</u>	<u>Weighted-Average Grant Date Fair Value</u>
Nonvested at December 31, 2017	503,237	\$ 20.63
Vested	(231,473)	21.20
Forfeited	(58,427)	19.92
Nonvested at December 31, 2018	<u>213,337</u>	<u>\$ 20.21</u>

During the year ended December 31, 2018, a total of 231,473 RSAs vested. The Company withheld 41,973 of those shares to pay the employees' portion of the minimum payroll withholding taxes.

Performance-Based Restricted Share Awards

During the year ended December 31, 2015, pursuant to the Company's 2005 Incentive Plan, the Company granted performance-based restricted share awards ("PBRsAs"). The PBRsAs grants provided for the payment of

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dividends on the Company's common stock, if any, to the participant during the requisite service period, and the participant had voting rights for each share of common stock. These PBRsAs were earned, if at all, based upon the achievement of performance goals over a performance period and completion of the service period. The PBRsAs granted on June 9, 2015, had a graded-vesting period of three years (33% vest each year) and were subject to performance targets based on the Company's EBITDA. The first 33% of the PBRsAs issued vested subject to meeting the EBITDA target for the year ending December 31, 2015. The remaining 66% of the PBRsAs issued vested 33% at the end of year two and 33% at the end of year three, subject to meeting the EBITDA target for the year ending December 31, 2016. The PBRsAs granted on September 15, 2015, had a vesting period of 1.3 years and were subject to performance targets based on the Company's EBITDA for the year ending December 31, 2016. In no event did any of the PBRsAs become earned if the Company's EBITDA was below a predetermined minimum threshold level at the conclusion of the performance period. Assuming achievement of the predetermined EBITDA threshold level, up to 150% of the PBRsAs were earned upon achievement of performance goals equal to or exceeding the maximum target levels for the performance goals over the performance period. On a quarterly basis, management evaluated the probability that the threshold performance goals were achieved, if at all, and the anticipated level of attainment to determine the amount of compensation expense to record in the consolidated financial statements.

During the year ended December 31, 2016, the first tranche of the June 9th grant vested at 90.4%. During the first quarter of the year ended December 31, 2017, the Company revised the attainment rate for the second and third tranches of the June 9th grant and the September 15th grant from 100% to 98% due to actual EBITDA achieved. The Company recognized compensation expense for PBRsAs on a straight-line basis over the requisite service periods.

A summary of nonvested PBRsAs are as follows:

<u>Nonvested Performance-Based Restricted Share Awards</u>	<u>Number of Shares</u>	<u>Weighted-Average Grant Date Fair Value</u>
Nonvested as of December 31, 2017	173,636	\$ 24.41
Vested	(173,636)	24.41
Nonvested as of December 31, 2018	—	\$ —

During the years ended December 31, 2018, a total of 173,636 PBRsAs vested. The Company withheld 64,699 of those shares to pay the employees' portion of the minimum payroll withholding taxes.

Total Shareholder Return Awards

During the years ended December 31, 2018 and 2017, pursuant to the 2016 Incentive Plan, the Company granted total shareholder return awards ("TSRs"). TSRs are performance shares that are earned, if at all, based upon the Company's total shareholder return as compared to a group of peer companies over a three-year performance period. The award payout can range from 0% to 200%. To determine the grant date fair value of the TSRs, a Monte Carlo simulation model is used. The Company recognizes compensation expense for the TSRs over a three-year performance period based on the grant date fair value.

The grant date fair value of the TSRs was estimated using the following weighted-average assumptions:

	<u>Years Ended December 31,</u>	
	<u>2018</u>	<u>2017</u>
Expected life (years)	2.9	2.9
Interest rate	2.4%	1.5%
Volatility	28.0%	26.5%
Dividend Yield	—	—

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A summary of nonvested TSRs are as follows:

<u>Nonvested Total Shareholder Return Awards</u>	<u>Number of Shares at Expected Attainment</u>	<u>Weighted-Average Grant Date Fair Value</u>
Nonvested as of December 31, 2017	143,649	\$ 24.37
Granted	541,214	31.31
Forfeited	(42,855)	30.19
Change in attainment	76,923	24.37
Nonvested as of December 31, 2018	<u>718,931</u>	<u>\$ 29.25</u>

Restricted Share Units

During the year ended December 31, 2018, pursuant to the 2016 Incentive Plan, the Company granted restricted share unit awards (“RSUs”). RSUs generally have requisite service periods of three years and vest in increments of 33% on the anniversary of the grant dates. Under each arrangement, RSUs are issued without direct cost to the employee on the vesting date. The Company estimates the fair value of the RSUs based upon the market price of the Company’s stock at the date of grant. The Company recognizes compensation expense for RSUs on a straight-line basis over the requisite service period.

A summary of nonvested RSUs are as follows:

<u>Nonvested Restricted Share Units</u>	<u>Number of Shares</u>	<u>Weighted-Average Grant Date Fair Value</u>
Nonvested as of December 31, 2017	—	\$ —
Granted	714,123	23.81
Vested	(10,000)	25.72
Forfeited	(53,078)	23.36
Nonvested as of December 31, 2018	<u>651,045</u>	<u>\$ 23.82</u>

During the year ended December 31, 2018, a total of 10,000 RSUs vested.

As of December 31, 2018, there was unrecognized compensation expense of \$13.2 million related to TSRs, \$10.8 million related to RSUs, \$3.8 million related to LTIP performance shares, \$1.9 million related to nonvested stock options, and \$2.5 million related to nonvested RSAs, which the Company expects to recognize over weighted-average periods of 2.0 years, 2.1 years, 1.2 years, 0.9 years, and 1.2 years, respectively.

The Company recorded stock-based compensation expense recognized under ASC 718 during the years ended December 31, 2018, 2017, and 2016, of \$20.4 million, \$13.7 million, and \$43.6 million, respectively, with corresponding tax benefits of \$3.9 million, \$1.7 million, and \$14.3 million, respectively. The Company recognizes compensation expense for stock option awards that vest with only service conditions on a straight-line basis over the requisite service period. The Company recognizes compensation expense for stock option awards that vest with service and market-based conditions on a straight-line basis over the longer of the requisite service period or the estimated period to meet the defined market-based condition.

12. Employee Benefit Plans

ACI 401(k) Plan

The ACI 401(k) Plan is a defined contribution plan covering all domestic employees of the Company. Participants may contribute up to 75% of their annual eligible compensation up to a maximum of

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\$18,500 (for employees who are under the age of 50 on December 31, 2018) or a maximum of \$24,500 (for employees aged 50 or older on December 31, 2018). After one year of service, the Company matches 100% of the first 4% of eligible participant contributions and 50% of the next 4% of eligible participant contributions, not to exceed \$5,000 per employee annually. Company contributions charged to expense during the years ended December 31, 2018, 2017, and 2016, were \$6.4 million, \$5.3 million, and \$5.5 million, respectively.

ACI Worldwide EMEA Group Personal Pension Scheme

The ACI Worldwide EMEA Group Personal Pension Scheme is a defined contribution plan covering substantially all ACI Worldwide (EMEA) Limited (“ACI-EMEA”) employees. For those ACI-EMEA employees who elect to participate in the plan, the Company contributes a minimum of 8.5% of eligible compensation to the plan for employees employed at December 1, 2000 (up to a maximum of 15.5% for employees aged over 55 years on December 1, 2000) or from 6% to 10% of eligible compensation for employees employed subsequent to December 1, 2000. ACI-EMEA contributions charged to expense were \$1.6 million during both the years ended December 31, 2018 and 2017, and \$1.7 million during the year ended December 31, 2016.

13. Income Taxes

On December 22, 2017, the Tax Cuts and Jobs Act (“Tax Act”) was signed into U.S. Law. In December 2017, the Securities and Exchange Commission staff issued Staff Accounting Bulletin No. 118, *Income Tax Accounting Implications of the Tax Cuts and Jobs Act*, which allowed the Company to record provisional amounts during a measurement period not to extend beyond one year of the enactment date. As of December 31, 2018, the Company has completed its accounting for the tax effects related to the enactment of the Tax Act.

Deferred Tax Assets and Liabilities

The Tax Act reduced the U.S. federal corporate income tax rate from 35% to 21%, effective January 1, 2018. During the year ended December 31, 2017, the Company remeasured certain deferred tax assets and liabilities and recorded a \$15.0 million provisional tax charge. During the year ended December 31, 2018, the Company reduced the initial provisional tax charge by recording a \$4.9 million benefit related to accelerated tax deductions claimed on the 2017 U.S. Federal Income Tax Return.

One-Time Transition Tax

The Tax Act required U.S. companies to pay a one-time transition tax on certain unremitted foreign earnings. During the year ended December 31, 2017, the Company recorded a \$20.9 million provisional tax charge based on post-1986 earnings and profits of foreign subsidiaries that were previously deferred from U.S. income taxes. Upon further analysis, the Company reduced the initial provisional tax charge by recording a \$8.1 million benefit during the year ended December 31, 2018.

Foreign Tax Credit Utilization

The Tax Act changed taxation of foreign earnings. Generally, the Company will no longer be subject to U.S. federal income taxes upon the receipt of dividends from foreign subsidiaries, nor will the Company be permitted to utilize foreign tax credits related to such dividends. As a result of the aforementioned, as well as the U.S. federal corporate income tax rate reduction, the acceleration of tax deductions, and the reduction in the one-time transition tax, the Company has more U.S. foreign tax credits than it anticipates being able to utilize prior to their expiration. Upon further analysis of certain aspects of the Tax Act and refinement of our calculations during the year ended December 31, 2018, the Company recorded an \$15.5 million valuation allowance on this deferred tax asset.

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Global Intangible Low-Taxed Income (GILTI)

The Tax Act subjects a U.S. shareholder to tax on global intangible low-taxed income (GILTI) earned by certain foreign subsidiaries. The FASB Staff Q&A, Topic 740, No 5, *Accounting for Global Intangible Low-Taxed Income*, states that an entity can make an accounting policy election to either recognize deferred taxes for temporary basis differences expected to reverse as GILTI in future years or to provide for the tax expense related to GILTI in the year the tax is incurred as a period expense only. The Company has elected to account for GILTI in the year the tax is incurred. For the year ended December 31, 2018, the Company has recorded \$2.1 million of tax charge for the current impact of the GILTI provisions.

Indefinite Reinvestment

During the years ended December 31, 2017 and 2016, the Company considered all earnings in foreign subsidiaries to be indefinitely reinvested, and accordingly, recorded no deferred income taxes related to unremitted earnings. As of December 31, 2018, the Company considered only the earnings in its Indian subsidiaries to be indefinitely reinvested. The earnings of all other foreign subsidiaries are no longer considered indefinitely reinvested and the Company recorded a \$1.1 million deferred tax charge associated with withholding and state taxes on the future repatriation of those earnings. The Company is also permanently reinvested for outside book/tax basis differences related to foreign subsidiaries.

For financial reporting purposes, income before income taxes includes the following components (in thousands):

	Years Ended December 31,		
	2018	2017	2016
United States	\$16,312	\$(42,863)	\$134,740
Foreign	75,487	86,435	50,841
Total	<u>\$91,799</u>	<u>\$ 43,572</u>	<u>\$185,581</u>

The expense (benefit) for income taxes consists of the following (in thousands):

	Years Ended December 31,		
	2018	2017	2016
Federal			
Current	\$ 6,545	\$ 2,586	\$14,108
Deferred	(6,587)	19,212	19,034
Total	(42)	21,798	33,142
State			
Current	4,441	(1,857)	12,565
Deferred	(2,649)	(1,324)	(2,502)
Total	1,792	(3,181)	10,063
Foreign			
Current	17,626	16,048	11,671
Deferred	3,502	3,772	1,170
Total	21,128	19,820	12,841
Total	<u>\$22,878</u>	<u>\$38,437</u>	<u>\$56,046</u>

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Differences between the income tax expense computed at the statutory federal income tax rate and per the consolidated statements of operations are summarized as follows (in thousands):

	Years Ended December 31,		
	2018	2017	2016
Tax expense at federal rate of 21% (35% pre-2018)	\$19,278	\$ 15,250	\$ 64,953
State income taxes, net of federal benefit	5,246	(2,238)	7,060
Change in valuation allowance	12,657	(1,884)	(8,524)
Foreign tax rate differential	(4,796)	(15,622)	(11,830)
Unrecognized tax benefit increase	1,262	3,007	1,045
Tax effect of foreign operations	8,546	5,532	5,988
Tax benefit of research & development	(2,557)	(1,904)	(1,088)
Transition tax	(8,112)	20,867	—
Revaluation of deferred tax balances	(4,937)	14,953	—
Performance-based compensation	(4,541)	2,081	—
Domestic production activities	—	(3,793)	(700)
Other	832	2,188	(858)
Income tax provision	<u>\$22,878</u>	<u>\$ 38,437</u>	<u>\$ 56,046</u>

The countries having the greatest impact on the tax rate adjustment line shown in the above table as “Foreign tax rate differential” for the year ended December 31, 2018, are Ireland and Luxembourg. The countries having the greatest impact on the tax rate adjustment line shown in the above table as “Foreign tax rate differential” for the year ended December 31, 2017, are Ireland, Luxembourg, and the United Kingdom. The countries having the greatest impact on the tax rate adjustment line shown in the above table as “Foreign tax rate differential” for the year ended December 31, 2016, are Ireland, South Africa, and the United Kingdom.

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The deferred tax assets and liabilities result from differences in the timing of the recognition of certain income and expense items for tax and financial accounting purposes. The sources of these differences at each balance sheet date are as follows (in thousands):

	December 31,	
	2018	2017
Deferred income tax assets:		
Net operating loss carryforwards	\$ 25,745	\$ 38,419
Tax credits	43,838	37,305
Compensation	15,934	18,124
Deferred revenue	27,587	22,248
Research and development expense deferral	12,631	—
Other	5,393	9,055
Gross deferred income tax assets	131,128	125,151
Less: valuation allowance	(20,415)	(7,808)
Net deferred income tax assets	<u>\$ 110,713</u>	<u>\$ 117,343</u>
Deferred income tax liabilities:		
Depreciation and amortization	\$ (60,872)	\$ (67,504)
Deferred revenue	(54,508)	—
Total deferred income tax liabilities	<u>(115,380)</u>	<u>(67,504)</u>
Net deferred income taxes	<u>\$ (4,667)</u>	<u>\$ 49,839</u>
Deferred income taxes / liabilities included in the balance sheet are:		
Deferred income tax asset – noncurrent	\$ 27,048	\$ 66,749
Deferred income tax liability – noncurrent	(31,715)	(16,910)
Net deferred income taxes	<u>\$ (4,667)</u>	<u>\$ 49,839</u>

In assessing the realizability of deferred tax assets, the Company considers whether it is more likely than not that some portion or all of the deferred tax assets will not be realized. The ultimate realization of deferred tax assets is dependent upon the generation of future taxable income during the periods in which those temporary differences become deductible. The Company considers projected future taxable income, carryback opportunities, and tax planning strategies in making this assessment. Based upon the level of historical taxable income and projections for future taxable income over the periods which the deferred tax assets are deductible, the Company believes it is more likely than not that it will realize the benefits of these deductible differences, net of the valuation allowances recorded. During the year ended December 31, 2018, the Company increased its valuation allowance by \$12.7 million which relates to an increase in valuation allowance on U.S. foreign tax credits offset by a reduction in valuation allowance on U.S. state net operating losses.

At December 31, 2018, the Company had domestic federal tax net operating losses (“NOLs”) of \$72.4 million, which will begin to expire in 2019. The Company had deferred tax assets equal to \$1.8 million related to domestic state tax NOLs which will begin to expire in 2019. The Company does not have any valuation allowance against the federal tax NOLs but has provided a \$1.0 million valuation allowance against the deferred tax asset associated with the state NOLs. The Company had foreign tax NOLs of \$32.5 million, of which \$30.2 million may be utilized over an indefinite life, with the remainder expiring over the next 17 years. The Company has provided a \$1.0 million valuation allowance against the deferred tax asset associated with the foreign NOLs.

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The Company had U.S. foreign tax credit carryforwards at December 31, 2018, of \$34.6 million, for which an \$15.5 million valuation allowance has been provided. The U.S. foreign tax credits will begin to expire in 2022. The Company had foreign tax credit carryforwards in other foreign jurisdictions at December 31, 2018, of \$1.5 million, of which \$1.1 million may be utilized over an indefinite life, with the remainder expiring over the next seven years. The Company has provided a \$1.1 million valuation allowance against the tax benefit associated with these foreign credits. The Company also has domestic federal and state general business credit carryforwards at December 31, 2018, of \$12.5 million and \$0.7 million, respectively, which will begin to expire in 2019 and 2022, respectively.

The unrecognized tax benefit at December 31, 2018 and 2017, was \$28.4 million and \$27.2 million, respectively, of which \$22.6 million and \$21.5 million, respectively, are included in other noncurrent liabilities in the consolidated balance sheets. Of the total unrecognized tax benefit amounts at December 31, 2018 and 2017, \$27.5 million and \$25.9 million, respectively, represent the net unrecognized tax benefits that, if recognized, would favorably impact the effective income tax rate in the respective years.

A reconciliation of the beginning and ending amount of unrecognized tax benefits for the years ended December 31 is as follows (in thousands):

	<u>2018</u>	<u>2017</u>	<u>2016</u>
Balance of unrecognized tax benefits at beginning of year	\$27,237	\$24,278	\$21,079
Increases for tax positions of prior years	315	2,478	58
Decreases for tax positions of prior years	(61)	(114)	(361)
Increases for tax positions established for the current period	1,185	1,677	5,185
Decreases for settlements with taxing authorities	—	(154)	(167)
Reductions resulting from lapse of applicable statute of limitation	(115)	(1,155)	(1,310)
Adjustment resulting from foreign currency translation	(155)	227	(206)
Balance of unrecognized tax benefits at end of year	<u>\$28,406</u>	<u>\$27,237</u>	<u>\$24,278</u>

The Company files income tax returns in the U.S. federal jurisdiction, various state and local jurisdictions, and many foreign jurisdictions. The United States, Canada, India, Ireland, Luxembourg, South Africa, and United Kingdom are the main taxing jurisdictions in which the Company operates. The years open for audit vary depending on the tax jurisdiction. In the United States, the Company's tax returns for years following 2014 are open for audit. In the foreign jurisdictions, the tax returns open for audit generally vary by jurisdiction between 2003 and 2017.

The Company's Indian income tax returns covering fiscal years 2003, 2005, and 2010 through 2013 are under audit by the Indian tax authority. Other foreign subsidiaries could face challenges from various foreign tax authorities. It is not certain that the local authorities will accept the Company's tax positions. The Company believes its tax positions comply with applicable tax law and intends to vigorously defend its positions. However, differing positions on certain issues could be upheld by tax authorities, which could adversely affect the Company's financial condition and results of operations.

The Company believes it is reasonably possible that the total amount of unrecognized tax benefits will decrease within the next 12 months by approximately \$3.9 million due to the settlement of various audits and the expiration of statutes of limitations. The Company accrues interest related to uncertain tax positions in interest expense or interest income and recognizes penalties related to uncertain tax positions in other income or other expense. As of December 31, 2018 and 2017, \$1.2 million is accrued for the payment of interest and penalties related to income tax liabilities. The aggregate amount of interest and penalties expense (benefit) recorded in the statements of operations for the years ended December 31, 2018, 2017, and 2016, is \$0.0 million, \$(0.8) million, and \$(0.2) million, respectively.

14. Commitments and Contingencies

In accordance with ASC 460, *Guarantees*, the Company recognizes the fair value for guarantee and indemnification arrangements it issues or modifies if these arrangements are within the scope of the interpretation. In addition, the Company must continue to monitor the conditions that are subject to the guarantees and indemnifications, as required under the previously existing generally accepted accounting principles, to identify if a loss has occurred. If the Company determines it is probable a loss has occurred, then any estimable loss would be recognized under those guarantees and indemnifications. Under its customer agreements, the Company may agree to indemnify, defend, and hold harmless its customers from and against certain losses, damages, and costs arising from claims alleging that the use of its software infringes the intellectual property of a third-party. Historically, the Company has not been required to pay material amounts in connection with claims asserted under these provisions, and accordingly, the Company has not recorded a liability relating to such provisions.

Under its customer agreements, the Company also may represent and warrant to customers that its software will operate substantially in conformance with its documentation, and that the services the Company performs will be performed in a workmanlike manner by personnel reasonably qualified by experience and expertise to perform their assigned tasks. Historically, only minimal costs have been incurred relating to the satisfaction of warranty claims. In addition, from time to time, the Company may guarantee the performance of a contract on behalf of one or more of its subsidiaries, or a subsidiary may guarantee the performance of a contract on behalf of another subsidiary.

Other guarantees include promises to indemnify, defend, and hold harmless the Company's executive officers, directors, and certain other key officers. The Company's certificate of incorporation provides that it will indemnify and advance expenses to its directors and officers to the maximum extent permitted by Delaware law. The indemnification covers any expenses and liabilities reasonably incurred by a person, by reason of the fact that such person is, was, or has agreed to be a director or officer, in connection with the investigation, defense, and settlement of any threatened, pending, or completed action, suit, proceeding, or claim. The Company's certificate of incorporation authorizes the use of indemnification agreements, and the Company enters into such agreements with its directors and certain officers from time to time. These indemnification agreements typically provide for a broader scope of the Company's obligation to indemnify the directors and officers than set forth in the certificate of incorporation. The Company's contractual indemnification obligations under these agreements are in addition to the respective directors' and officers' rights under the certificate of incorporation or under Delaware law.

Operating Leases

The Company leases office space and equipment under operating leases that run through October 2028. The leases do not impose restrictions as to the Company's ability to pay dividends or borrow funds, or otherwise restrict the Company's ability to conduct business. On a limited basis, certain lease arrangements include escalation clauses, which provide for rent adjustments due to inflation changes with the expense recognized on a straight-line basis over the term of the lease. Lease payments subject to inflation adjustments do not represent a significant portion of the Company's future minimum lease payments. Several leases provide renewal options, but in all cases, such renewal options are at the election of the Company. Certain lease agreements provide the Company with the option to purchase the leased equipment at its fair market value at the conclusion of the lease term.

Total operating lease expense for the years ended December 31, 2018, 2017, and 2016 was \$24.6 million, \$24.1 million, and \$25.3 million, respectively.

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Aggregate minimum operating lease payments under these agreements in future fiscal years are as follows (in thousands):

Fiscal Year Ending December 31,	Operating Leases
2019	\$ 16,925
2020	14,212
2021	10,538
2022	8,178
2023	6,529
Thereafter	21,196
Total minimum lease payments	\$ 77,578

Legal Proceedings

On September 23, 2015, a jury verdict was returned against ACI Worldwide Corp. (“ACI Corp.”), a subsidiary of the Company, for \$43.8 million in connection with counterclaims brought by Baldwin Hackett & Meeks, Inc. (“BHMI”) in the District Court of Douglas County, Nebraska. On September 21, 2012, ACI Corp. had sued BHMI for misappropriation of ACI Corp.’s trade secrets. The jury found that ACI Corp. had not met its burden of proof regarding these claims. On March 6, 2013, BHMI asserted counterclaims alleged to arise out of ACI Corp.’s filing of its lawsuit. The court entered a judgment against ACI Corp. for \$43.8 million for damages and \$2.7 million for attorney fees and costs. ACI Corp. disagreed with the verdicts and judgment, and after the trial court denied ACI Corp.’s post-judgment motions ACI Corp. perfected an appeal of the dismissal of its claims against BHMI and the judgment in favor of BHMI. On June 9, 2017, the Nebraska Supreme Court affirmed the District Court judgment. The Company recorded expense of \$48.1 million during the year ended December 31, 2017, of which \$46.7 million is included in general and administrative expense and \$1.4 million in interest expense in the accompanying consolidated statement of operations. The Company paid the judgment, including interest, during the year ended December 31, 2017.

15. Accumulated Other Comprehensive Loss

Activity within accumulated other comprehensive loss for the three years ended December 31, 2018, 2017, and 2016, which consists of foreign currency translation adjustments, was as follows (in thousands):

	Accumulated Other Comprehensive Loss
Balance at December 31, 2015	\$ (71,576)
Other comprehensive loss	(22,524)
Balance at December 31, 2016	(94,100)
Other comprehensive income	16,744
Balance at December 31, 2017	(77,356)
Other comprehensive loss	(15,261)
Balance at December 31, 2018	\$ (92,617)

16. Quarterly Financial Data (Unaudited)

(in thousands, except per share amounts)	Quarter Ended				Year Ended
	March 31, 2018	June 30, 2018	September 30, 2018	December 31, 2018	December 31, 2018
Revenues:					
Software as a service and platform as a service	\$ 104,280	\$ 113,600	\$ 104,519	\$ 110,626	\$ 433,025
License	28,046	45,555	68,964	137,991	280,556
Maintenance	56,659	55,048	54,373	53,065	219,145
Services	20,325	20,792	17,669	18,268	77,054
Total revenues	209,310	234,995	245,525	319,950	1,009,780
Operating expenses:					
Cost of revenue (1)	107,336	116,261	102,473	104,281	430,351
Research and development	36,791	37,862	36,008	32,969	143,630
Selling and marketing	31,893	33,160	28,252	24,576	117,881
General and administrative	28,649	28,837	29,537	20,399	107,422
Depreciation and amortization	21,345	21,033	20,896	21,311	84,585
Total operating expenses	226,014	237,153	217,166	203,536	883,869
Operating income (loss)	(16,704)	(2,158)	28,359	116,414	125,911
Other income (expense):					
Interest expense	(9,365)	(9,717)	(12,573)	(9,875)	(41,530)
Interest income	2,744	2,742	2,763	2,893	11,142
Other, net	(55)	(1,677)	(1,304)	(688)	(3,724)
Total other income (expense)	(6,676)	(8,652)	(11,114)	(7,670)	(34,112)
Income (loss) before income taxes	(23,380)	(10,810)	17,245	108,744	91,799
Income tax expense (benefit)	(3,952)	3,764	2,012	21,054	22,878
Net income (loss)	\$ (19,428)	\$ (14,574)	\$ 15,233	\$ 87,690	\$ 68,921
Earnings (loss) per share					
Basic	\$ (0.17)	\$ (0.13)	\$ 0.13	\$ 0.76	\$ 0.59
Diluted	\$ (0.17)	\$ (0.13)	\$ 0.13	\$ 0.74	\$ 0.59

(1) The cost of revenue excludes charges for depreciation but includes amortization of purchased and developed software for resale.

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(in thousands, except per share amounts)	Quarter Ended				Year Ended
	March 31, 2017	June 30, 2017	September 30, 2017	December 31, 2017	December 31, 2017
Revenues:					
Software as a service and platform as a service	\$ 99,447	\$ 113,469	\$ 99,761	\$ 112,895	\$ 425,572
License	59,381	54,180	50,017	129,546	293,124
Maintenance	54,471	56,009	56,349	55,242	222,071
Services	18,163	16,941	19,608	28,712	83,424
Total revenues	231,462	240,599	225,735	326,395	1,024,191
Operating expenses:					
Cost of revenue (1)	108,543	120,357	107,393	115,993	452,286
Research and development	37,285	34,969	33,935	30,732	136,921
Selling and marketing	27,137	28,817	25,236	26,695	107,885
General and administrative (2)	32,503	72,527	25,302	22,700	153,032
Depreciation and amortization	22,371	22,372	22,446	22,238	89,427
Total operating expenses	227,839	279,042	214,312	218,358	939,551
Operating income (loss)	3,623	(38,443)	11,423	108,037	84,640
Other income (expense):					
Interest expense	(10,160)	(10,664)	(9,374)	(8,815)	(39,013)
Interest income	106	150	165	143	564
Other, net	649	(1,766)	(1,059)	(443)	(2,619)
Total other income (expense)	(9,405)	(12,280)	(10,268)	(9,115)	(41,068)
Income (loss) before income taxes	(5,782)	(50,723)	1,155	98,922	43,572
Income tax expense (benefit)	(4,174)	(20,914)	(2,233)	65,758	38,437
Net income (loss)	\$ (1,608)	\$ (29,809)	\$ 3,388	\$ 33,164	\$ 5,135
Earnings (loss) per share					
Basic	\$ (0.01)	\$ (0.25)	\$ 0.03	\$ 0.28	\$ 0.04
Diluted	\$ (0.01)	\$ (0.25)	\$ 0.03	\$ 0.28	\$ 0.04

(1) The cost of revenue excludes charges for depreciation but includes amortization of purchased and developed software for resale.

(2) General and administrative expenses in the second quarter includes the BHMI judgment.

17. Subsequent Event

Speedpay

On February 28, 2019, the Company and The Western Union Company (“Western Union”) announced that they had entered into a definitive agreement for the Company to acquire Western Union’s Speedpay U.S. domestic bill pay business for approximately \$750.0 million in cash.

The Company has obtained commitments from Bank of America, N.A. to arrange, and Bank of America to provide, subject to certain conditions, a senior secured first-lien term loan of \$500.0 million under a proposed amendment to the Credit Agreement. The Company will use the funds from the new term loan in addition to drawing on the existing available Revolving Credit Facility to fund the acquisition. The transaction is subject to satisfaction of customary closing conditions, including the expiration of the applicable waiting period under the Hart-Scott-Rodino Antitrust Improvements Act.

EXHIBIT INDEX

<u>Exhibit No.</u>	<u>Description</u>
3.01 (1)	2013 Amended and Restated Certificate of Incorporation of the Company
3.02 (2)	Amended and Restated Bylaws of the Company
4.01 (3)	Form of Common Stock Certificate (P)
4.02 (4)	Indenture, dated as of August 21, 2018, among ACI Worldwide, Inc., the guarantors listed therein, and Wilmington Trust, National Association, as trustee
4.03	Form of 5.750% Senior Notes due 2026 (Included as Exhibit A to Exhibit 4.02)
10.01 (5)*	ACI Worldwide, Inc. 2017 Employee Stock Purchase Plan
10.02 (6)*	ACI Worldwide, Inc. 2005 Equity and Performance Incentive Plan, as amended
10.03 (7)*	Form of Severance Compensation Agreement (Change-in-Control) between the Company and certain officers, including executive officers
10.04 (8)*	Form of Indemnification Agreement between the Company and certain officers, including executive officers
10.05 (9)*	Form of Nonqualified Stock Option Agreement – Non-Employee Director for the Company’s 2005 Equity and Performance Incentive Plan, as amended
10.06 (10)*	Form of Nonqualified Stock Option Agreement – Employee for the Company’s 2005 Equity and Performance Incentive Plan, as amended
10.07 (11)*	Form of LTIP Performance Shares Agreement for the Company’s 2005 Equity and Performance Incentive Plan, as amended
10.08 (12)*	Amended and Restated Employment Agreement by and between the Company and Philip G. Heasley, dated December 4, 2015 (effective as of January 7, 2016)
10.09 (13)*	ACI Worldwide, Inc. 2013 Executive Management Incentive Compensation Plan
10.10 (14)*	Form of Change-in-Control Employment Agreement between the Company and certain officers, including executive officers
10.11 (15)*	Form of Restricted Share Award Agreement for the Company’s 2005 Equity and Performance Incentive Plan, as amended
10.12 (16)*	Amended and Restated Deferred Compensation Plan
10.13 (17)	Credit Agreement, dated February 24, 2017, by and among ACI Worldwide, Inc., Bank of America, N.A. and the lenders that are party thereto
10.14 (18)*	Form of 2015 Supplemental Performance Shares Agreement for the Company’s 2005 Equity and Performance Incentive Plan, as amended
10.15 (19)*	Form of 2015 Supplemental Non-Qualified Stock Option Agreement for the Company’s 2005 Equity and Performance Incentive Plan, as amended
10.16 (20)*	Form of 2015 Performance Shares Agreement for the Company’s 2005 Equity and Performance Incentive Plan, as amended
10.17 (21)*	Form of 2015 Non-Qualified Stock Option Agreement – Employee for the Company’s 2005 Equity and Performance Incentive Plan, as amended
10.18 (22)*	ACI Worldwide, Inc. 2016 Equity and Performance Incentive Plan
10.19 (23)*	Form of 2016 Supplemental Performance Share Award Agreement for the Company’s 2016 Equity and Performance Incentive Plan

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<u>Exhibit No.</u>	<u>Description</u>
10.20	(24)* Form of 2016 Supplemental Nonqualified Stock Option Agreement for the Company's 2016 Equity and Performance Incentive Plan
10.21	(25)* Form of Performance Share Award Agreement for the Company's 2016 Equity and Performance Incentive Plan
10.22	(26)* Form of 2016 Nonqualified Stock Option Agreement for the Company's 2016 Equity and Performance Incentive Plan
10.23	(27)* Form of 2016 Restricted Share Award Agreement for the Company's 2016 Equity and Performance Incentive Plan
10.24	(28)* Form of 2016 Restricted Share Award Agreement – Nonemployee Director for the Company's 2016 Equity and Performance Incentive Plan
10.25	(29)* Form of Change-in-Control Employment Agreement
10.26	* Form of 2016 Restricted Share Unit Award Agreement for the Company's 2016 Equity and Performance Incentive Plan
21.01	Subsidiaries of the Registrant (filed herewith)
23.01	Consent of Independent Registered Public Accounting Firm (filed herewith) – Deloitte & Touche LLP
31.01	Certification of Chief Executive Officer pursuant to S.E.C. Rule 13a-14, as adopted pursuant to Section 302 of the Sarbanes-Oxley Act of 2002 (filed herewith)
31.02	Certification of Chief Financial Officer pursuant to S.E.C. Rule 13a-14, as adopted pursuant to Section 302 of the Sarbanes-Oxley Act of 2002 (filed herewith)
32.01	** Certification of Chief Executive Officer pursuant to 18 U.S.C. Section 1350, as adopted pursuant to Section 906 of the Sarbanes-Oxley Act of 2002 (furnished herewith)
32.02	** Certification of Chief Financial Officer pursuant to 18 U.S.C. Section 1350, as adopted pursuant to Section 906 of the Sarbanes-Oxley Act of 2002 (furnished herewith)
101.INS	XBRL Instance Document
101.SCH	XBRL Taxonomy Extension Schema
101.CAL	XBRL Taxonomy Extension Calculation Linkbase
101.LAB	XBRL Taxonomy Extension Label Linkbase
101.PRE	XBRL Taxonomy Extension Presentation Linkbase
101.DEF	XBRL Taxonomy Extension Definition Linkbase

- (1) Incorporated herein by reference to Exhibit 3.1 to the registrant's current report on Form 8-K filed August 17, 2017.
- (2) Incorporated herein by reference to Exhibit 3.1 to the registrant's current report on Form 8-K filed February 27, 2017.
- (3) Incorporated herein by reference to Exhibit 4.01 to the registrant's Registration Statement No. 33-88292 on Form S-1.
- (4) Incorporated herein by reference to Exhibit 4.1 to the registrant's current report on Form 8-K filed August 21, 2018.
- (5) Incorporated herein by reference to Annex A to the registrant's Proxy Statement filed on April 27, 2017.
- (6) Incorporated herein by reference to Exhibit 10.7 to the registrant's quarterly report on Form 10-Q for the period ended June 30, 2014.

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- (7) Incorporated herein by reference to Exhibit 10.9 to the registrant's annual report on Form 10-K for the year ended December 31, 2009.
- (8) Incorporated herein by reference to Exhibit 10.10 to the registrant's annual report on Form 10-K for the year ended December 31, 2009.
- (9) Incorporated herein by reference to Exhibit 10.17 to the registrant's annual report on Form 10-K for the year ended December 31, 2009.
- (10) Incorporated herein by reference to Exhibit 10.18 to the registrant's annual report on Form 10-K for the year ended December 31, 2009.
- (11) Incorporated herein by reference to Exhibit 10.1 to the registrant's current report on Form 8-K filed December 16, 2009.
- (12) Incorporated herein by reference to Exhibit 10.1 to the registrant's current report on Form 8-K filed on December 9, 2015.
- (13) Incorporated herein by reference to Annex A to the registrant's Proxy Statement for its 2013 Annual Meeting (File No. 000-25346) filed on April 29, 2013.
- (14) Incorporated herein by reference to Exhibit 10.3 the registrant's current report on Form 8-K filed June 20, 2016.
- (15) Incorporated herein by reference to Exhibit 10.29 to the registrant's annual report on Form 10-K for the year ended December 31, 2009.
- (16) Incorporated herein by reference to Exhibit 4.3 to the registrant's Registration Statement No. 333-169293 on Form S-8 filed September 9, 2010
- (17) Incorporated herein by reference to Exhibit 10.1 to the registrant's current report on Form 8-K filed February 27, 2017.
- (18) Incorporated herein by reference to Exhibit 10.1 to the registrant's current report on Form 8-K filed January 30, 2015.
- (19) Incorporated herein by reference to Exhibit 10.2 to the registrant's current report on Form 8-K filed January 30, 2015.
- (20) Incorporated herein by reference to Exhibit 10.3 to the registrant's current report on Form 8-K filed January 30, 2015.
- (21) Incorporated herein by reference to Exhibit 10.4 to the registrant's current report on Form 8-K filed January 30, 2015.
- (22) Incorporated herein by reference to Exhibit 10.1 to the registrant's current report on Form 8-K filed June 20, 2016.
- (23) Incorporated herein by reference to Exhibit 10.02 to the registrant's quarterly report on Form 10-Q for the period ended June 30, 2016.
- (24) Incorporated herein by reference to Exhibit 10.03 to the registrant's quarterly report on Form 10-Q for the period ended June 30, 2016.
- (25) Incorporated herein by reference to Exhibit 10.2 to the registrant's current report on Form 8-K filed February 27, 2017.
- (26) Incorporated herein by reference to Exhibit 10.05 to the registrant's quarterly report on Form 10-Q for the period ended June 30, 2016.
- (27) Incorporated herein by reference to Exhibit 10.06 to the registrant's quarterly report on Form 10-Q for the period ended June 30, 2016.
- (28) Incorporated herein by reference to Exhibit 10.07 to the registrant's quarterly report on Form 10-Q for the period ended June 30, 2016.
- (29) Incorporated herein by reference to Exhibit 10.3 to the registrant's current report on Form 8-K filed June 20, 2016.

* Denotes exhibit that constitutes a management contract, or compensatory plan or arrangement.

** This certification is not deemed "filed" for purposes of Section 18 of the Securities Exchange Act of 1934, or otherwise subject to the liability of that section. Such certification will not be deemed to be incorporated by reference into any filing under the Securities Act of 1933 or the Securities Exchange Act of 1934, except to the extent that the Company specifically incorporates it by reference.

SUBSIDIARIES OF THE REGISTRANT

The following is a list of subsidiaries of ACI Worldwide, Inc., omitting subsidiaries which, considered in the aggregate as a single subsidiary, would not constitute a significant subsidiary as of December 31, 2018:

ACI Australia Pty. Ltd	Australia
ACI Worldwide (Pacific) Pty. Ltd.	Australia
Official Payments Corporation	Delaware
ACI Worldwide (Germany) GmbH	Germany
Applied Communications Holding GmbH	Germany
ACI Worldwide Solutions Private Limited	India
Applied Communications Finance Limited	Ireland
Applied Communications GPC Limited	Ireland
Applied Communications (Ireland) Limited	Ireland
ACI Worldwide Luxembourg Holding S.a.r.l.	Luxembourg
ACI Worldwide (Luxembourg) S.a.r.l.	Luxembourg
ACI Worldwide Corp.	Nebraska
ACI Worldwide B.V.	Netherlands
ACI Worldwide (Asia) Pte. Ltd.	Singapore
ACI South Africa (Proprietary) Ltd.	South Africa
ACI Global Limited	United Kingdom
Applied Communications Inc. U.K. Holding Limited	United Kingdom
ACI Worldwide (EMEA) Limited	United Kingdom

CONSENT OF INDEPENDENT REGISTERED PUBLIC ACCOUNTING FIRM

We consent to the incorporation by reference in Registration Statement Nos. 333-123263, 333-146794, 333-182584, 333-212948, 333-169293, and 333-219608 on Form S-8 of our report dated February 28, 2019, relating to the consolidated financial statements of ACI Worldwide, Inc. and subsidiaries ("ACI Worldwide, Inc.") (which report expresses an unqualified opinion and includes an explanatory paragraph relating to the adoption of FASB Accounting Standards Update 2014-09, *Revenue from Contracts with Customers*, effective January 1, 2018), and our report dated February 28, 2019 relating to the effectiveness of ACI Worldwide, Inc.'s internal control over financial reporting, appearing in this Annual Report on Form 10-K of ACI Worldwide, Inc. for the year ended December 31, 2018.

/s/ DELOITTE & TOUCHE LLP

Omaha, Nebraska
February 28, 2019

CERTIFICATION OF CHIEF EXECUTIVE OFFICER

I, Philip G. Heasley, certify that:

1. I have reviewed this annual report on Form 10-K of ACI Worldwide, 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 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 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, 2019

/s/ PHILIP G. HEASLEY

Philip G. Heasley
President, Chief Executive Officer and Director
(Principal Executive Officer)

CERTIFICATION OF CHIEF FINANCIAL OFFICER

I, Scott W. Behrens, certify that:

1. I have reviewed this annual report on Form 10-K of ACI Worldwide, 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 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 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, 2019

/s/ SCOTT W. BEHRENS

Scott W. Behrens
*Senior Executive Vice President, Chief Financial Officer and
Chief Accounting Officer
(Principal Financial Officer)*

**CERTIFICATION OF CHIEF EXECUTIVE OFFICER 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 of ACI Worldwide, Inc. (the "Company") on Form 10-K for the fiscal year ended December 31, 2018, as filed with the Securities and Exchange Commission on the date hereof (the "Report"), I, Philip G. Heasley, Chief Executive Officer of the Company, certify, pursuant to 18 U.S.C. Section 1350, as adopted pursuant to Section 906 of the Sarbanes-Oxley Act of 2002, that to my knowledge:

- 1) The Report fully complies with the requirements of Sections 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, 2019

/s/ PHILIP G. HEASLEY

Philip G. Heasley
President, Chief Executive Officer and Director
(Principal Executive Officer)

**CERTIFICATION OF CHIEF FINANCIAL OFFICER 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 of ACI Worldwide, Inc. (the "Company") on Form 10-K for the fiscal year ended December 31, 2018, as filed with the Securities and Exchange Commission on the date hereof (the "Report"), I, Scott W. Behrens, Chief Financial Officer of the Company, certify, pursuant to 18 U.S.C. Section 1350, as adopted pursuant to Section 906 of the Sarbanes-Oxley Act of 2002, that to my knowledge:

- 1) The Report fully complies with the requirements of Sections 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, 2019

/s/ SCOTT W. BEHRENS

Scott W. Behrens
*Senior Executive Vice President, Chief Financial Officer and
Chief Accounting Officer
(Principal Financial Officer)*