

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

FORM 20-F

☐ REGISTRATION STATEMENT PURSUANT TO SECTION 12(b) OR (g) OF THE SECURITIES EXCHANGE ACT OF 1934

OR

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

For the fiscal year ended September 30, 2019

OR

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

For the transition period from _____ to _____.

OR

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

Date of event requiring this shell company report

Commission File Number: 1-14840

AMDOCS LIMITED

(Exact name of Registrant as specified in its charter)

Island of Guernsey
(Jurisdiction of incorporation or organization)
Hirzel House, Smith Street,
St. Peter Port, Guernsey, GY1 2NG

Amdocs, Inc.
1390 Timberlake Manor Parkway, Chesterfield, Missouri 63017
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Securities registered or to be registered pursuant to Section 12(b) of the Act:

Title of Each Class	Name of Exchange on Which Registered
Ordinary Shares, par value £0.01	Nasdaq Global Select Market

Securities registered or to be registered pursuant to Section 12(g) of the Act:

None

Securities for which there is a reporting obligation pursuant to Section 15(d) of the Act:

None

Indicate the number of outstanding shares of each of the issuer's classes of capital or common stock as of the close of the period covered by the annual report.

Ordinary Shares, par value £0.01 (Title of class)	134,773,123(1) (Number of shares)
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Indicate by check mark if the registrant is a well-known seasoned issuer, as defined in Rule 405 of the Securities Act. Yes ☒ No ☐

If this report is an annual or transition report, indicate by check mark if the registrant is not required to file reports pursuant to Section 13 or 15(d) of the Securities Exchange Act of 1934. Yes ☐ No ☒

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

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

Indicate by check mark whether the registrant is a large accelerated filer, an accelerated filer, a non-accelerated filer, or an emerging growth company. See definition of "large accelerated filer," "accelerated filer," and "emerging growth company" in Rule 12b-2 of the Exchange Act.

Large accelerated filer ☒ Accelerated filer ☐ Non-accelerated filer ☐ Emerging growth company ☐

If an emerging growth company that prepares its financial statements in accordance with U.S. GAAP, 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 which basis of accounting the registrant has used to prepare the financial statements included in this filing:

U.S. GAAP ☒ International Financial Reporting Standards as issued by the International Accounting Standards Board ☐ Other ☐

If this is an annual report, indicate by check mark whether the registrant is a shell company (as defined in Rule 12b-2 of the Exchange Act). Yes ☐ No ☒

(1) Net of 142,374,728 shares held in treasury. Does not include 6,941,175 ordinary shares reserved for issuance upon exercise of stock options and vesting of restricted stock units granted under our stock option plan or by companies we have acquired.

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Unless the context otherwise requires, all references in this Annual Report on Form 20-F to “Amdocs,” “we,” “our,” “us” and the “Company” refer to Amdocs Limited and its consolidated subsidiaries and their respective predecessors, and references to our software products, refer to current and subsequent versions. Our consolidated financial statements are prepared in accordance with generally accepted accounting principles in the United States, or U.S. GAAP, and are expressed in U.S. dollars. References to “dollars” or “\$” are to U.S. dollars. Our fiscal year ends on September 30 of each calendar year. References to any specific fiscal year refer to the year ended September 30 of the calendar year specified. For example, we refer to the fiscal year ending September 30, 2019 as “fiscal 2019.”

We own, have rights to or use trademarks or trade names in conjunction with the sale of our products and services, including Amdocs™, CES™ and The New World of Customer Experience™, among others.

Forward Looking Statements

This Annual Report on Form 20-F contains forward-looking statements (within the meaning of the U.S. federal securities laws) that involve substantial risks and uncertainties. You can identify these forward-looking statements by words such as “expect,” “anticipate,” “believe,” “seek,” “estimate,” “project,” “forecast,” “continue,” “potential,” “should,” “would,” “could,” “intend” and “may,” and other words that convey uncertainty of future events or outcome. Statements that we make in this Annual Report that are not statements of historical fact also may be forward-looking statements. Forward-looking statements are not guarantees of future performance, and involve risks, uncertainties and assumptions that may cause our actual results to differ materially from the expectations that we describe in our forward-looking statements. There may be events in the future that we are not accurately able to predict, or over which we have no control. You should not place undue reliance on forward-looking statements. Although we may elect to update forward-looking statements in the future, we disclaim any obligation to do so, even if our assumptions and projections change, except where applicable law may otherwise require us to do so. Readers should not rely on those forward-looking statements as representing our views as of any date subsequent to the date of the filing of this Annual Report on Form 20-F.

Important factors that may affect these projections or expectations include, but are not limited to: changes in the overall economy; changes in competition in markets in which we operate; changes in the demand for our products and services; the loss of a significant customer; consolidation within the industries in which our customers operate; our ability to derive revenues in the future from our current research and development efforts; changes in the telecommunications regulatory environment; changes in technology that impact both the markets we serve and the types of products and services we offer; financial difficulties of our customers; losses of key personnel; difficulties in completing or integrating acquisitions; litigation and regulatory proceedings; and acts of war or terrorism. For a discussion of these and other important factors, please read the information set forth below under the caption “Risk Factors.”

PART I

ITEM 1. IDENTITY OF DIRECTORS, SENIOR MANAGEMENT AND ADVISERS

Not applicable.

ITEM 2. OFFER STATISTICS AND EXPECTED TIMETABLE

Not applicable.

ITEM 3. KEY INFORMATION

Selected Financial Data

Our historical consolidated financial statements are prepared in accordance with U.S. GAAP and presented in U.S. dollars. The selected historical consolidated financial information set forth below has been derived from our historical consolidated financial statements for the years presented. Historical information as of and for the five years ended September 30, 2019 is derived from our consolidated financial statements, which have been audited by Ernst & Young LLP, our independent registered public accounting firm. You should read the information presented below in conjunction with those statements.

The information presented below is qualified by the more detailed historical consolidated financial statements, the notes thereto and the discussion under “Operating and Financial Review and Prospects” included elsewhere in this Annual Report.

	2019	2018	2017	2016	2015
	(in thousands, except share data)				
Statement of Operations Data:					
Revenue	\$ 4,086,669	\$ 3,974,837	\$ 3,867,155	\$ 3,718,229	\$ 3,643,538
Operating income	569,746	428,307	517,333	483,141	515,948
Net income	479,446	354,396	436,826	409,331	446,163
Basic earnings per share	3.49	2.49	2.99	2.74	2.89
Diluted earnings per share	3.47	2.47	2.96	2.71	2.85
Dividends declared per share(1)	1.105	0.970	0.855	0.755	0.665
	2019	2018	2017	2016	2015
	(in thousands)				
Balance Sheet Data:					
Cash, cash equivalents and short-term interest-bearing investments	\$ 471,632	\$ 519,216	\$ 979,608	\$1,095,723	\$1,354,012
Total assets	5,292,826	5,347,815	5,279,380	5,331,355	5,324,652
Long-term obligations					
Convertible senior notes(2)	—	—	—	—	571
Equity	3,542,466	3,492,042	3,574,070	3,453,561	3,406,842

- (1) In the fourth quarter of fiscal 2012, we instituted a discretionary quarterly cash dividend program in the amount of \$0.13 per share, with the first payment in the first quarter of fiscal 2013. In January 2014, January 2015, February 2016, January 2017, January 2018 and January 2019, our shareholders approved increases in the rate of the quarterly cash dividend to \$0.155 per share, \$0.17 per share, \$0.195 per share, \$0.22 per share, \$0.25 and \$0.285, respectively. In November 2019, our Board of Directors approved, subject to shareholders approval at the January 2020 annual general shareholders meeting, an increase in the rate of the quarterly cash dividend to \$0.3275 per share.

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- (2) On September 6, 2016 (the “Redemption Date”), we redeemed all of our outstanding convertible notes due 2024 at a redemption price of 100% of the principal amount of the notes, plus accrued and unpaid interest up to, but excluding, the Redemption Date.

	Ordinary Shares		Additional Paid-In Capital	Treasury Stock
	Shares	Amount		
(in thousands)				
Statement of Changes in Shareholders' Equity Data:				
Balance as of September 30, 2016	147,134	\$ 4,377	\$ 3,322,789	\$ (4,024,527)
Employee stock options exercised	2,220	28	87,948	—
Repurchase of shares(1)	(5,519)	—	—	(340,597)
Tax benefit from equity-based awards	—	—	3,611	—
Issuance of restricted stock, net of forfeitures	556	5	—	—
Equity-based compensation expense related to employees	—	—	44,539	—
Balance as of September 30, 2017	144,391	\$ 4,410	\$ 3,458,887	\$ (4,365,124)
Employee stock options exercised	1,800	24	81,262	—
Repurchase of shares(1)	(6,337)	—	—	(419,228)
Issuance of restricted stock, net of forfeitures	323	2	—	—
Equity-based compensation expense related to employees	—	—	47,476	—
Balance as of September 30, 2018	140,177	\$ 4,436	\$ 3,587,625	\$ (4,784,352)
Employee stock options exercised	874	11	41,487	—
Repurchase of shares(1)	(6,656)	—	—	(398,057)
Issuance of restricted stock, net of forfeitures	378	5	—	—
Equity-based compensation expense related to employees	—	—	38,550	—
Balance as of September 30, 2019	134,773	\$ 4,452	\$ 3,667,662	\$ (5,182,409)

- (1) From time to time, our Board of Directors can adopt share repurchase plans authorizing the repurchase of our outstanding ordinary shares. On November 8, 2017, our Board of Directors adopted another share repurchase plan for the repurchase of up to an additional \$800.0 million of our outstanding ordinary shares with no expiration date. In April 2018, we completed the repurchase of the remaining authorized amount of ordinary shares under the February, 2016 plan and began executing repurchases under the November 2017 plan. In fiscal year 2019, we repurchased approximately 6.7 million ordinary shares at an average price of \$59.79 per share (excluding broker and transaction fees). The November 2017 plan permits us to purchase our ordinary shares in open market or privately negotiated transactions at times and prices that we consider appropriate. As of September 30, 2019, we had remaining authority to repurchase up to \$239.2 million of our outstanding ordinary shares under the November 2017 plan. On November 12, 2019, our Board of Directors adopted another share repurchase plan for the repurchase of up to an additional \$800.0 million of our outstanding ordinary shares with no expiration date which brings the unused authorization as of September 30, 2019 to \$1,039.2 million. The authorizations permit us to purchase our ordinary shares in open market or privately negotiated transactions at times and prices that we consider appropriate.

Risk Factors

We are exposed to general global economic and market conditions, particularly those impacting the communications industry.

We provide software and services primarily to service providers in the communications industry, and our business is therefore highly dependent upon conditions in that industry. Developments in the communications industry, such as the impact of global economic conditions, industry consolidation, emergence of new competitors, commoditization of voice, video and data services and changes in the regulatory environment, at times have had, and could continue to have, a material adverse effect on our existing or potential customers. These conditions have reduced, and may continue to reduce, the growth rates that the communications industry had previously experienced and caused the market value, financial results and prospects and capital spending levels of many communications companies to decline or degrade. Industry consolidation involving our customers, which has been significant in recent years, may place us at risk of losing business to the incumbent provider to one of the parties to the consolidation or to new competitors. During previous economic downturns, the communications industry experienced significant financial pressures that caused many in the industry to cut expenses and limit investment in capital intensive projects and, in some cases, led to restructurings and bankruptcies. Continuing uncertainty as to the pace of economic recovery following such economic downturns may have adverse consequences for our customers and our business.

Downturns in the business climate for communications companies have in the past resulted in slower customer buying decisions and price pressures that adversely affected our ability to generate revenue. Adverse market conditions may have a negative impact on our business by decreasing our new customer engagements and the size of initial spending commitments under those engagements, as well as decreasing the level of demand and expenditures by existing customers. In addition, a slowdown in buying decisions may extend our sales cycle period and may limit our ability to forecast our flow of new contracts. If such adverse business conditions arise in the future, our business may be harmed.

If we fail to adapt to changing market conditions and cannot compete successfully with existing or new competitors, our business could be harmed.

We may be unable to compete successfully with existing or new competitors. Our failure to adapt to changing market conditions and to compete successfully with established or new competitors could have a material adverse effect on our results of operations and financial condition. We face intense competition for the software products and services that we sell, including competition for managed services we provide to customers under long-term service agreements. These managed services include management of data center operations and IT infrastructure, application management and ongoing support, systems modernization and consolidation and management of end-to-end business processes for billing and customer care operations.

The market for communications information systems is highly competitive and fragmented, and we expect competition to continue to increase. We compete with independent software and service providers and with the in-house IT and network departments of communications companies. Our main competitors include firms that provide IT services (including consulting, systems integration and managed services), software vendors that sell products for particular aspects of a total information system, software vendors that specialize in systems for particular communications services (such as Internet, wireline and wireless services, cable, satellite and service bureaus) and network equipment providers that offer software systems in combination with the sale of network equipment. We also compete with companies that provide digital commerce software and solutions.

We believe that our ability to compete with other vendors as well as with in-house IT and network departments of communications companies, depends on a number of factors, including:

- the development by others of software products and services that are competitive with our products and services,

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- the price at which others offer competitive software and services,
- the ability of competitors to deliver projects at a level of quality that rivals our own,
- the responsiveness of our competitors to customer needs, and
- the ability of our competitors to hire, retain and motivate key personnel.

A number of our competitors have long operating histories, large customer bases, substantial financial, technical, sales, marketing and other resources, and strong name recognition. Current and potential competitors have established, and may establish in the future, cooperative relationships among themselves or with third parties to increase their abilities to address the needs of our existing or prospective customers. In addition, our competitors have acquired, and may continue to acquire in the future, companies that may enhance their market offerings. Accordingly, new competitors or alliances among competitors may emerge and rapidly acquire significant market share. As a result, our competitors may be able to adapt more quickly than us to new or emerging technologies and changes in customer requirements, and may be able to devote greater resources to the promotion and sale of their products. We cannot assure you that we will be able to compete successfully with existing or new competitors. If we fail to adapt to changing market conditions and to compete successfully with established or new competitors, our results of operations and financial condition may be adversely affected.

If we do not continually enhance our products and service offerings, introduce new products and features and adopt and monetize new technologies and methodologies in the marketplace we may have difficulty retaining existing customers and attracting new customers.

We believe that our future success will depend, to a significant extent, upon our ability to enhance our existing products and services, to introduce new products, services and features to meet the requirements of our customers, and to adopt to and leverage new technologies and methodologies such as cloud, microservices-based architecture, DevOps, automation, and artificial intelligence, in a rapidly developing and evolving market. We devote significant resources to refining and expanding our base software modules and to developing our products, services and development methodologies and tools. In some instances, we rely on cooperative relationships with third parties to assist us in delivering certain products and services to our customers. Our present or future products, services and technology may not satisfy the evolving needs of the communications industry or of other industries that we serve. If we are unable to anticipate or respond adequately to such needs, due to resource, technological or other constraints, our business and results of operations could be harmed.

Our future success will depend on our ability to develop and maintain long-term relationships with our customers and to meet their expectations in providing products and performing services.

We believe that our future success will depend to a significant extent on our ability to develop and maintain long-term relationships with successful network operators and service providers with the financial and other resources required to invest in significant ongoing development of our products and services. If we are unable to develop new customer relationships, our business will be harmed. In addition, our business and results of operations depend in part on our ability to provide high quality services to customers that have already implemented our products. If we are unable to meet customers' expectations in providing products or performing services, our business and results of operations could be harmed.

If our security measures for our software, hardware, services or cloud offerings are compromised and as a result, our data, our customers' data or our IT systems are accessed improperly, made unavailable, or improperly modified, our products and services may be perceived as vulnerable, which may materially affect our business and result in potential legal liability.

Our products and services, including our cloud offerings, store, retrieve, and manage our customers' information and data, as well as our own data. We have a reputation for secure and reliable product offerings and

related services and we have invested a great deal of time and resources in protecting the integrity and security of our products, services and the internal and external data that we manage. Despite our efforts to implement security measures, we cannot guarantee that our systems are fully protected from vulnerabilities related to IT-related viruses, worms and other malicious software programs, attacks, break-ins and similar disruptions from unauthorized tampering by computer hackers and others. Increasing sophistication and frequency of cybersecurity incidents could mean that we might not discover a security breach or a loss of information for a significant amount of time after the breach, and might not be able to anticipate attacks or implement sufficient mitigating measures. Such cybersecurity incidents could include, but not limited to, an attempt to gain unauthorized access to digital systems for purposes of misappropriating assets or sensitive information, corrupting data, or causing operational disruption. “Phishing” and other types of attempts to obtain unauthorized information or access are often sophisticated and difficult to detect or defeat. In addition, security measures in our products and services may be penetrated or bypassed by computer hackers and others who may gain unauthorized access to our or our customers’ or partners’ software, hardware, cloud offerings, networks, data or systems. These actors may use a wide variety of methods, which may include developing and deploying malicious software to attack our products and services and gain access to our networks and datacenters, using social engineering techniques, or acting in a coordinated manner to launch distributed denial of service or other coordinated attacks. This is also true for third party data, products or services incorporated into our own. Data may also be accessed or modified improperly as a result of customer, partner or employee error or malfeasance and third parties may attempt to fraudulently induce customers, partners, employees or suppliers into disclosing sensitive information such as user names, passwords or other information in order to gain access to our data or IT systems or our customers’ or partners’ data or IT systems. Any of the foregoing occurrences could create system disruptions and cause shutdowns or denials of service or compromise data, including personal or confidential information, of us, our partners or our customers.

If a cyber-attack or other security incident (for example phishing, advanced persistent threats, or social engineering) were to result in unauthorized access to, or deletion of, and/or modification and/or exfiltration of our customers’ data, other external data or our own data or our IT systems or if the services we provide to our customers were disrupted, customers could lose confidence in the security and reliability of our products and services, including our cloud offerings, and perceive them not to be secure. This in turn could lead to fewer customers using our products and services and result in reduced revenue and earnings. The costs we would incur to address and fix these security incidents would increase our expenses. These risks will increase as we continue to grow our cloud solutions and network offerings and store and process increasingly large amounts of data, including personal information and our customers’ confidential information and data and other external data, and host or manage parts of our customers’ businesses in cloud-based IT environments. In addition, we have acquired certain companies, products, services and technologies over the years and have partnered with other companies for certain of our other offerings. While we make significant efforts to address any IT security issues with respect to our acquired companies and partners, we may still inherit such risks when we integrate these companies, products, services and technologies or work with our partners.

Any of the events described above could cause our customers to make claims against us for damages allegedly resulting from a security breach or service disruption, which could adversely affect our business, results of operation and financial condition.

We are subject to laws, directives, and regulations relating to the collection, use, retention, disclosure, security and transfer of personal data. These laws, directives, and regulations, and their interpretation and enforcement continue to evolve and may be inconsistent from jurisdiction to jurisdiction. For example, the General Data Protection Regulation (GDPR), which regulates the use of personally identifiable information, went into effect in the European Union (EU) on May 25, 2018, applies globally to all of our activities conducted from an establishment in the EU, to related products and services that we offer to EU customers and to non-EU customers which offer services in the EU. The GDPR also affects our role as product developers, as we are required to adopt “privacy by design” principles in order to address our customers’ need to apply privacy adequate solutions when handling their subscribers’ data. Complying with the GDPR and similar emerging and

changing privacy and data protection requirements may cause us to incur substantial costs or require us to change our business practices. Additionally, new local privacy laws have been enacted recently as part of an overall trend, including in the Philippines, U.S.A and Brazil. Noncompliance with our legal obligations relating to privacy and data protection could result in penalties, fines, legal proceedings by governmental entities or others, loss of reputation, legal claims by individuals and customers and significant legal and financial exposure and could affect our ability to retain and attract customers. In addition, Guernsey has introduced legislation similar in form to the GDPR, the Data Protection (Bailiwick of Guernsey) Law, 2017 (as amended) which will apply globally in a similar fashion as the GDPR to our activities conducted from and within Guernsey.

We may not receive significant revenues from our current research and development efforts for several years, if at all.

Developing software and digital products is expensive and the investment in the development of these products often involves a long return on investment cycle. An important element of our corporate strategy is to continue to make significant investments in research and development and related products and service opportunities both through internal investments and the acquisition of intellectual property including from companies that we have acquired. Accelerated products and service introductions and short software and hardware life cycles require high levels of expenditures for research and development that could adversely affect our operating results if not offset by revenue increases. We believe that we must continue to dedicate a significant amount of resources to our research and development efforts to maintain our competitive position. However, we cannot guarantee that we will receive significant revenues from these investments for several years, if at all.

Our business is dependent on a limited number of significant customers, and the loss of any one of our significant customers, or a significant decrease in business from any such customer, could harm our results of operations.

Our business is dependent on a limited number of significant customers, of which AT&T has historically been our largest. AT&T accounted for 23% and 27% of our revenue in fiscal years 2019 and 2018, respectively. We cannot assure you that our revenues from AT&T will remain the same or grow in future years. Aggregate revenue derived from the multiple business arrangements we have with the ten largest of our significant customers accounted for approximately 65% of our revenue in fiscal year 2019 and 66% in fiscal year 2018. The loss of any significant customer, including as a result of industry consolidation involving our customers, a significant decrease in business from any such customer or a reduction in customer revenue due to adverse changes in the terms of our contractual arrangements, market conditions, customer circumstances (such as financial condition and market position) or other factors could harm our results of operations and financial condition. For example, in April 2018, T-Mobile and Sprint entered into a definitive agreement to merge, subject to regulatory approvals and other closing conditions, and we cannot predict all possible outcomes resulting from the proposed merger, or from other current and potential customer consolidation activities. Revenue from individual customers may fluctuate from time to time based on the commencement, scope and completion of projects or other engagements, the timing and magnitude of which may be affected by market or other conditions.

Although we have received a substantial portion of our revenue from recurring business with established customers, many of our major customers do not have any obligation to purchase additional products or services from us and generally have already acquired fully paid licenses for their installed systems. Therefore, our customers may not continue to purchase new systems, system enhancements or services in amounts similar to previous years or may delay implementation or significantly reduce the scope of committed projects, each of which could reduce our revenue and profits.

We seek to acquire companies or technologies and cannot assure you that these acquisitions will enhance our products and services or strengthen our competitive position, and they may adversely affect our results of operations.

It is a part of our business strategy to pursue acquisitions and other initiatives in order to offer new products or services or otherwise enhance our market position or strategic strengths. Consistent with this strategy, in recent years we have completed numerous acquisitions and we are actively evaluating potential acquisition opportunities, some of which could be significant, stand alone or in the aggregate. In the future, we intend to continue to pursue acquisitions of other companies, products, services and technologies that we believe will advance our business strategy. However, we may not be able to identify suitable future acquisition candidates, consummate acquisitions on favorable terms or complete otherwise favorable acquisitions because of antitrust, regulatory or other concerns.

We cannot assure you that the acquisitions we have completed, or any future acquisitions that we may make, will enhance our products and services or strengthen our competitive position. Due to the multiple risks and difficulties associated with any acquisition, there can be no assurance that we will be successful in achieving our expected strategic, operating, and financial goals for any such acquisition.

We may not be successful in the integration of our acquisitions.

We cannot assure you that we have identified, or will be able to identify, all material adverse issues related to the integration of our acquisitions, such as significant defects in the internal control policies of companies that we have acquired. In addition, our acquisitions could lead to difficulties in integrating acquired personnel and operations and in retaining and motivating key personnel from these businesses. In some instances, we may need to depend on the seller of an acquired business to provide us with certain transition services in order to meet the needs of our customers. Any failure to recognize significant defects in the internal control policies of acquired companies or properly integrate and retain personnel, and any interruptions of transition services, may require a significant amount of time and resources to address. Acquisitions may disrupt our ongoing operations, divert management from day-to-day responsibilities, increase our expenses and harm our results of operations or financial condition.

The skilled and highly qualified workforce that we need to develop, implement and modify our solutions may be difficult to hire, train and retain, and we could face increased costs to attract and retain our skilled workforce.

Our business operations depend in large part on our ability to attract, train, motivate and retain highly skilled information technology professionals, software programmers and communications engineers on a worldwide basis. In addition, our competitive success will depend on our ability to attract and retain other outstanding, highly qualified employees, consultants and other professionals. Because our software products are highly complex and are generally used by our customers to perform critical business functions, we depend heavily on skilled technology professionals. Skilled technology professionals are often in high demand and short supply. If we are unable to hire or retain qualified technology professionals to develop, implement and modify our solutions, we may be unable to meet the needs of our customers. In addition, serving several new customers or implementing several new large-scale projects in a short period of time may require us to attract and train additional IT professionals at a rapid rate.

We may face difficulties identifying and hiring qualified personnel and in particular, we may face difficulties in our ability to attract and retain employees with technical and project management skills, including those from developing countries. Although we are heavily investing in training our new employees, we may not be able to train them rapidly enough to meet the increasing demands on our business, particularly in light of high attrition rates in some regions where we have operations. Our inability to hire, train and retain the appropriate personnel could increase our costs of retaining a skilled workforce and make it difficult for us to manage our

operations, meet our commitments and compete for new customer contracts. In particular, wage costs in lower-cost markets where we have historically added personnel, such as India, are increasing and we may need to increase the levels of our employee compensation more rapidly than in the past to remain competitive.

As a result of our entry into new domains, we now compete for high quality employees in those domains' limited and competitive talent market. In addition, cost containment measures effected in recent years, such as the relocation of projects to lower-costs countries, may lead to greater employee attrition and increase the cost of retaining our most skilled employees. The transition of projects to new locations may also lead to business disruptions due to differing levels of employee knowledge and organizational and leadership skills. Although we have never experienced an organized labor dispute, strike or work stoppage, any such occurrence, including in connection with unionization efforts, could disrupt our business and operations and harm our financial condition.

In addition, a national union and a group of our employees had attempted in the past to secure the approval of the minimum number of employees needed for union certification with respect to our employees in Israel. While these efforts have not resulted in either group being recognized as a representative union, we cannot be certain there will be no such efforts in the future. In the event an organization is recognized as a representative union for our employees in Israel, we would be required to enter into negotiations to implement a collective bargaining agreement. We are unable to predict whether, and to what extent, efforts to unionize our employees in Israel or elsewhere would have an adverse effect on our business, operations or financial condition. Our continued growth and success will also depend upon the continued active participation of a relatively small group of senior management personnel, and requires us to hire, retain and develop our leadership bench. If we are unable to attract and retain talented, highly qualified senior management and other key executives, as well as provide for the succession of senior management, our growth and results of operations may be adversely impacted.

Our quarterly operating results may fluctuate, and a decline in revenue in any quarter could result in lower profitability for that quarter and fluctuations in the market price of our ordinary shares.

At times, we have experienced fluctuations in our quarterly operating results and anticipate that such movements may continue to occur. Fluctuations may result from many factors, including:

- the size, timing and pace of progress of significant customer projects license and service fees, and sales of partners software and hardware,
- delays in or cancellations of significant projects and activities by customers,
- changes in operating expenses,
- increased competition,
- changes in our strategy,
- personnel changes,
- foreign currency exchange rate fluctuations,
- penetration of new markets, regions, customers and domains, and
- general economic and political conditions.

Generally, our revenue relating to software licenses that require significant customization, modification, implementation and integration is satisfied over time as work progresses. Given our reliance on a limited number of significant customers, our quarterly results may be significantly affected by the size and timing of customer projects and our progress in completing such projects.

We believe that the placement of customer orders may be concentrated in specific quarterly periods due to the time requirements and budgetary constraints of our customers. Although we recognize a significant portion of

our revenue as projects are performed, progress may vary significantly from project to project, and we believe that variations in quarterly revenue are sometimes attributable to the timing of initial order placements. Due to the relatively fixed nature of certain of our costs, a decline of revenue in any quarter could result in lower profitability for that quarter. In addition, fluctuations in our quarterly operating results could cause significant fluctuations in the market price of our ordinary shares.

Our revenue, earnings and profitability are affected by the length of our sales cycle, and a longer sales cycle could adversely affect our results of operations and financial condition.

Our business is directly affected by the length of our sales cycle. Information systems for communications companies are relatively complex and their purchase generally involves a significant commitment of capital, with attendant delays frequently associated with large capital expenditures and procurement procedures within an organization. The purchase of these types of products and services typically also requires coordination and agreement across many departments within a potential customer's organization. Delays associated with such timing factors could have a material adverse effect on our results of operations and financial condition. In periods of economic slowdown in the communications industry, our typical sales cycle lengthens, which means that the average time between our initial contact with a prospective customer and the signing of a sales contract increases. The lengthening of our sales cycle could reduce growth in our revenue. In addition, the lengthening of our sales cycle contributes to increased selling expenses, thereby reducing our profitability.

We may be required to increase or decrease the scope of our operations in response to changes in the demand for our products and services, and if we fail to successfully plan and manage changes in the size of our operations, our business will suffer.

In the past, we have both grown and contracted our operations, in some cases rapidly, in order to profitably offer our products and services in a continuously changing market. If we are unable to manage these changes and plan and manage any future changes in the size and scope of our operations, our business will suffer.

Restructurings and cost reduction measures that we have implemented, from time to time, have reduced the size of our operations and workforce. Reductions in personnel can result in significant severance, administrative and legal expenses and may also adversely affect or delay various sales, marketing and product development programs and activities. These cost reduction measures have included, and may in the future include, employee separation costs and consolidating and/or relocating certain of our operations to different geographic locations.

Acquisitions, organic growth and absorption of significant numbers of customers' employees in connection with managed services projects have, from time to time, increased our headcount. During periods of expansion, we may need to serve several new customers or implement several new large-scale projects in short periods of time. This may require us to attract and train additional IT professionals at a rapid rate, as well as quickly expand our facilities, which we may have difficulties doing successfully.

Volatility and turmoil in the world's capital markets may adversely affect our investment portfolio and other financial assets.

Our cash, cash equivalents and short-term interest-bearing investments totaled \$472 million, as of September 30, 2019. Our short-term investments, if applicable, generally consist primarily of bank deposits, corporate bonds, money market funds, U.S. government treasuries, and U.S. agency securities. Although we believe that we generally adhere to conservative investment guidelines, adverse market conditions have resulted in immaterial impairments of the carrying value of certain of our investment assets in recent fiscal years, and future adverse market conditions may lead to additional impairments. Realized or unrealized losses in our investments or in our other financial assets may adversely affect our financial condition, including by reducing the capital available for our business and requiring us to seek additional capital, which may not be available on favorable terms.

Declines in the financial condition of banks or other global financial institutions may adversely affect our normal financial operations.

We may be exposed to the credit risk of customers that have been adversely affected by adverse business conditions.

We typically sell our software and related services as part of long-term projects and arrangements. During the life of a project or arrangement, a customer's budgeting constraints or other financial difficulties can impact the scope of such project or arrangement as well as the customer's requirements and ability to make payments or comply with other obligations with respect to such project or arrangement. In addition, adverse general business conditions may degrade the creditworthiness of our customers over time, and we can be adversely affected by bankruptcies or other business failures.

Our international presence exposes us to risks associated with varied and changing political, cultural, legal and economic conditions worldwide.

We are affected by risks associated with conducting business internationally. We maintain development facilities in Brazil, Canada, Cyprus, India, Ireland, Israel, Mexico, the Philippines, the United Kingdom and the United States, and have operations in North America, Europe, Israel, Latin America, Africa and the Asia-Pacific region. Although a substantial majority of our revenue is derived from customers in North America, we obtain significant revenue from customers in Europe, the Asia-Pacific region and Latin America. Our strategy is to continue to broaden our North American and European customer bases and to continue to expand into international markets, including emerging markets, such as those in Latin America, Russia and other members of the Commonwealth of Independent States, India and Southeast Asia. Conducting business internationally exposes us to certain risks inherent in doing business in numerous markets, including:

- lack of acceptance of non-localized products or services and other related services,
- difficulties in complying with varied legal and regulatory requirements across jurisdictions, including those applicable to employees and the terms of employment,
- difficulties in staffing and managing foreign operations,
- longer payment cycles,
- difficulties in collecting accounts receivable, converting local currencies or withholding taxes,
- capital restrictions that limit the repatriation of earnings,
- trade barriers,
- challenges in complying with complex foreign and U.S. laws and regulations, including communication, trade sanctions, export controls, and privacy regulations,
- political instability and threats of terrorism,
- currency exchange rate fluctuations,
- hyper inflation,
- foreign ownership restrictions,
- regulations on the transfer of funds to and from foreign countries,
- the lack of well-established or reliable legal systems in some countries,
- variations in effective income tax rates and tax policies among countries where we conduct business; and
- the timing and manner of the United Kingdom exiting the European Union, as and when it occurs.

One or more of these factors could have a material adverse effect on our operations, which could harm our results of operations and financial condition.

In addition, the ability of foreign nationals to work in the United States, Europe and other regions in which we have customers depends on their and our ability to obtain the necessary visas and work permits for our personnel who need to travel internationally. If we are unable to obtain such visas or work permits, or if their issuance is delayed or if their length is shortened, this may impact our ability to provide services to our customers in a timely and cost-effective manner. Immigration and work permit laws and regulations in the countries in which we have customers are subject to legislative and administrative changes as well as changes in the application of standards and enforcement.

As we continue to develop our business internationally, including in emerging markets, we face increasing challenges that could adversely impact our results of operations, reputation and business.

As we continue our efforts to expand our business internationally, including in emerging markets such as those in Latin America, Africa, Russia and other members of the Commonwealth of Independent States, India and Southeast Asia, we face a number of challenges. These challenges include those related to more volatile economic conditions, competition from companies that are already present in the market, the need to identify correctly and leverage appropriate opportunities for sales and marketing, poor protection of intellectual property, inadequate protection against crime (including counterfeiting, corruption and fraud), lack of due process, inadvertent breaches of local laws or regulations and difficulties in recruiting sufficient personnel with appropriate skills and experience. In addition, local business practices in jurisdictions in which we operate, and particularly in emerging markets, may be inconsistent with international regulatory requirements, such as anti-corruption and anti-bribery laws and regulations (including the U.S. Foreign Corrupt Practices Act and the U.K. Bribery Act) to which we are subject. It is possible that some of our employees, subcontractors, agents or partners may violate such legal and regulatory requirements, which may expose us to criminal or civil enforcement actions, including penalties and suspension or disqualification from U.S. federal procurement contracting. If we fail to comply with such legal and regulatory requirements, our business and reputation may be harmed.

Our international operations expose us to risks associated with fluctuations in foreign currency exchange rates that could adversely affect our business.

Although we have operations throughout the world, approximately 70% to 80% of our revenue and approximately 50% to 60% of our operating costs are denominated in, or linked to, the U.S. dollar. Accordingly, we consider the U.S. dollar to be our functional currency. As we conduct business internationally, fluctuations in exchange rates between the dollar and the currencies not denominated in, or linked to, the U.S. dollar in which revenues are earned or costs are incurred may have a material adverse effect on our results of operations and financial condition. From time to time, we may experience increases in the costs of our operations outside the United States, as expressed in dollars, as well as decreases in revenue not denominated in, or linked to, the U.S. dollar, each of which could have a material adverse effect on our results of operations and financial condition.

For example, during the height of the financial crisis in fiscal 2008, we recognized higher than usual foreign exchange losses under interest and other expense, net, mainly due to the significant revaluation of assets and liabilities denominated in other currencies attributable to the rapid and significant foreign exchange rate changes associated with the global economic turbulence. Although our foreign exchange losses have been less significant since then as a result of enhanced hedging strategies, we believe that foreign exchange rates may continue to present challenges in future periods should significant increases in volatility in foreign exchange markets occur.

Our policy is to hedge significant net exposures in the major foreign currencies in which we operate, and we generally hedge our net currency exposure with respect to expected revenue and operating costs and certain balance sheet items. We do not hedge all of our currency exposure, including for currencies for which the cost of

hedging is prohibitively expensive. We cannot assure you that we will be able to effectively limit all of our exposure to currency exchange rate fluctuations.

The imposition of exchange or price controls, devaluation policies, restrictions on withdrawal of foreign exchange, other restrictions on the conversion of foreign currencies or foreign government initiatives to manage local economic conditions, including changes to or cessation of any such initiatives, could also have a material adverse effect on our business, results of operations and financial condition.

Political and economic conditions in the Middle East and other countries may adversely affect our business.

Of the development centers we maintain worldwide, two of our largest development centers are located in Israel and India. In Israel, the centers are located in several different sites, and approximately 20% of our workforce is located in Israel. As a result, we are directly influenced by the political, economic and military conditions affecting Israel and its neighboring regions. Any major hostilities involving Israel could have a material adverse effect on our business. We maintain contingency plans to provide ongoing services to our customers in the event that escalated political or military conditions disrupt our normal operations. These plans include the transfer of some development operations within Israel to several of our other sites both within and outside of Israel. Implementation of these plans could disrupt our operations and cause us to incur significant additional expenditures, which could adversely affect our business and results of operations.

Conflicts in North Africa and the Middle East, including in Egypt and Syria which border Israel, have resulted in continued political uncertainty and violence in the region. Relations between Israel and Iran continue to be seriously strained, especially with regard to Iran's nuclear program. In addition, efforts to improve Israel's relationship with the Palestinian Authority have failed to result in a permanent solution, and there have been numerous periods of hostility in recent years. Further deterioration of relations with the Palestinian Authority or other countries in the Middle East might require increased military reserve service by some of our workforce, which may have a material adverse effect on our business.

In recent years, we have expanded our operations internationally, particularly in India, Southeast Asia and Latin America. Conducting business in these and other countries involves unique challenges, including political instability, threats of terrorism, the transparency, consistency and effectiveness of business regulation, business corruption, the protection of intellectual property, and the availability of sufficient qualified local personnel. Any of these or other challenges associated with operating in these countries may adversely affect our business or operations. Terrorist activity in India and Pakistan has contributed to tensions between those countries and our operations in India may be adversely affected by future political and other events in the region.

If we are unable to protect our proprietary technology from misappropriation, our business may be harmed.

Any misappropriation of our technology or the development of competitive technology could seriously harm our business. Our software and software systems are largely comprised of software and systems we have developed or acquired and that we regard as proprietary. We rely upon a combination of trademarks, patents, contractual rights, trade secret law, copyrights, non-disclosure agreements and other methods to protect our proprietary rights. We enter into non-disclosure and confidentiality agreements with our customers, workforce and marketing representatives and with certain contractors with access to sensitive information, and we also limit our customer access to the source codes of our software and our software systems. We have undertaken, and will continue to undertake, appropriate actions to protect our technology. The ability to develop and use our software and software systems requires knowledge and professional experience that we believe is unique to us and would be very difficult for others to independently obtain. However, our competitors may independently develop technologies that are substantially equivalent or superior to ours.

The steps we have taken to protect our proprietary rights may be inadequate. If so, we might not be able to prevent others from using what we regard as our technology to compete with us. Existing trade secret, copyright

and trademark laws offer only limited protection. In addition, the laws of some foreign countries do not protect our proprietary technology or allow enforcement of confidentiality covenants to the same extent as the laws of the United States.

If we have to resort to legal proceedings to enforce our intellectual property rights, the proceedings could be burdensome, protracted and expensive and could involve a high degree of risk.

Claims by others that we infringe their proprietary technology and trade secrets could harm our business and subject us to potentially burdensome litigation.

Our software and software systems are the results of long and complex development processes, and although our technology is not significantly dependent on patents or licenses from third parties, certain aspects of our products make use of software components that we license from third parties, including our employees and contractors. As a developer of complex software systems, third parties may claim that portions of our systems violate their intellectual property rights.

Software developers, including us, have been and are becoming increasingly subject to infringement claims as the number of products and competitors providing software and services to the communications industry increases and overlaps occur. In addition, patent infringement claims are increasingly being asserted by patent holding companies, which do not use the technology subject to their patents, and whose sole business is to enforce patents against companies, such as us, for monetary gain. Any claim of infringement by a third party could cause us to incur substantial costs defending against the claim and could distract our management from our business. Furthermore, a party making such a claim, if successful, could secure a judgment that requires us to pay substantial damages. A judgment could also include an injunction or other court order that could prevent us from selling our products or offering our services, or prevent a customer from continuing to use our products. For example, during fiscal year 2019 we paid the settlement amount of \$50 million and \$5 million in legal and other fees which were accrued as of September 2018, in connection with a lawsuit against certain of our subsidiaries alleging breach of contract and trade secret misappropriation. See “Legal Proceedings” for further details. We also support service providers and media companies with respect to digital content services, which could subject us to claims related to such services. Our entry into the digital content services market has also subjected us to possible claims of infringement of the ownership rights to media content, for example, as well as to direct legal claims from retail consumers arising from the delivery of such services.

If anyone asserts a claim against us relating to proprietary technology or information, we might seek to license their intellectual property. We might not, however, be able to obtain a license on commercially reasonable terms or on any terms. In addition, any efforts to develop non-infringing technology could be unsuccessful. Our failure to obtain the necessary licenses or other rights or to develop non-infringing technology could prevent us from selling our products and could therefore seriously harm our business.

Product defects, software errors, or service failures could adversely affect our business.

Design defects or software errors may cause delays in product introductions and project implementations and damage customer satisfaction, and may have a material adverse effect on our business, results of operations and financial condition. Our software products are highly complex and may, from time to time, contain design defects or software errors that may be difficult to detect and correct.

Because our products are generally used by our customers to perform critical business functions, design defects, software errors, misuse of our products, incorrect data from external sources, failures to comply with our service obligations or other potential problems within or outside of our control may arise during implementation or from the use of our products and services, and may result in financial or other damages to our customers, for which we may be held responsible. Although we have license and service agreements with our customers that contain provisions designed to limit our exposure to potential claims and liabilities arising from customer

problems, these provisions may not effectively protect us against such claims in all cases and in all jurisdictions. In addition, as a result of business and other considerations, we may undertake to compensate our customers for damages caused to them arising from the use of our products and services, even if our liability is limited by a license or other agreement. Claims and liabilities arising from customer problems could also damage our reputation, adversely affecting our business, results of operations and financial condition and the ability to obtain “Errors and Omissions” insurance.

Our use of “open source” software could adversely affect our ability to sell our services and subject us to possible litigation.

We use open source software in providing our solutions, and we may use additional open source software in the future. Such open source software is generally licensed by its authors or other third parties under open source licenses. Under such licenses, if we engage in certain defined manners of use, we may be subject to certain conditions, including requirements that we offer our solutions that incorporate the open source software for no cost; that we make available source code for modifications or derivative works we create based upon, incorporating or using the open source software; and/or that we license such modifications or derivative works under the terms of the particular open source license. In addition, if a third-party software provider has incorporated open source software into software that we license from such provider in a manner that triggers one or more of the above requirements, we could be required to disclose any of our source code that incorporates or is a modification of such licensed software. If an author or other third party that distributes such open source software were to allege that we had not complied with the conditions of one or more of these licenses, we could be required to incur significant legal expenses defending such allegations and could be subject to significant damages, enjoined from the sale of our solutions that contained the open source software, and required to comply with the foregoing conditions, which could disrupt the distribution and sale of some of our solutions. In addition, generally open source software licenses do not contain any warranties and may not have available support from the authors or third parties from whom we license it from. If such open source software contains prior defects, security vulnerabilities or infringes any third party right or we are unable to obtain or provide necessary support, we could be exposed to legal claims and significant legal expenses without the ability to seek contribution from the authors or third parties from whom we license open source software.

System disruptions and failures may result in customer dissatisfaction, customer loss or both, which could materially and adversely affect our reputation and business.

Our systems are an integral part of our customers’ business operations. The continued and uninterrupted performance of these systems for our customers is critical to our success. Customers may become dissatisfied by any system failure that interrupts our ability to provide services to them.

Our ability to serve our customers depends on our ability to protect our systems and infrastructure against damage from fire, power loss, water damage, telecommunications and technology failure, cyber-attacks, earthquake, severe weather conditions, terrorist attacks, vandalism and other similar unexpected adverse events. We also depend on various cloud providers and co-location datacenter providers which provide us environments, tools and applications on which we provide our products. Although we maintain insurance that we believe is appropriate for our business and industry, such coverage may not be sufficient to compensate for any significant losses that may occur as a result of any of these events. In addition, we have experienced systems outages and service interruptions in the past, none of which has had a material adverse effect on us. However, a prolonged system-wide outage or frequent outages for our infrastructure or our cloud providers’ infrastructure could cause harm to our customers and to our reputation and reduce the attractiveness of our services significantly, which could result in decreased demand for our products and services and could cause our customers to make claims against us for damages allegedly resulting from an outage or interruption. Any damage or failure that interrupts or delays our operations could result in material harm to our business and expose us to material liabilities.

Changes in the tax legislation policies and regulations imposed by the jurisdictions in which we operate, the termination or reduction of certain government programs and tax benefits, or challenges by tax authorities of our tax positions could adversely affect our overall effective tax rate.

There can be no assurance that our effective tax rate of 15.6% for the year ended September 30, 2019 will not change over time as a result of changes in corporate income tax rates or other changes in the tax laws of Guernsey, the jurisdiction in which our holding company is organized, or of the various countries in which we operate. Any changes in tax laws could have an adverse impact on our financial results.

For example, there is growing pressure in many jurisdictions and from multinational organizations such as the Organization for Economic Cooperation and Development (OECD) and the EU to amend existing international taxation rules in order to align the tax regimes with current global business practices. Specifically, in October 2015, the OECD published its final package of measures for reform of the international tax rules as a product of its Base Erosion and Profit Shifting (BEPS) initiative, which was endorsed by the G20 finance ministers. Many of the initiatives in the BEPS package required and resulted in specific amendments to the domestic tax legislation of various jurisdictions and to existing tax treaties. We continuously monitor these developments. Although many of the BEPS measures have already been implemented or are currently being implemented globally (including, in certain cases, through adoption of the OECD's 'multilateral convention' to effect changes to tax treaties which entered into force on July 1, 2018 and through the European Union's 'Anti Tax Avoidance' Directives), it is still difficult in some cases to assess to what extent these changes would impact our tax liabilities in the jurisdictions in which we conduct our business or to what extent they may impact the way in which we conduct our business or our effective tax rate due to the unpredictability and interdependency of these potential changes. Further, in January 2019 the OECD announced further work in continuation of the BEPS project, focusing on two 'pillars'. The first 'pillar' attempts to reach an international consensus on the allocation of international taxing rights in light of the challenges posed by the digitization of the economy. The second 'pillar' will focus on remaining BEPS issues. Given these developments, it is generally expected that tax authorities in various jurisdictions in which we operate might increase their audit activity and might seek to challenge some of the tax positions we have adopted. It is difficult to assess if and to what extent such challenges, if raised, might impact our effective tax rate. In addition, following the screening by the EU Code of Conduct Group on Business Taxation ("COCG") of third country jurisdictions to assess their compliance for tax purposes, Guernsey was found to be a co-operative jurisdiction. However, the COCG has requested that Guernsey, along with a number of other jurisdictions, take further steps to ensure that its tax system does not facilitate offshore structures which attract profits without real economic activity. Legislation introducing economic substance requirements for companies in the Crown Dependencies was approved by the respective parliaments in December 2018. The legislation applies to all companies resident for tax purposes in the Crown Dependencies and is effective for accounting periods commencing on or after January 1, 2019. The regulations require companies to demonstrate that they have sufficient substance in Guernsey via a series of requirements, or tests. Amdocs is monitoring the developments closely to ensure that the Company is compliant with the various requirements.

Further, the recently enacted U.S. Tax Cuts and Jobs Act of 2017 (the Tax Act) significantly changed how corporations are taxed in the United States. The application of the Tax Act is subject to certain uncertainties. The Tax Act includes certain provisions that may increase our overall tax liabilities. Certain provisions of the Tax Act have applied to us from fiscal year 2018, while other provisions of the Tax Act have become applicable to us from our fiscal year 2019. We have implemented certain steps to optimize our global tax structure, but there can be no assurance that our global tax liabilities would not increase as a result of the Tax Act. In addition, due to the uncertainty involved in applying certain provisions of the Tax Act to our group, we made reasonable estimates for the effects on our financial statements. The U.S. Treasury Department, the Internal Revenue Service and other standards-setting bodies may issue guidance on how the provisions of the Tax Act will be applied that is different from our interpretation. The Tax Act requires complex computations not previously required or produced, and significant judgments and assumptions in the interpretation of the law were made in producing our provisional estimates. As we continue our analyses, and interpret any additional guidance, we may adjust the

provisional amounts we have recorded, and those adjustments may materially impact our provision for income taxes in the period in which the adjustments are made.

The market price of our ordinary shares has and may continue to fluctuate widely.

The market price of our ordinary shares has from time to time fluctuated widely and may continue to do so. Many factors could cause the market price of our ordinary shares to rise and fall, including:

- market conditions in the industry and the economy as a whole,
- variations in our quarterly operating results,
- changes in our backlog levels,
- announcements of technological innovations by us or our competitors,
- announcements by any of our key customers,
- introductions of new products and services or new pricing policies by us or our competitors,
- trends in the communications, media or software industries, including industry consolidation,
- acquisitions or strategic alliances by us or others in our industry,
- changes in estimates of our performance or recommendations by financial analysts, institutions and other market professionals
- changes in our shareholder base, and
- political developments in the Middle East or other areas of the world.

In addition, the stock market frequently experiences significant price and volume fluctuations. In the past, market fluctuations have, from time to time, particularly affected the market prices of the securities of many high technology companies. These broad market fluctuations could adversely affect the market price of our ordinary shares.

It may be difficult for our shareholders to enforce any judgment obtained in the United States against us or our affiliates.

We are incorporated under the laws of the Island of Guernsey and a majority of our directors and executive officers are not citizens or residents of the United States. A significant portion of our assets and the assets of those persons are located outside the United States. As a result, it may not be possible for investors to effect service of process upon us within the United States or upon such persons outside their jurisdiction of residence. Also, we have been advised that there is doubt as to the enforceability in Guernsey of judgments of the United States courts of civil liabilities predicated solely upon the laws of the United States, including the federal securities laws.

ITEM 4. INFORMATION ON THE COMPANY

History, Development and Organizational Structure of Amdocs

Amdocs Limited was organized as a company with limited liability under the laws of the Island of Guernsey in 1988. Since 1995, Amdocs Limited has been a holding company for the various subsidiaries that conduct our business on a worldwide basis. Our global business is providing software and services solutions to leading communications and media companies in North America, Europe and the rest of the world. Our registered office is Hirzel House, Smith Street, St. Peter Port, Guernsey, GY1 2NG, and the telephone number at that location is +44-1481-728444.

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The executive offices of our principal subsidiary in the United States are located at 1390 Timberlake Manor Parkway, Chesterfield, Missouri 63017, and the telephone number at that location is +1-314-212-8328.

Our subsidiaries are organized under and subject to the laws of several countries. Our principal operating subsidiaries are in Canada, Cyprus, India, Ireland, Israel, Switzerland, the United Kingdom and the United States. Please see Exhibit 8 to this Annual Report on Form 20-F for a listing of our significant subsidiaries.

As part of our strategy, we have pursued and may continue to pursue acquisitions and other initiatives in order to offer new products or services or otherwise enhance our market position or strategic strengths. In recent years, we have completed numerous acquisitions, which, among other things, have expanded our business into digital commerce solutions and other digital offerings, software design and development and the media and entertainment domain. In January 2016, we acquired cVidya Networks, Inc., a vendor of revenue assurance and fraud management solutions, which adds to our capabilities in the area of revenue guard and fraud management. Additionally, in September 2016, we acquired Vindicia, Inc., a software-as-a-service subscription management and payment solution provider, BriteBill Group Limited, a provider of personalized digital interactive billing services and Pontis, Inc., a provider of contextual digital engagement solutions, enabling us to expand our digital offerings. In July 2017, we acquired Kenzan Media, LLC, a software engineering services company that provides customized, end-to-end solutions focusing on digital transformation, and platform-as-a-service and cloud-native application development using DevOps and microservices. In November 2017, we acquired projekt202, a leader in experience-driven software design and development. In February 2018, we acquired Vubiquity, a leading provider of premium digital content services and technology solutions, in order to further expand our capabilities in the world of media and entertainment which is increasingly converging with our traditional domain of communications. Also in February 2018, we acquired UXP Systems, a leader in user lifecycle management, to enhance our capabilities around digital identity, user entitlements, personalization, and privacy, including consent management. In August 2019, we acquired TTS Wireless, a provider of mobile network engineering services, specializing in network optimization and planning, to further expand our 5G capabilities and help operators accelerate and simplify deployment of 5G networks with comprehensive network rollout solutions.

As the result of our organic growth and acquisitions, our workforce has increased over the last three years from an approximate average workforce of 24,237 in fiscal 2017 to 24,516 in fiscal 2019. In the past, our workforce has fluctuated with changes in business conditions.

Our principal capital expenditures for fiscal 2019 and 2018 have been for computer equipment in our operating facilities and development centers, for which we spent approximately \$110 million and \$118 million, respectively and the development of our new campus in Israel for which we spent approximately \$7 million (which is net of proceed of \$9.7 million relating to refund of betterment levy) and \$96 million, respectively. In 2017, our principal capital expenditures have been for computer equipment in our operating facilities and development centers, for which we spent approximately \$114 million.

Business Overview

Amdocs is a leading provider of software and services for more than 350 communications, Pay TV, entertainment and media industry and other service providers in developed countries and emerging markets. Our customers include some of the largest telecommunications companies in the world (including America Movil, AT&T, Bell Canada, Singtel, Sprint, Telefonica, Telstra, T-Mobile and Vodafone), as well as cable and satellite providers (including Altice USA, Charter, Comcast, DISH, J:COM, Rogers Communications and Sky), small to mid-sized communications businesses and mobile virtual network enablers/mobile virtual network operators and directory publishers and other providers of media and other services. Amdocs also has technology and distribution ties to more than 600 content creators to bring premium content to over 1,000 video distributors worldwide, including Verizon, Turner and Warner Bros.

Our software and services, which we develop, implement and manage, are designed to meet the business imperatives of our customers. Our offerings are based on a product and services mix, using technologies and

methodologies such as cloud, microservices, DevOps, open source, bimodal operations, Site Reliability Engineering (SRE) and increasing amounts of automation through standard information technology (IT) tools, open APIs and artificial intelligence. As a result, our offerings enable service providers to efficiently and cost-effectively introduce new products and services, process orders, monetize data and content, support new business models and generally enhance their understanding of their customers. Our technology, design-led thinking approach and expertise help service providers to further transform into digital service providers, enhance their entertainment offerings, and serve their customers across all channels. In order to fulfill our responsibilities to our customers, we sometimes engage third-party vendors and system integrators providing complementary products and services, including hardware and software.

We are able to offer customers superior products and services on a worldwide basis, in large part because of our highly qualified and trained technical, engineering, sales, marketing, consulting, and management personnel. We combine deep industry knowledge and experience, advanced methodologies, industry best practices and pre-configured tools to help deliver consistent results and minimize our customers' risks. We invest significantly in the ongoing training of our personnel in key areas such as industry knowledge, software technologies and management capabilities. Based in significant part on the skills and knowledge of our workforce, we believe that we have developed a reputation for reliably delivering quality solutions.

We believe the demand for our solutions is driven by our clients continued transformation into digital service providers to provide wireless access services, content and applications (apps) on any device through digital and non-digital channels. It is also driven by the trend towards integrated service offerings which we believe is leading to increased merger and acquisition activity among our customers who then require systems consolidation, which we provide, to ensure a consistent customer experience at all touchpoints. Our solutions enable service providers to help their consumer and enterprise and business-to-business (B2B) customers navigate the increasing number of devices, services, partner services and plans available in today's digital world and the need of service providers to cope with the rapidly growing demand for content and data that these devices and services create, as well as to compete with over-the-top (OTT)-focused players. Regardless of whether service providers are bringing their first offerings to market, scaling for growth, consolidating systems or transforming the way they do business, we believe that they seek to differentiate themselves by delivering a customer experience that is simple, personal, contextual and valuable at every point of engagement and across all channels.

We invest time and resources to identify and address cybersecurity risks, including risks that our customers face with regard to our systems, products or services. We have established policies and procedures, based on industry best practices, to protect the integrity and security of our products and services. We work with our customers and use overlapping controls to defend against cybersecurity attacks and threats on networks, end-user devices, servers, applications, data and our cloud solutions. In addition, we utilize a combination of educational tools to foster a culture of security awareness and responsibility among our workforce.

In addition to the business value we provide to our customers, we also aim to create value for society: we believe we are a leading provider of sustainable products and services. For example, our network functions virtualization and orchestration solutions are designed to help service providers shift away from costly, space and energy-consuming hardware components, by delivering software-driven capabilities; our mobile financial services solutions are designed to help the unbanked and underbanked to manage their finances, transfer money, shop, buy and pay bills using just their phone, and our eSIM platform enables service providers and users to simply and digitally activate connected devices without the production, transportation and manual processes associated with traditional connectivity. We also take consumer privacy and security seriously and have made it a priority to address the impact of our products and services on both, in order to meet consumer expectations, as well as regulatory demands.

Our business is conducted on a global basis. We maintain development and support facilities worldwide, including Brazil, Canada, Cyprus, India, Ireland, Israel, Mexico, the Philippines, the United Kingdom and the United States and have operations in North America, Europe, Israel, Latin America, Africa and the Asia-Pacific region.

Industry Background

We believe service providers will maintain a strong focus on growing new revenue streams, cost reduction and driving more efficient operations, and that the trends of ongoing digital transformation, network virtualization, and consolidation within the industry will continue. This is due to service providers seeking to become full-service integrated carriers, providing their customers with a rich portfolio of offerings including core communications; media, advertising and entertainment; enterprise enablement; Internet of Things (IoT) and digital lifestyle services. The smartphone and associated communications and entertainment apps, other connected devices such as tablets, e-readers, wearables, and improvements in IoT technology continue to drive unprecedented growth in the demand for multi-modal customer engagement capabilities and data. In response to the demand for digital experiences, service providers are continuing to focus on providing digital services, as well as enriching their offerings with integrated partner services. Service providers are also beginning to introduce 5G, investing in their networks, and virtualizing them, to meet the demand for increased bandwidth, faster pace of innovation for new digital services, as well as to improve their business and operational agility and optimize and monetize their investments in such services.

OTT-focused players and device manufacturers continue to penetrate the communications market and are also competing for customer attention in the entertainment market, while traditional content creators are looking to stream their content direct-to-consumer (D2C). Additionally, social networks such as Facebook and Twitter, alongside OTT-focused players such as Snapchat and WhatsApp, have become widely-accepted alternatives to traditional voice communications and are also providing video streaming services. To meet the challenges from new competitors, service providers are developing cooperative partnerships with OTT-focused players to improve the customer experience as well as vertically integrating with content creators. Pay TV providers are moving toward more OTT and on-demand video services in their need to respond to customers' on-demand experience expectations. As the business-to-consumer (B2C) domain is crowded with disruptors and heightened competition from OTT players, service providers are also looking to strengthen their standing with enterprise customers, explore new opportunities in the wholesale market and provide IoT services to new vertical market segments, such as the home, health and automotive industries.

To capture new revenue streams, service providers are expanding within existing and non-traditional business models and deploying new network technologies such as 5G. We believe service providers will continue to place an emphasis on network virtualization and on modernization and transformation projects for their networks and operational and business systems as they seek to offer innovative new services for both enterprise customers and individual consumers and monetize these new capabilities.

We believe these factors create significant opportunities for vendors of information technology software products and providers of managed services and end-to-end systems integration, such as Amdocs.

Business Strategy

Our goal is to provide software and services solutions and support to communications and media companies of all sizes as they strive to deliver digital engagements and remain competitive. We seek to accomplish our goal by pursuing the strategies described below.

- *Focus on the Communications and Media Industry.* We focus our resources and efforts primarily on providing customer experience solutions to service providers in the communications and media industry. We consider our longstanding and continuing focus on this industry a competitive advantage. This strategy has enabled us to develop the specialized industry know-how and capability necessary to deliver the technologically advanced, large-scale, specifications-intensive solutions required by the leading wireless, wireline, broadband, cable and satellite companies as well as provide targeted point solutions for service providers of all sizes. These strengths have enabled us to diversify our customer base and expand our offering domains and may continue to provide us with opportunities to expand within other vertical segment markets.
- *Target Industry Leaders.* We intend to continue to direct our marketing efforts primarily toward communications and media industry leaders and contenders. By targeting such leading service providers, which require the most sophisticated and relevant solutions, we believe that we are better

able to remain at the forefront of developments in the industry. We believe that the development of this customer base has helped position us as a market leader.

- *Continued Expansion into New Geographies and Emerging Markets.* We seek to grow our customer base by expanding into new markets inside the regions we currently serve and serving the needs of service providers operating in emerging markets. While we have a strong presence overall in developed markets such as Europe, there are countries in which we believe we can further expand our presence. In fiscal 2019, for example, we succeeded in growing our activities in the Italian market. We are also in the Russian market and expanding our presence in other geographies such as Africa. In emerging markets, prepaid subscriber growth remains high and average revenue per user remains relatively low in comparison to more developed markets. In order to increase subscriber revenue, service providers are focusing on customer experience and on increasing capacity, particularly for data and content offerings, as key competitive differentiators. Our existing and prospective customers in these markets vary dramatically, with some service providers serving subscriber bases already numbering in the hundreds of millions and others introducing communications services to communities for the first time. We believe this shift in focus to customer experience and on increasing bandwidth and providing content helps to create the wide spectrum of emerging market service providers that require offerings ranging from relatively low-cost systems with pre-packaged services that can be implemented rapidly, to more robust services, to complete customer experience solutions.
- *Provide Customers with an Open and Dynamic Portfolio.* With amdocsONE, we seek to provide our customers with an open and dynamic portfolio, available on an open, modular, cloud-native architecture and deployed using best practice DevOps to help them deliver a customer experience that is simple, personal and valuable at every point of service. We provide solutions across digital business systems and legacy business and operational support systems (BSS/OSS) and network domains and multiple lines of business, including wireline, wireless, broadband, cable, satellite services and digital services. Integration of our systems is achieved through a central, cloud-native catalog, built on an open, API-first and microservices-based approach to enable third-party integration. We believe that our ability to provide a broad, open, dynamic and modular portfolio helps position us as a strategic partner for our customers as they continue to transform into digital service providers and provides us with multiple avenues for strengthening and expanding our ongoing customer relationships.
- *Expand Our Managed Services Capabilities.* We seek to assume responsibility for the operation, development and management of our customers' Amdocs systems, as well as systems developed by in-house IT departments or by other vendors. Our mandate can extend across the service provider's entire IT and network environment and encompass key business process operational needs. Many of these projects involve what we call managed transformations: a multi-year project in which we modernize legacy systems while operating them, and then continue to provide managed services once the transformation is complete. Our customers receive predictable service levels based on agreed-upon key performance indicators, as well as improved efficiencies and long-term savings over the day-to-day costs of operating and maintaining these systems, as well as an improved end-user experience, so they can focus on their own internal strengths and strategy to grow their business, leaving system concerns to us. Managed services also benefit us, as they can be a source of predictable revenue and long-term relationships.
- *Develop and Maintain Long-Term Customer Relationships.* We seek to develop and maintain long-term, mutually beneficial relationships with our customers, and have organized our internal operations to better anticipate and respond to our customers' needs. We believe these relationships can lead to additional product and services sales, including products and services from recent acquisitions which have expanded our offering, as well as ongoing, long-term support, system enhancement, modernization and maintenance and managed services agreements. We believe that such relationships are facilitated in many cases by the mission-critical, strategic nature of Amdocs systems and by the added value we provide through our specialized skills and knowledge. We believe that the longevity of our customer relationships and the recurring revenue that such relationships produce provide a competitive advantage for us.

amdocsONE

In the second quarter of fiscal 2018, we relaunched our business offerings as amdocsONE. amdocsONE is designed to meet the challenges facing our customers as they transform into digital service providers within the framework of a hybrid IT environment, which requires them to rapidly introduce new cloud-native applications while still operating legacy systems. It enables modular expansion as a service provider evolves, ensuring low-cost and reduced-risk implementations, while its microservices-based architecture enables the rapid deployment of complex applications as suites of independently deployable services that can be frequently upgraded via DevOps. With amdocsONE's modular structure, our customers have the flexibility to choose business offerings that address their specific needs and improve their time to market. In the third quarter of fiscal 2019, we released the amdocsONE summer edition, a seasonal update consolidating the latest developments and innovation practices across the various portfolio domains.

As part of amdocsONE, we offer a comprehensive line of services designed to address every stage of a service provider's lifecycle, from planning, delivery and implementation to ongoing support. Our services include end-to-end systems integration services, managed services, testing (which we refer to as quality engineering), data and intelligence services, cloud services, digital business operations and consulting services. Using artificial intelligence and predictive analytics, as well as automation and machine learning, our managed services enable faster time to market for new services as well as the cost-effective management of existing offerings. Our adoption of SRE methodology helps provide more agile and reliable operations and also includes dedicated tools that automate tasks that would traditionally require various software development skills. Managed services provide multi-year, flexible and tailored managed services across all verticals, managing IT, business processes and applications services, including application development and maintenance, operations, IT and infrastructure hosting, cloud services and legacy modernization. Our professional services are designed to assist customers in the selection, implementation, operation, management, modernization and maintenance of their IT, network and content systems. As a lead systems integrator, we assume end-to-end responsibility to monitor, manage and deploy the overall development and integration activities of Amdocs and third-party vendors throughout the transformation lifecycle and business as usual state.

Meeting our Customers' Business Imperatives

amdocsONE consists of a combination of software and services that address service providers' business and operational needs. Our software and services solutions support the full span of the customer relationship.

The key service provider business imperatives addressed by amdocsONE are:

- *Consumer experience and monetization:* Our cloud-native modular solutions are designed to address service providers' need to differentiate in a hyper-competitive consumer market, as disruptors continuously emerge, and consumer expectations are ever-changing. We support service providers in their goals to grow loyalty by personalizing care and commerce and to provide a seamless digital experience across all channels. Our digital-native platform is designed to enable service providers to modernize their customer experience and monetization systems on the cloud. Our 5G-ready, cloud-native monetization offerings enable service providers to launch new types of multi-play, multi-partner offers, with the flexible payment methods needed to capture new revenues in the digital economy.
- *Media and digital services:* Our solutions are designed to enable service providers to build rich, premium content offerings for their customers, accessing large libraries of premium licensed content, securely processed and distributed across any channel, device type or geography. Through content aggregation, localization and compliance management, metadata creation, encoding, distribution, asset management and delivery, our solutions help service providers and premium content owners monetize content through a variety of commercial models. Our solutions enable service providers to monetize OTT offerings by providing full partner lifecycle management, including onboarding, revenue sharing, settlement and reporting, along with a complete set of subscription and digital identity management capabilities.

- *Enterprise and connected society:* These offerings allow service providers to drive better experiences across their B2B customer journeys and accelerate growth by offering services beyond connectivity. At the sales phase, our lead-to-order solution facilitates, secures and helps process opportunities into orders. Our configure-price-quote systems supports generating accurate and validated quotes and once the customer order is placed, our zero-touch ordering and fulfillment solutions eliminate manual handling and order fallouts. When the order relates to connectivity, our solutions boost the time to activation – whether for traditional connectivity such as fiber, mobile such as eSIM, or new generation connectivity such as SD-WAN. Our NFV/SDN offering includes a large partner ecosystem of virtual network functions (VNFs) and provides upsell opportunities with services such as security, web filtering or vCPE. Our full business enablement suite for enterprise customers also includes functions such as white-label billing, settlement or partner management as well as a large portfolio of competencies to support migration to cloud-native, microservices-based environments.
- *Open cloud networks:* These offerings comprise standards-based software solutions to enable service lifecycle management across hybrid physical, virtual and cloud networks, allowing service providers to automate network operations and simplify the introduction of NFV and value-added services into existing and next generation networks, including 5G and edge-computing systems. Amdocs NFV powered by ONAP (the Linux Foundation's Open Network Automation Platform) features software and services capabilities to orchestrate multi-vendor VNFs over virtual infrastructures and public clouds such as Amazon Web Services (AWS) and Microsoft Azure, automating VNF onboarding to enable the design, testing and launching of new network services in weeks rather than months, and supporting a live view of services and resources. The Amdocs Open 5G suite of solutions enables service providers to deploy, manage and monetize 5G networks. We also provide operational support systems for fixed line, broadband, wireless and cable TV networks. The offerings facilitate network operational processes, including network planning and rollout across multiple technologies such as fiber, small cell and LTE, essential for 5G readiness, service fulfillment and assurance, inventory management, order orchestration and activation of new services through automation. Our integrated suite of network optimization software and services is designed to help service providers plan, build, launch, manage and optimize their mobile networks. Vendor and technology agnostic, this offering affords service providers the analytics and services capabilities needed to maximize network investments, accelerate and automate the roll out and upgrade of network technologies, and optimize network performance and capacity.
- *New domains and disruptions:* These offerings enable service providers to expand into new domains and disrupt traditional practices. Our eSIM cloud platform enables service providers to launch IoT solutions, while our advanced cyber-security service helps protect and manage enterprises. We also enable innovative commerce and payment solutions with our mobile financial services and help service providers become a truly data-driven organization with offerings for data management, data analytics and customer journey management and recommendations.
- *Services and hybrid operations:* Our solutions are designed to enable service providers to introduce intelligence and automation into their operations to accelerate innovation, agility and efficiency; optimize data for intelligence-driven analytics; effectively manage multi-dimensional, dynamic hybrid operations; embark on their cloud and IT modernization paths and prevent revenue loss. Using open source, third-party solutions and Amdocs' unique IP, including tools and methodologies around artificial intelligence, SRE, predictive analytics and machine learning, these services span both Amdocs products and third-party software and can be rapidly deployed through DevOps capabilities and are focused on delivering clear business value as well as reducing costs.

Our broad suite of services, which also form part of amdocsONE, range from advisory services through solution development and business operations to managed services and training, and the extent of services provided varies from customer to customer. Our services engagements can range in size and scope and include advising customers on business and technical strategy, designing and implementing particular business solutions,

managing specific business operations processes, adopting DevOps, migrating applications to the cloud and orchestrating large-scale transformation projects. We also provide end-to-end application development and maintenance, from ideation to deployment, managing all steps of the development lifecycle, supporting bi-modal development methodologies, as well as ongoing maintenance. In addition, we are generally retained by the customer to provide ongoing services, such as maintenance, enhancement design and development and operational support, or to act as a lead systems integrator for post-production activities that may include interfaces with third-party and legacy systems. For a substantial number of our customers, the implementation and integration of an initial system has been followed by the sale of additional systems and modules. We aim to establish long-term maintenance and support contracts with our customers. These contracts generally involve an expansion in the scope of support delivered and provide us with recurring revenue.

Our key services are:

- *Managed Services* — We seek to transform traditional managed services towards autonomous operations, while continuing to manage legacy systems. This includes rapid deployment of new services through DevOps capabilities, modernization of legacy systems, cloud and infrastructure services, while maintaining ongoing IT operations. Using open source, third-party solutions and Amdocs' unique IP around artificial intelligence, predictive analytics and machine learning, as well as a unique adaptation of SRE methodologies, this suite of services spans both Amdocs products and non-Amdocs, third-party software.
- *Digital Business Operations* — We offer a suite of services for automating and digitalizing business operations, including order to activation and other business processes. These services combine domain-specific expertise and advanced technologies such as robotic process automation, predictive analytics, machine learning and technology with real-time, end-to-end visibility over any business process regardless of underlying silos. We aim to improve customer experience, decrease handling time, reduce OPEX and shorten time to introduce digital channels and new services.
- *Quality Engineering Services* — We offer industry-specific quality assurance services, and a global presence, to help our customers reduce operational costs, enhance innovation and ensure the desired end-user experience, leveraging our advanced automation, intelligence and machine learning tools that form part of our 36ONE platform.
- *Cloud Services* — We provide a set of services to help design, build, implement and manage cloud solutions, including through AWS and Microsoft Azure. These services include cloud consulting, which is primarily delivered by experts from our Kenzan acquisition. Our cloud migration services move applications and IT systems to the cloud, and also implement changes to processes, culture and teams, enabling our customers to leverage the capabilities of the cloud to meet their business goals. With data migration to the cloud, we help improve the accessibility of data to enable faster, timelier AI-driven analytics. This provides customers with the ability to better leverage their data, with more users having access to more data, thereby enabling greater value to be achieved through analytics.
- *Consulting Services* — We provide business and top-level technology strategy consulting services for both Amdocs and non-Amdocs systems. Our consultants understand the service provider's environment and bring with them the experience we accumulated when modernizing our own Amdocs product lines and re-skilling our people to master hybrids of the legacy and the new. Using expertise from recent acquisitions, we also provide experts in specific niches, such as the marketing consultancy practice acquired in the Pontis acquisition, the user experience (UX) experts from projekt202 and the digital software engineering and platform development experts from Kenzan.
- *Integration Services* — We offer integration design and implementation services to help bridge between modern digital channels and a customer's existing legacy back-end and third-party systems. We also offer a unique integration platform as a service (IPaaS) solution, which is a cloud, hybrid or on-premise integration platform built specifically for the unique challenges of the communications and media industry, enabling modernization with minimal impact on the systems of record and other legacy systems.

- *Data & Intelligence Services* — We offer advanced, insightful data and analytics services, powered by our IP around customer data and our logical data model designed for the communications service provider. From strategy and consulting through optimizing and modernizing data ecosystems and migration to the cloud, our services deliver self-service business intelligence (BI) reporting, dashboards and efficient data monetization.

In addition, amdocsONE includes revenue guard services designed to ensure faster, more accurate detection and resolution of revenue leakage, fraud and cyber fraud; the BriteBill multi-channel bill presentment platform focused on providing clarity in billing, creating a digital engagement channel with customers, and generating upsell opportunities. We also provide advertising and media offerings for media publishers, TV networks, video streaming providers, advertising agencies and service providers. Our OpenMarket business provides A2P (application-to-person) text messaging solutions.

Technology

Our portfolio architecture allows our applications to work in multiple customer environments.

To help service providers respond more quickly to changes in their markets, we embrace an open and integrated approach to our technology built on the following key principles:

- *Design led.* Adopting design-led principles and methodologies across software applications to ensure improved and optimized customer experiences.
- *API enabled.* Leveraging domain-driven design to expose APIs across key applications and ensure consumption and interaction between applications is easily enabled. It exposes the Amdocs portfolio application programming interfaces to external systems, allowing our applications to integrate with each other and with third-party applications.
- *Cloud flexibility.* Architected to run in public and on-premise cloud environments.
- *Microservices.* Developing highly granular, lightweight distributed software architecture, shipped and delivered using containers and orchestrated using Kubernetes, the industry-leading cluster management for containers.
- *Scalability.* Designed to take full advantage of the capabilities of the underlying platform, allowing progressive system expansion, proportional with increases in business volumes. Using the same software, our applications can support operations for small and very large service providers.
- *Reliability.* System and component architecture supports high availability and redundancy to allow connected and uninterrupted operations at full network utilization and device load.
- *Modularity.* Applications can be installed on an individual standalone basis, interfacing with the customer's existing systems, or as part of an integrated Amdocs system environment. We believe this modularity provides our customers with a highly flexible solution that is able to incrementally expand with the customer's growing needs and capabilities.
- *Upgradability and Backwards Compatibility.* Version interoperability eliminates risky upgrades and allows for a gradual upgrade approach of suite elements.
- *Virtualization.* Business agility improves with virtualization as it allows introduction of new services rapidly. Moreover, virtualization reduces cost by improving resource utilization, and by automating processes.
- *Open Source Software.* Enabling rapid time to market and lower-cost functionality introduction, our software leverages open-source components to encourage standardization and improved quality where possible. Amdocs is playing a central role in the development of The Linux Foundation's ONAP, an advanced open source solution for the telecommunications industry.

- *Service-Oriented Architecture*. SOA enables improved flow of information, rapid function development, easier scaling and simplified introduction of new services.

Sales and Marketing

Our sales and marketing activities are primarily directed at major communications and media companies.

As a result of the strategic importance of our amdocsONE solutions to the operations of service providers, a number of constituencies within a customer's organization are typically involved in purchasing decisions, including senior management, information systems personnel and user groups, such as the finance, customer service and marketing departments.

Our sales activities are supported by marketing efforts and increasing cooperation with strategic partners. We interact with other third parties in our sales activities, including independent sales agents, information systems consultants engaged by customers and system integrators that provide complementary products and services. We also have value-added reseller agreements with leading hardware and software vendors. Our sales and marketing activities also support projects with partner companies, such as Amazon Web Services, Microsoft, Intel, Google, Redhat, Dell EMC and VMware, Adobe, Nokia, Hewlett Packard Enterprise and IBM.

Customers

Our target market is comprised of service providers in the communications and media industry that require customer experience solutions with advanced functionality and technology. The companies in our target segment are typically market leaders. By working with such companies, we help ensure that we remain at the forefront of developments in the industry and that our product offerings continue to address the market's most sophisticated needs. We have a global orientation and customers in over 85 countries.

Our customers include service providers, such as:

A1 Bulgaria	POST Luxembourg
A1 Telekom Austria	Proximus
Airtel	Red Carpet Home Cinema
Altice SFR	Reliance Communications
Altice USA	Rogers Communications
America Movil	Rostelecom
Astro	Safaricom
AT&T	Sensis
AT&T Mexico	Singtel
Bell Canada	Sky Italia
Bharat Sanchar Nigam Limited	Smart
Botswana Telecommunications Corporation	Sprint
BT	Sunrise Telecom
Cable & Wireless	Telefónica Argentina
Capita Business Services	Telefónica Brasil (Vivo)
Cellcom	Telefónica Chile
CenturyLink	Telefónica Peru
Charter Communications	Telefónica SA
Claro Brasil	Telenet
Claro Chile	Telia Norway
Claro Dominican Republic	Telia Sweden
Claro Puerto Rico	Telkom South Africa
Comcast	Telkomsel
Deutsche Telekom	Telstra
Digital TV Cable	TELUS Communications

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Dish Network	Three Ireland (Hutchison) Limited
EE	TIM
Elisa	TIM Brasil
EPIX (an MGM company)	T-Mobile US
Eros Now	True Corporation
FarEasTone	Turner
Foxtel	UPC Broadband
Globe Telecom	US Cellular
J:COM	UTS
Kazakhtelecom	VEON
Kcell	Verizon
KCOM	Viacom
KPN	Virgin Media
KT Corporation	Vodafone Germany
Kyivstar	Vodafone Hungary
M1	Vodafone Idea
Magyar Telekom	Vodafone Ireland
Maxis	Vodafone Italy
MTS	Vodafone Qatar
NFL Digital Media	Vodafone Romania
Oi	Vodafone Spain
Optus	Vodafone UK
Orange Belgium	VodafoneZiggo
Orange Spain	Warner Bros
PLDT	XL Axiata

Our business is dependent on a limited number of significant customers, of which AT&T has historically been our largest. AT&T accounted for 23% and 27% of our revenue in fiscal 2019 and 2018, respectively. Aggregate revenue derived from the multiple business arrangements we have with the ten largest of our significant customers accounted for approximately 65% of our revenue in fiscal 2019 and 66% in fiscal 2018. See “Risk Factors — *Our business is dependent on a limited number of significant customers, and the loss of any one of our significant customers could harm our results of operations.*”

The following is a summary of revenue by geographic area. Revenue is attributed to geographic region based on the location of the customer:

	<u>2019</u>	<u>2018</u>	<u>2017</u>
North America	63.2%	64.2%	65.9%
Europe	14.7%	14.4%	12.6%
Rest of the World	22.1%	21.4%	21.5%

Competition

The market for customer experience solutions in the communications and media industry continues to become more competitive. Amdocs’ competitive landscape is comprised of internal IT departments of our customers, as well as independent competitors or new entrants that may compete broadly with us or in limited segments of our market, and can be generally categorized as follows:

- providers of BSS/OSS and customer relationship management (CRM)/digital systems, including CSG International, Optiva, Oracle, Pegasystems, Salesforce, Vlocity and SAP;
- system integrators and providers of IT services, such as Accenture, Cognizant, DXC Technology, IBM Global Services, Infosys, Tata Consultancy Services, Tech Mahindra and Wipro (some of whom we also cooperate with in certain opportunities and projects);

- network equipment providers such as Ericsson, Huawei, Nokia Networks, and NEC and its subsidiary Netcracker (some of whom we also cooperate with in certain opportunities and projects and some of whom have also moved into the BSS/OSS space);
- niche domain players, often start-up companies, who compete against particular parts of our portfolio, such as Matrixx, Openet in charging; Hansen (Sigma) in catalog; Aria, Stripe, Zuora in subscription billing; Forgerock and Okta in identity management; Deluxe Entertainment and iNDemand in Media.

We expect the competition in our industry to increase from many of such companies.

We believe that we are able to differentiate ourselves from these competitors by, among other things:

- applying our over 35-year heritage to the development and delivery of products and professional services that enable our customers to overcome their challenges and achieve service differentiation by providing a personalized and intelligent customer experience, shaping the quality of network experience and simplifying the complexity of the operating environment,
- continuing to design and develop solutions targeted specifically to the communications and media industry,
- innovating and enabling our customers to adopt new business models that will improve their ability to drive new revenues, and compete and win in a changing market,
- providing high-availability, high-quality, reliable, scalable, integrated and modular applications, leveraging cloud technology, artificial intelligence and new software development and deployment options,
- providing flexible and tailored IT and business process outsourcing solutions and delivery models, and
- offering customers end-to-end accountability from a single vendor.

Employees

We invest significant resources in the training, retention and motivation of high-quality personnel. Training programs cover areas such as technology, applications, development methodology, project methodology, programming standards, industry background, business, management development and leadership. Our management development efforts are reinforced by an organizational structure that provides opportunities for talented managers to gain experience in general management roles. We also invest considerable resources in personnel motivation, including providing various incentive plans for sales staff and high-quality employees. Our future success depends in large part upon our continuing ability to attract and retain highly qualified managerial, technical, sales and marketing personnel and outstanding leaders. Moreover, we are committed to diversity and inclusion, believing a gender diverse, multi-cultural workforce spread across the globe provides strength and a competitive business advantage.

See “Directors, Senior Management and Employees — Workforce Personnel” for further details regarding our employees and our relationships with them.

Property, Plants and Equipment

Facilities

We lease land and buildings for our executive offices, sales, marketing, administrative, development and support centers. We lease an aggregate of approximately 3.4 million square feet worldwide, including significant leases in the United States, Israel, Canada, Cyprus, India, Philippines, United Kingdom and Mexico. The following table summarizes information with respect to the principal facilities leased by us and our subsidiaries as of September 30, 2019:

<u>Location</u>	<u>Area (Sq. Feet)</u>
United States:	
Champaign, IL	111,267
St. Louis, MO	56,215
Burbank, CA	56,005
Seattle, WA	27,157
Eldorado Hills, CA	9,817
Others	264,878
Total	525,339
Israel:	
Ra'anana	901,327
Sderot	143,192
Nazareth	25,919
Others	5,436
Total	1,075,874
Canada:	
Montreal	60,274
Toronto	44,470
Ottawa	40,422
Total	145,166
Cyprus (Limassol)	110,868
India:	
Pune	892,178
Delhi	204,062
Mumbai	4,400
Total	1,100,640
Philippines	103,135
United Kingdom	75,875
Mexico	70,934
Other locations (21 countries)	201,109
Total	3,408,940

Our leases expire on various dates through 2035, not including various options to terminate or extend lease terms. In December 2017, the Company entered into agreements with Union Investments and Development Limited ("Union") to partner through a legal entity that would be equally owned by the Company and Union for the purpose of acquiring land which the Company intends to use as the site for a new campus in Ra'anana, Israel that we believe will provide an advanced, optimal working environment that can meet the needs of Amdocs Israel and its employees, and support the Company's future growth. The design for the new campus is in accordance with LEED requirements and includes advanced energy and water saving systems.

Equipment

We develop amdocsONE solutions over a system of UNIX, Linux, Windows servers owned or leased by us, as well as over cloud providers. We use a variety of software products in our development centers, including products by Microsoft, Oracle, Syncsort, Red Hat, CA, IBM, Hewlett-Packard or others. Our data storage is based mainly on equipment from EMC, NetApp, IBM, Hitachi and Hewlett-Packard.

ITEM 4A. UNRESOLVED STAFF COMMENTS

Not applicable.

ITEM 5. OPERATING AND FINANCIAL REVIEW AND PROSPECTS

Overview of Business and Trend Information

Amdocs is a leading provider of software and services for communications and media industry service providers in both developed countries and emerging markets. Regardless of whether service providers are bringing their first offerings to market, scaling for growth, consolidating systems or transforming the way they do business, we believe that service providers seek to differentiate their offerings by delivering a customer experience that is simple, personal, contextual and valuable at every point of engagement and across all channels.

We develop, implement and manage software and services designed to meet the business imperatives of our customers. Our technology, design-led thinking approach and expertise help service providers to further transform into digital service providers, enhance their entertainment offerings, and serve their customers across all channels. amdocsONE, our open and dynamic portfolio, enables service providers to accelerate their continuous digital transformation.

In a global communications and media industry impacted by unprecedented growth in data demand, an increasing number of connected devices, improvement in IoT technologies, and the rising influence of device makers, social networks and OTT players that bypass traditional service providers, consumers expect immediate and constant connectivity to a wide array of personalized services, information and applications. To capture new revenue streams, service providers are continuing to transform to become digital service providers, investing in their networks to meet the demand for increased bandwidth and are searching for ways to provide new services, particularly around content. We seek to address these market forces through a strategy of innovation from the network and digital business systems to the device and end user, leveraging cloud-native microservices technologies for high velocity time to market, delivering in fast DevOps sprints, with full accountability, to control costs, bring optimal scope and drive agility. Our goal is to supply cost-effective, modular, scalable and open software products and services that provide functionality and flexibility to service providers as they and their markets grow and change.

In part, we have sought, through acquisitions, to expand our service offerings and customer base and to enhance our ability to provide managed services to our customers. In recent years, we have completed numerous acquisitions (including our fiscal 2017 acquisition of Kenzan, our fiscal 2018 acquisitions of projekt202, UXP Systems and Vubiquity and our fiscal 2019 acquisition of TTS Wireless), which, among other things, we believe will enable us to expand our digital offerings, network capabilities and technological expertise. As part of our strategy, we may continue to pursue acquisitions and other initiatives in order to offer new products or services, enter into new vertical markets or otherwise enhance our market position or strategic strengths.

amdocsONE

Our amdocsONE portfolio consists of software and services that address service providers' business and operational needs. Its open, modular and integrated solution set introduces a rich group of capabilities built on cloud-native, microservices and machine-learning technologies, and is delivered based on modern DevOps practices. amdocsONE is designed to meet the business imperatives of our customers who are transforming into

digital service providers within the framework of a hybrid IT environment, which requires them to rapidly introduce new cloud-native applications while still operating legacy systems.

Our comprehensive line of services is designed to address every stage of a service provider's lifecycle. They include consulting services, managed services, digital business operations, quality engineering services, cloud services, integration services and data and intelligence services. Our managed services provide multi-year, flexible and tailored business processes and applications services, including application development, modernization and maintenance, IT and infrastructure services, testing and professional services that are designed to assist customers in the selection, implementation, operation, management and maintenance of their IT systems.

We conduct our business globally, and as a result we are subject to the effects of global economic conditions and, in particular, market conditions in the communications and media industry. In fiscal 2019, customers in North America accounted for 63.2% of our revenue, while customers in Europe and the rest of the world accounted for 14.7% and 22.1%, respectively. We maintain development facilities in Brazil, Canada, Cyprus, India, Ireland, Israel, Mexico, the Philippines, the United Kingdom and the United States. Historically, AT&T has been our largest customer, accounting for 23% and 27% of our revenue in fiscal 2019 and 2018, respectively. Aggregate revenue derived from the multiple business arrangements we have with our ten largest customers accounted for approximately 65% of our revenue in fiscal 2019 and 66% in fiscal 2018. We believe that demand for our solutions is primarily driven by the following key factors:

- Transformation within the communications and media industry, including:
 - continued transformation of service providers to digital service providers,
 - increasing use of communications and content services,
 - widespread access to content, information and applications,
 - continued growth in Latin America and Southeast Asia,
 - expansion into new lines of business,
 - consolidation among service providers in established markets, often including companies with multinational operations,
 - increased competition, including from non-traditional players,
 - continued bundling and blending of communications and entertainment, and
 - continued commoditization and pricing pressure.
- Technology advances, such as:
 - wide-scale foundational technology changes including the leveraging of open-source, cloud-enabled and cloud-native operating infrastructure, microservices-based architecture, API-based ecosystems, and aggressive digital modernization transformations,
 - evolving service provider business models and opportunities like OTT partnerships, content development and offerings, advertising, enterprise and small- or medium-sized business modernization, and innovative consumer bundling solutions,
 - network evolution in order to support growing technology needs associated with Internet of Things (IoT), autonomous vehicles and augmented and virtual reality,
 - new communications technologies such as 5G wireless technology, eSIM, long range (LoRa), Narrowband IoT (NB-IOT), network functions virtualization (NFV), network automation and edge computing,
 - emerging initiatives like artificial intelligence, including machine learning (ML) and natural language processing (NLP) and blockchain.

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- Customer focus, such as:
 - the need for service providers to personalize the customer's experience and provide contextual and personalized engagements at all points in their omni-channel customer journey,
 - increasing customer expectations for new, innovative services and applications that are personally relevant and that can be accessed anytime, anywhere and from any device, and
 - the ever-increasing expectations for service and support, including proactive multi-modal customer care and commerce.
- The need for operational efficiency, including:
 - the shift from in-house management to vendor solutions,
 - business needs of service providers to reduce costs and lower total cost of ownership of software systems while retaining high-value customers in a highly competitive environment,
 - automating, introducing artificial intelligence, and integrating business processes that span service providers' business systems and network solutions,
 - implementing and integrating new next-generation networks (and retiring legacy networks) to deploy new technologies, and
 - transforming fragmented legacy OSS to introduce new services in a timely and cost-effective manner.

Revenue from managed services arrangements is a significant part of our business generating substantial, long-term recurring revenue streams and cash flow. Revenue from managed services arrangements accounted for approximately \$2.25 billion and \$2.05 billion of revenue in fiscal 2019 and 2018, respectively. In managed services contracts revenue from the operation of a customer's system is recognized as services are performed based on time elapsed, output produced or volume of data processed. In the initial period of our managed services projects, we often invest in modernization and consolidation of the customer's systems. Managed services engagements can be less profitable in their early stages; however, margins tend to improve over time, and this improvement is seen more rapidly in the initial period of an engagement, as we derive benefit from the operational efficiencies and from changes in the geographical mix of our resources.

Research and Development, Patents and Licenses

Our research and development activities involve the development of new software architecture, modules and product offerings in response to an identified market demand. We also expend additional amounts on applied research and software development activities to keep abreast of new technologies in the communications and media markets and to provide new and enhanced functionality to our existing product offerings. We leverage leading-edge development technologies and associated technologies, for example, DevOps, Continuous Integration/Continuous Development (CI/CD) and Agile, to ensure we are able to develop and deliver our solutions efficiently and cost-effectively.

Substantially all of our research and development expenditures are directed at our solutions. In recent years, we have also invested our research and development efforts in network control, optimization and orchestration and network functions virtualization technologies; applications to enable service providers to deploy and monetize technologies such as fiber, LTE, 5G, small cells and Wi-Fi; big data analytics and intelligence capabilities leveraging natural language processing and artificial intelligence toward consumer and business satisfaction, marketing effectiveness and network operations and experience; increased focused for the business segment, digital, commerce and entertainment domains, platforms for processing, distributing and monetizing content globally and on foundational technologies including microservices and cloud infrastructure readiness. We believe that our research and development efforts are a key element of our strategy and are essential to our

success. However, an increase or a decrease in our total revenue would not necessarily result in a proportional increase or decrease in the levels of our research and development expenditures, which could affect our operating margin.

Our products are largely comprised of software and systems that we have developed or acquired and that we regard as proprietary. In recent years, we have invested in adopting open source components in an effort to reduce total cost of ownership for our customers, but our software and software systems remain the results of long, robust and intensive development processes. Although our technology is not significantly dependent on patents or licenses from third parties, certain aspects of our products continue to make use of software components licensed from third parties. As a developer of complex software systems, third parties may claim that portions of our systems infringe their intellectual property rights. The ability to develop and use our software and software systems requires knowledge and professional experience that we believe would be very difficult for others to independently obtain. However, our competitors may independently develop technologies that are substantially equivalent or superior to ours. We have taken, and intend to continue to take, several measures to establish and protect our proprietary rights in our products and technologies from third-party infringement. We rely upon a combination of trademarks, patents, contractual rights, trade secret law, copyrights and non-disclosure agreements. We enter into non-disclosure and confidentiality agreements with our customers, employees and marketing representatives and with certain contractors with access to sensitive information; and we also limit customer access to the source code of our software and software systems.

Operating Results

The following table sets forth for the fiscal years ended September 30, 2019, 2018 and 2017, certain items in our consolidated statements of income reflected as a percentage of revenue (figures may not sum because of rounding):

	Year Ended September 30,		
	2019	2018	2017
Revenue	100%	100%	100%
Operating expenses:			
Cost of revenue	64.9	65.3	64.8
Research and development	6.7	7.0	6.7
Selling, general and administrative	12.1	12.1	12.2
Amortization of purchased intangible assets and other	2.4	2.7	2.9
Non-recurring charges	—	2.1	—
	<u>86.1</u>	<u>89.2</u>	<u>86.6</u>
Operating income	13.9	10.8	13.4
Interest and other expense, net	0.0	0.2	0.1
Income before income taxes	13.9	10.6	13.3
Income taxes	2.2	1.7	2.0
Net income	<u>11.7%</u>	<u>8.9%</u>	<u>11.3%</u>

Fiscal Years Ended September 30, 2019 and 2018

The following is a tabular presentation of our results of operations for the fiscal year ended September 30, 2019, compared to the fiscal year ended September 30, 2018. Following the table is a discussion and analysis of our business and results of operations for these fiscal years.

	Year Ended September 30,		Increase (Decrease)	
	2019	2018	Amount	%
	(In thousands)			
Revenue	\$4,086,669	\$3,974,837	\$ 111,832	2.8%
Operating expenses:				
Cost of revenue	2,653,172	2,595,276	57,896	2.2
Research and development	273,936	276,615	(2,679)	(1.0)
Selling, general and administrative	492,457	481,093	11,364	2.4
Amortization of purchased intangible assets and other	97,358	108,489	(11,131)	(10.3)
Non-recurring charges	—	85,057	(85,057)	(100)
	<u>3,516,923</u>	<u>3,546,530</u>	<u>(29,607)</u>	<u>(0.8)</u>
Operating income	569,746	428,307	141,439	33.0
Interest and other expense, net	1,859	6,766	(4,907)	(72.5)
Income before income taxes	567,887	421,541	146,346	34.7
Income taxes	88,441	67,145	21,296	31.7
Net income	<u>\$ 479,446</u>	<u>\$ 354,396</u>	<u>\$ 125,050</u>	<u>35.3%</u>

Revenue. Revenue increased by \$111.8 million, or 2.8%, to \$4,086.7 million in fiscal year 2019, from \$3,974.8 million in fiscal year 2018. The increase in revenue was attributable to increased managed services including managed transformation activities. Revenue for the year ended September 30, 2019 increased by 4.1% compared to fiscal year ended September 30, 2018, excluding approximately 1.3% negative foreign exchange fluctuations impact, and was also positively affected by activities related to acquisitions completed in fiscal year 2018 and to a lesser extent 2019 acquisition.

In fiscal year 2019, revenue from customers in North America, Europe and the rest of the world accounted for 63.2%, 14.7% and 22.1%, respectively, of total revenue, compared to 64.2%, 14.4% and 21.4%, respectively, in fiscal year 2018. Revenue from customers in North America increased during the fiscal year 2019, while total revenue increased at a higher rate, which resulted in a decrease of revenue from customers in North America as a percentage of total revenue. The increase in revenue from customers in North America in absolute amounts was primarily attributable to higher revenue from key customers in North America as we support the continuous digital transformation of the region's communications, Pay TV and media companies and by activities related to fiscal year 2018 acquisitions, partially offset by lower revenue with AT&T. Revenue from customers in Europe increased in fiscal year 2019, despite negative foreign exchange fluctuations, primarily as a result of higher revenue from development and modernization activities while we expand our presence in this region. Revenue from customers in the rest of the world increased in fiscal year 2019, despite negative foreign exchange fluctuations, as a result of our expansion and progress of managed transformations activities for customers in the rest of the world.

Cost of Revenue. Cost of revenue consists primarily of costs associated with providing services to customers, including compensation expense and costs of third-party products, as well as fee and royalty payments to software suppliers. Cost of revenue increased by \$57.9 million, or 2.2%, to \$2,653.2 million in fiscal year 2019, from \$2,595.3 million in fiscal year 2018. As a percentage of revenue, cost of revenue decreased to 64.9% in fiscal year 2019 from 65.3% in fiscal year 2018. The Cost of revenue increase was commensurate with revenue growth, excluding the impact of changes of certain acquisition-related liabilities measured at fair value recognized in the fiscal years 2019 and 2018 in total amount of \$2.2 million and \$17.7 million, respectively.

Research and Development. Research and development expense is primarily comprised of compensation expense. Research and development expense decreased by \$2.7 million, or 1.0%, to \$273.9 million in fiscal year 2019, from \$276.6 million in fiscal year 2018. Research and development expense decreased as a percentage of revenue from 7.0% in fiscal year 2018, to 6.7% in fiscal year 2019. We continue to invest in our digital offering as well as our media offering, invest in our network related innovation and in developing cloud native offering. Our research and development efforts are a key element of our strategy and are essential to our success, and we intend to maintain our commitment to research and development. An increase or a decrease in our revenue would not necessarily result in a proportional increase or decrease in the levels of our research and development expenditures, which could affect our operating margin. Please see “Research and Development, Patents and Licenses.”

Selling, General and Administrative. Selling, general and administrative expense, which is primarily comprised of compensation expense, increased by \$11.4 million, or 2.4%, to \$492.5 million in fiscal year 2019, from \$481.1 million in fiscal year 2018. The increase in selling, general and administrative expense was primarily attributable to changes in the accounts receivable allowances. Selling, general and administrative expense may fluctuate from time to time, depending upon such factors as changes in our workforce and sales efforts and the results of any operational efficiency programs that we may undertake.

Amortization of Purchased Intangible Assets and Other. Amortization of purchased intangible assets and other decreased by \$11.1 million, or 10.3%, to \$97.4 million in fiscal year 2019, from \$108.5 million in fiscal year 2018. The decrease in amortization of purchased intangible assets and other was primarily attributable to a completion of amortization of previously purchased intangible assets, partially offset by an increase in amortization of intangible assets due to acquisitions completed in fiscal years 2019 and 2018.

Non-recurring Charges. There were no non-recurring charges in fiscal year 2019, while there were \$85.1 million of such charges in fiscal year 2018. The non-recurring charges in fiscal year 2018 were primarily associated to a loss incurred to settle a long-running legal dispute and restructuring charges which were primarily associated with recently completed acquisitions and internal business realignment actions in North America. Please see Note 10 to our consolidated financial statements.

Operating Income. Operating income increased by \$141.4 million, or 33.0%, to \$569.7 million in fiscal year 2019, from \$428.3 million in fiscal year 2018. Operating income increased as a percentage of revenue, from 10.8% in fiscal year 2018 to 13.9% in fiscal year 2019. The increase in operating income was attributable primarily to revenue growth surpassing operating expenses growth in fiscal year 2019 as well as non-recurring charges recognized fiscal year 2018. Negative foreign exchange impacts on our revenue were partially offset by the foreign exchange reduction impact on our operating expense, resulting in a negative impact on our operating income.

Interest and Other Expense, Net. Interest and other expense, net, changed from a net loss of \$6.8 million in fiscal year 2018 to a net loss of \$1.9 million in fiscal year 2019. The decrease in Interest and other expense, was primarily attributable to the realized and unrealized net gains relating to minority equity investments.

Income Taxes. Income taxes for fiscal year 2019 were \$88.4 million on pre-tax income of \$567.9 million, resulting in an effective tax rate of 15.6%, compared to 15.9% in fiscal year 2018. Our effective tax rate may fluctuate between periods as a result of discrete items that may affect a particular period. Please see Note 11 to our consolidated financial statements.

Net Income. Net income increased by \$125.1 million, or 35.3%, to \$479.4 million in fiscal year 2019, from \$354.4 million in fiscal year 2018. The increase in net income was primarily attributable to the increase in Operating Income partially offset by increase in Income Taxes.

Diluted Earnings Per Share. Diluted earnings per share increased by \$1.00, or 40.5%, to \$3.47 in fiscal year 2019, from \$2.47 in fiscal year 2018. The increase in diluted earnings per share was primarily attributable to

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the increase in net income as well as to the decrease in the diluted weighted average number of shares outstanding which resulted from share repurchases. Please see also Note 20 to our consolidated financial statements.

Fiscal Years Ended September 30, 2018 and 2017

The following is a tabular presentation of our results of operations for the fiscal year ended September 30, 2018, compared to the fiscal year ended September 30, 2017. Following the table is a discussion and analysis of our business and results of operations for these fiscal years.

	Year Ended September 30,		Increase (Decrease)	
	2018	2017	Amount	%
	(In thousands)			
Revenue	\$ 3,974,837	\$ 3,867,155	\$ 107,682	2.8%
Operating expenses:				
Cost of revenue	2,595,276	2,507,656	87,620	3.5
Research and development	276,615	259,097	17,518	6.8
Selling, general and administrative	481,093	472,778	8,315	1.8
Amortization of purchased intangible assets and other	108,489	110,291	(1,802)	(1.6)
Non-recurring charges	85,057	—	85,057	100
	<u>3,546,530</u>	<u>3,349,822</u>	<u>196,708</u>	<u>5.9</u>
Operating income	428,307	517,333	(89,026)	(17.2)
Interest and other (expense) income, net	(6,766)	(4,421)	(2,345)	53.0
Income before income taxes	421,541	512,912	(91,371)	(17.8)
Income taxes	67,145	76,086	(8,941)	(11.8)
Net income	<u>\$ 354,396</u>	<u>\$ 436,826</u>	<u>\$ (82,430)</u>	<u>(18.9)%</u>

Revenue. Revenue increased by \$107.7 million, or 2.8%, to \$3,974.8 million in fiscal year 2018, from \$3,867.2 million in fiscal year 2017. The majority of increase in revenue, which was net of a revenue decrease from the sale of directory systems, was attributable to increased activity in Europe, and to a lesser extent in the rest of the world. The 2.8% increase in revenue, was positively affected by activity related to acquisitions in fiscal year 2018, as well as approximately half percent from foreign exchange fluctuations.

Revenue attributable to the sale of amdocsONE increased by \$121.0 million, or 3.2%, to \$3,930.1 million in fiscal year 2018, from \$3,809.1 million in fiscal year 2017. The majority of increase in revenue was attributable to increased activity in Europe, and to a lesser extent in the rest of the world. Revenue resulting from the sale of amdocsONE represented 98.9% and 98.5% of our total revenue in fiscal years 2018 and 2017, respectively.

Revenue attributable to the sale of directory systems decreased by \$13.4 million, or 23.1%, to \$44.7 million in fiscal year 2018, from \$58.1 million in fiscal year 2017. This decrease was primarily attributable to continued slowness in the directory systems market and we anticipate revenue from the sale of directory systems will continue to decline in fiscal year 2019. Revenue from the sale of directory systems represented 1.1% and 1.5% of our total revenue in fiscal years 2018 and 2017, respectively.

In fiscal year 2018, revenue from customers in North America, Europe and the rest of the world accounted for 64.2%, 14.4% and 21.4%, respectively, of total revenue, compared to 65.9%, 12.6% and 21.5%, respectively, in fiscal year 2017. Revenue from customers in North America slightly increased in fiscal year 2018, while total revenue increased at a higher rate, which resulted in a decrease of revenue from customers in North America as a percentage of total revenue. The decrease in the percentage of revenue from customers in North America was primarily attributable to lower activity with AT&T. The decrease was partially offset by higher revenue from

other key customers in North America as we support the continuous digital transformation of the region's communications, Pay TV and media companies and by activities related to fiscal year 2018 acquisitions. The increase in revenue from customers in Europe was primarily attributable to higher revenue from development and modernization activities, while we expand our presence in this region, as well as to positive foreign exchange fluctuations.

Revenue from customers in the rest of the world increased in fiscal year 2018, while total revenue increased at a higher rate, which resulted in similar level of revenue from customers in the rest of the world as a percentage of total revenue. The increase in revenue from customers in the rest of the world was driven by increased activity in Asia-Pacific as a result of our progress with new and existing customers which was partially offset by lower revenue from other regions within the rest of the world.

Cost of Revenue. Cost of revenue consists primarily of costs associated with providing services to customers, including compensation expense and costs of third-party products, as well as fee and royalty payments to software suppliers. Cost of revenue increased by \$87.6 million, or 3.5%, to \$2,595.3 million in fiscal year 2018, from \$2,507.7 million in fiscal year 2017. As a percentage of revenue, cost of revenue increased to 65.3% in fiscal year 2018 from 64.8% in fiscal year 2017. The decrease in the gross margin in fiscal year 2018 compared to fiscal year 2017 was primarily attributable to a loss resulting from changes in certain acquisition-related liabilities measured at fair value recognized in fiscal year 2018 as well as to an opposite effect in fiscal year 2017 of a gain resulting from changes in certain acquisition-related liabilities measured at fair value recognized.

Excluding the changes in certain acquisition-related liabilities measured at fair value mentioned above, we were able to maintain our gross margin in fiscal year 2018.

Research and Development. Research and development expense is primarily comprised of compensation expense. Research and development expense increased by \$17.5 million, or 6.8%, to \$276.6 million in fiscal year 2018, from \$259.1 million in fiscal year 2017. Research and development expense increased as a percentage of revenue from 6.7% in fiscal year 2017, to 7.0% in fiscal year 2018. We continue to expand our digital offering as well as our media offering, invest in our network related innovation and in developing cloud native offering. Our research and development efforts are a key element of our strategy and are essential to our success, and we intend to maintain our commitment to research and development. An increase or a decrease in our revenue would not necessarily result in a proportional increase or decrease in the levels of our research and development expenditures, which could affect our operating margin. Please see "Research and Development, Patents and Licenses."

Selling, General and Administrative. Selling, general and administrative expense, which is primarily comprised of compensation expense, increased by \$8.3 million, or 1.8%, to \$481.1 million in fiscal year 2018, from \$472.8 million in fiscal year 2017. Selling, general and administrative expense decreased as a percentage of revenue from 12.2% in fiscal year 2017, to 12.1% in fiscal year 2018. Selling, general and administrative expense may fluctuate from time to time, depending upon such factors as changes in our workforce and sales efforts and the results of any operational efficiency programs that we may undertake.

Amortization of Purchased Intangible Assets and Other. Amortization of purchased intangible assets and other decreased by \$1.8 million, or 1.6%, to \$108.5 million in fiscal year 2018, from \$110.3 million in fiscal year 2017. The decrease in amortization of purchased intangible assets and other was primarily attributable to a decrease in amortization caused by fully amortized intangible assets partially offset by increase of amortization of intangible assets due to the acquisitions completed in fiscal year 2018.

Non-recurring Charges. Non-recurring charges for fiscal year 2018 were \$85.1 million, while there were no such charges in the fiscal year 2017. The non-recurring charges include a loss incurred to settle a long-running legal dispute and restructuring charges which were primarily associated with recently completed acquisitions and

internal business realignment actions in North America. Please see Note 10 to our consolidated financial statements.

Operating Income. Operating income decreased by \$89.0 million, or 17.2%, to \$428.3 million in fiscal year 2018, from \$517.3 million in fiscal year 2017. Operating income decreased as a percentage of revenue, from 13.4% in fiscal year 2017 to 10.8% in fiscal year 2018. The decrease in operating income as a percentage of revenue was attributable mainly to operating expenses, particularly to non-recurring charges recognized in fiscal year 2018. Negative foreign exchange impacts on our operating income which resulted from negative impact on our operating expenses, were partially offset by positive foreign exchange impacts on our revenue.

Interest and Other (Expense) Income, Net. Interest and other (expense) income, net, changed from a net loss of \$4.4 million in fiscal year 2017 to a net loss of \$6.8 million in fiscal year 2018. This change in interest and other (expense) income, net, was primarily attributable to foreign exchange impacts.

Income Taxes. Income taxes for fiscal year 2018 were \$67.1 million on pre-tax income of \$421.5 million, resulting in an effective tax rate of 15.9%, compared to 14.8% in fiscal year 2017. Our effective tax rate may fluctuate between periods as a result of discrete items that may affect a particular period. Please see Note 11 to our consolidated financial statements.

Net Income. Net income decreased by \$82.4 million, or 18.9%, to \$354.4 million in fiscal year 2018, from \$436.8 million in fiscal year 2017. The decrease in net income was primarily attributable to non-recurring charges recognized in fiscal year 2018.

Diluted Earnings Per Share. Diluted earnings per share decreased by \$0.49, or 16.6%, to \$2.47 in fiscal year 2018, from \$2.96 in fiscal year 2017. The decrease in diluted earnings per share was primarily attributable to non-recurring charges, partially offset by the decrease in the diluted weighted average number of shares outstanding, which resulted from share repurchases. Please see also Note 20 to our consolidated financial statements.

Liquidity and Capital Resources

Cash, Cash Equivalents and Short-Term Interest-Bearing Investments. Cash, cash equivalents and short-term interest-bearing investments, totaled \$471.6 million as of September 30, 2019, compared to \$519.2 million as of September 30, 2018. The decrease was mainly attributable to \$398.1 million used to repurchase of our ordinary shares, \$147.6 million of cash dividend payment, \$128.1 million for capital expenditures, net, \$60.6 million acquisition payment, \$7.5 million contingent consideration payment from a business acquisition and \$4.8 million payment to non-controlling interests, partially offset by \$656.4 million in positive cash flow from operations and \$41.5 million of proceeds from stock option exercises. Net cash provided by operating activities amounted to \$656.4 million and \$557.2 in fiscal years 2019 and 2018, respectively.

Our free cash for fiscal year 2019 was \$528.3 million, is calculated as net cash provided by operating activities of \$656.4 million for the period less \$128.1 million for capital expenditures, net. Our normalized free cash flow for fiscal year 2019 was \$613.5 million, is calculated as net cash provided by operating activities of \$656.4 million for the period less \$128.1 million for capital expenditures, net, excluding \$55.0 million of payments related to the settlement of the legal dispute in the U.S. District Court in Oregon, \$15.6 million of payments for the non-recurring charges for re-alignment actions in North-America, \$7.7 million of payment of acquisition related liabilities and \$6.9 million of the capital expenditures associated with the multiyear development of our new campus in Israel, (which is net of proceeds of \$9.7 million relating to the refund of betterment levy).

Free cash flow and normalized free cash flow are non-GAAP financial measures and are not prepared in accordance with, and are not alternatives for, generally accepted accounting principles and may be different from

non-GAAP financial measures with similar names used by other companies. Non-GAAP measures such as free cash flow and normalized free cash flow should only be reviewed in conjunction with the corresponding GAAP measures. We believe that the foregoing non-GAAP financial measures, when used in conjunction with the corresponding GAAP measure provide useful information to investors and management relating to the amount of cash generated by the Company's business operations.

Our policy is to retain sufficient cash balances in order to support our growth. We believe that our current cash balances, cash generated from operations, our current lines of credit and our ability to access capital markets will provide sufficient resources to meet our operational needs, fund the construction of the new campus in Israel, fund share repurchases and the payment of cash dividends for at least the next fiscal year.

As a general long-term guideline, we expect to retain a portion of our free cash flow to support the growth of our business, including possible mergers and acquisitions. In fiscal year 2020, we plan to return to shareholders roughly 100% of our normalized free cash flow (i.e. before capital expenditures associated with the multiyear development of our new campus in Israel and other items), subject to financial performance, outlook and liquidity, the size of possible mergers and acquisitions activity, financial market conditions and prevailing industry condition, (see also Note 2 to our consolidated financial statements) through our ongoing share repurchase and dividend program. While having this plan in mind, our actual share repurchase activity and payment of future dividends, if any, may vary quarterly or annually.

Our interest-bearing investments are classified as available-for-sale securities. Such short-term interest-bearing investments, if applicable, generally consist primarily of bank deposits, corporate bonds, money market funds, U.S. government treasuries, and U.S. agency securities. We believe we have conservative investment policy guidelines. Our interest-bearing investments are stated at fair value with the unrealized gains or losses reported as a separate component of accumulated other comprehensive (loss) income, net of tax, unless a security is other than temporarily impaired, in which case the loss is recorded in the consolidated statements of income. Our interest-bearing investments are priced by pricing vendors and are classified as Level 1 or Level 2 investments, since these vendors either provide a quoted market price in an active market or use other observable inputs to price these securities. During fiscal years 2019 and 2018 we did not recognize credit losses. Please see Notes 5 and 6 to our consolidated financial statements.

Revolving Credit Facility, Letters of Credit and Guarantees. In 2011, we entered into an unsecured \$500.0 million five-year revolving credit facility with a syndicate of banks. In December 2014 and in December 2017, the credit facility was amended and restated to, among other things, extend the maturity date of the facility to December 2019 and December 2022, respectively. The credit facility is available for general corporate purposes, including acquisitions and repurchases of ordinary shares that we may consider from time to time. The interest rate for borrowings under the revolving credit facility is chosen at our option from several pre-defined alternatives, depends on the circumstances of any advance and is based in part on our credit rating. In March 2017, we borrowed an aggregate of \$200.0 million under the facility and repaid it in April 2017. In March 2018, we borrowed an aggregate of \$120.0 million under the facility and repaid it in April 2018. As of September 30, 2019, we were in compliance with the financial covenants under the revolving credit facility and had no outstanding borrowings under this facility.

As of September 30, 2019, we had additional uncommitted lines of credit available for general corporate and other specific purposes and had outstanding letters of credit and bank guarantees from various banks totaling \$91.3 million. These were supported by a combination of the uncommitted lines of credit that we maintain with various banks.

Acquisitions. During fiscal year 2019, we acquired TTS Wireless for approximately \$50.0 million in cash and potential additional consideration based on the achievement of certain performance metrics. During fiscal year 2018, we acquired three technology companies to expand our digital and media offering: Vubiquity, projekt202 and UXP Systems ("UXP"), for the aggregate purchase price of \$355.1 million in cash.

Capital Expenditures. Generally, 80% to 90% of our capital expenditures (excluding the investment in our new campus in Israel) consist of purchases of computer equipment, and the remainder is attributable mainly to leasehold improvements. Our capital expenditures were approximately \$128.1 million and included proceeds, of mainly \$9.7 million relating to refund of betterment levy in fiscal year 2019. Our fiscal year 2019 capital expenditures were mainly attributable to investments in our operating facilities and our development centers around the world. Regarding our expected investment in our new campus in Israel, please see Note 2 to our consolidated financial statements.

Share Repurchases. From time to time, our Board of Directors can adopt share repurchase plans authorizing the repurchase of our outstanding ordinary shares. On November 8, 2017, our Board of Directors adopted another share repurchase plan for the repurchase of up to an additional \$800.0 million of our outstanding ordinary shares with no expiration date. In April 2018, we completed the repurchase of the remaining authorized amount of ordinary shares under the February, 2016 plan and began executing repurchases under the November 2017 plan. In fiscal year 2019, we repurchased approximately 6.7 million ordinary shares at an average price of \$59.79 per share (excluding broker and transaction fees). The November 2017 plan permits us to purchase our ordinary shares in open market or privately negotiated transactions at times and prices that we consider appropriate. As of September 30, 2019, we had remaining authority to repurchase up to \$239.2 million of our outstanding ordinary shares under the November 2017 plan. On November 12, 2019, our Board of Directors adopted another share repurchase plan for the repurchase of up to an additional \$800.0 million of our outstanding ordinary shares with no expiration date which brings the unused authorization as of September 30, 2019 to \$1,039.2 million. The authorizations permit us to purchase our ordinary shares in open market or privately negotiated transactions at times and prices that we consider appropriate.

Cash Dividends. Our Board of Directors declared the following dividends during fiscal years 2019, 2018 and 2017:

Declaration Date	Dividends Per Ordinary Share	Record Date	Total Amount (In millions)	Payment Date
August 7, 2019	\$ 0.285	September 30, 2019	\$ 38.4	October 25, 2019
May 14, 2019	\$ 0.285	June 28, 2019	\$ 38.7	July 19, 2019
February 5, 2019	\$ 0.285	March 29, 2019	\$ 39.1	April 19, 2019
November 8, 2018	\$ 0.250	December 31, 2018	\$ 34.8	January 18, 2019
July 31, 2018	\$ 0.250	September 28, 2018	\$ 35.0	October 19, 2018
May 10, 2018	\$ 0.250	June 29, 2018	\$ 35.4	July 20, 2018
January 30, 2018	\$ 0.250	March 30, 2018	\$ 35.6	April 20, 2018
November 8, 2017	\$ 0.220	December 29, 2017	\$ 31.6	January 19, 2018
August 2, 2017	\$ 0.220	September 29, 2017	\$ 31.7	October 23, 2017
May 9, 2017	\$ 0.220	June 30, 2017	\$ 32.0	July 14, 2017
February 1, 2017	\$ 0.220	March 31, 2017	\$ 32.2	April 14, 2017
November 8, 2016	\$ 0.195	December 30, 2016	\$ 28.6	January 13, 2017

On November 12, 2019, our Board of Directors approved a quarterly dividend payment of \$0.285 per share and set December 31, 2019 as the record date for determining the shareholders entitled to receive the dividend, which is payable on January 24, 2020. On November 12, 2019, our Board of Directors also approved, subject to shareholder approval at the January 2020 annual general meeting of shareholders, an increase in the quarterly cash dividend to \$0.3275 per share, anticipated to be paid in April 2020.

Our Board of Directors considers on a quarterly basis whether to declare and pay, if any, a dividend in accordance with the terms of the dividend program, subject to applicable Guernsey law and based on several factors including our financial performance, outlook and liquidity. Guernsey law requires that our Board of Directors consider a dividend's effects on our solvency before it may be declared or paid. While the Board of

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Directors will have the authority to reduce the quarterly dividend or discontinue the dividend program should it determine that doing so is in the best interests of our shareholders or is necessary pursuant to Guernsey law, any increase to the per share amount or frequency of the dividend would require shareholder approval.

Off-Balance Sheet Arrangements

We do not have any off-balance sheet arrangements.

Contractual Obligations

The following table summarizes our contractual obligations as of September 30, 2019, and the effect such obligations are expected to have on our liquidity and cash flows in future periods (in millions):

<u>Contractual Obligations</u>	<u>Payments Due by Period</u>				
	<u>Total</u>	<u>Less Than 1 Year</u>	<u>1-3 Years</u>	<u>4-5 Years</u>	<u>More Than 5 Years</u>
Pension funding	\$ 12.4	\$ 1.3	\$ 3.8	\$ 2.5	\$ 4.8
Purchase obligations	96.5	60.9	35.2	0.4	—
Non-cancelable operating leases	331.6	69.0	144.4	44.0	74.2
Total	<u>\$440.5</u>	<u>\$ 131.2</u>	<u>\$183.4</u>	<u>\$46.9</u>	<u>\$ 79.0</u>

As discussed in Note 2 to our consolidated financial statements, we purchased specific land to use as the future site of the new campus in Ra'anana, Israel and we are obligated to construct the campus. The total net investment we expect to make in connection with the construction of the new campus is estimated to be up to \$350 million over a period of four to five years, starting with fiscal year 2018, out of which approximately \$96 million was incurred in fiscal years 2018 by both us and our partner Union at equal portions (i.e. our net investment was approximately \$48 million) and \$7 million was incurred by us in fiscal year 2019. We expect to incur up to \$120 million in fiscal year 2020. Due to the difficulty in determining the exact timing of the net investment in the years beyond fiscal year 2020, the obligations to construct the campus are not included in the above table. Please see Note 2 to our consolidated financial statements.

The total amount of unrecognized tax benefits for uncertain tax positions was \$169.3 million as of September 30, 2019. Payment of these obligations would result from settlements with taxing authorities. Due to the difficulty in determining the timing of resolution of audits, these obligations are not included in the above table.

Deferred Tax Asset Valuation Allowance

As of September 30, 2019, we had deferred tax assets of \$85.5 million, which were offset by valuation allowances due to the uncertainty of realizing any tax benefit for such credits and losses. These deferred tax assets derived primarily from tax credits, net capital and operating loss carryforwards related to some of our subsidiaries, see Note 11.

Critical Accounting Policies

Our discussion and analysis of our consolidated financial condition and results of operations are based upon our consolidated financial statements, which have been prepared in accordance with U.S. generally accepted accounting principles, or GAAP. The preparation of these financial statements requires us to make estimates, assumptions and judgments that affect the reported amounts of assets, liabilities, revenue and expenses and related disclosure of contingent liabilities. On a regular basis, we evaluate and may revise our estimates. We base our estimates on historical experience and various other assumptions that we believe to be reasonable under the

circumstances, the results of which form the basis for making judgments about the carrying values of assets and liabilities that are not readily apparent. Actual results could differ materially from the estimates under different assumptions or conditions.

We believe that the estimates, assumptions and judgments involved in the accounting policies described below have the greatest potential impact on our financial statements, so we consider these to be our critical accounting policies. These policies require that we make estimates in the preparation of our financial statements as of a given date. Our critical accounting policies are as follows:

- Revenue recognition and contract accounting
- Tax accounting
- Business combinations
- Goodwill, intangible assets and long-lived assets-impairment assessment
- Derivative and hedge accounting
- Accounts receivable reserves

We discuss these policies further below, as well as the estimates and judgments involved. We also have other key accounting policies. We believe that, compared to the critical accounting policies listed above, the other policies either do not generally require us to make estimates and judgments that are as difficult or as subjective, or it is less likely that they would have a material impact on our reported consolidated results of operations for a given period.

Revenue Recognition and Contract Accounting

We derive our revenue principally from:

- the initial sales of licenses to use our products and related services, including modification, implementation, integration and customization services,
- providing managed services in our domain expertise and other related services, and
- recurring revenue from ongoing support, maintenance and enhancements provided to our customers, and from incremental license fees resulting from increases in a customer's business volume.

Revenue is recognized under the five-step methodology required under ASC 606, which requires us to identify the contract with the customer, identify the performance obligations in the contract, determine the transaction price, allocate the transaction price to the performance obligations identified, and recognize revenue when (or as) each performance obligation is satisfied.

We usually sell our software licenses as part of an overall solution offered to a customer that combines the sale of software licenses with a broad range of services, which normally include significant customization, modification, implementation and integration. Those services are deemed essential to the software. As a result, we generally recognize initial license fee and related service revenue over the course of these projects. Revenue from customization, implementation, modification and integration services is also recognized over the course of the projects. When total cost estimates exceed revenue in such project, the estimated losses are recognized immediately based upon the cost applicable to the project.

Contingent subsequent license fee revenue is recognized upon completion of specified conditions in each contract, based on a customer's subscriber or transaction volume or other measurements when greater than the level specified in the contract for the initial license fee.

Revenue from managed services arrangement is recognized for each individual performance obligation according to its relevant revenue category, including but not limited to, revenue from the management of a customer's operations, revenue from projects and revenue from ongoing support services.

Typically, managed services arrangements include management of data center operations and IT infrastructure, which include third-party hardware and software, application management and ongoing support, management of end-to-end business processes, and managed transformation that includes both a transformation project as well as taking over managed services responsibility.

Revenue from services that do not involve significant ongoing obligations is recognized as services are rendered. Revenue from other ongoing services is recognized over time as services are preformed, using one method of measuring performance such as time elapsed, output produced, volume of data processed or subscriber count that provides the most faithful depiction of the transfer of services.

Revenue from third-party hardware sales is recognized upon delivery or installation, and revenue from third-party software sales is recognized upon delivery. Maintenance revenue is recognized ratably over the term of the maintenance agreement. Revenue from third-party hardware and software sales is recorded at gross amount for transactions in which we control the third-party hardware and software before transferring them to the customer. In specific circumstances where we do not meet the above criteria, we recognize revenue on a net basis. In certain arrangements, we may earn revenue from other third-party services which is recorded at a gross amount as we control the services before transferring them to the customer.

We follow very specific and detailed guidelines, several of which are discussed above, in measuring revenue; however, certain judgments affect the application of our revenue recognition policy:

We evaluate contracts entered into at or near the same time with the same customer (or related parties of the customer) and determine if the contracts should be combined in accordance with the guidance for revenue recognition.

Significant portion of our revenue is recognized over the course of implementation and integration projects, usually based on a percentage that incurred labor effort to date bears to total projected labor effort. The recognition of revenue over time requires the exercise of judgment on a quarterly basis, such as with respect to estimates of progress-to-completion, contract revenue, loss contracts and contract costs. Progress in completing such projects may significantly affect our annual and quarterly operating results.

Our revenue recognition policy takes into consideration the creditworthiness and past transaction history of each customer in determining the probability of collection. This determination requires the exercise of judgment, which affects our revenue recognition. If we determine that a fee is not collectible, we exclude the relevant fee from transaction price.

Many of our agreements include multiple performance obligations. We allocate the transaction price for each contract to each performance obligation identified in the contract based on the relative standalone selling price (SSP). We determine SSP for the purposes of allocating the transaction price to each performance obligation by considering several external and internal factors including, but not limited to, transactions where the specific performance obligation sold separately, historical actual pricing practices and geographies in which we offer our services in accordance with ASC 606. The determination of SSP requires the exercise of judgement. If a specific performance obligation is sold for a broad range of amounts (that is, the selling price is highly variable) or if we have not yet established a price for that good or service, and the good or service has not previously been sold on a standalone basis (that is, the selling price is uncertain), we apply the residual approach whereby all other performance obligations within a contract are first allocated a portion of the transaction price based upon their respective SSPs with any residual amount of transaction price allocated to the remaining specific performance obligation.

For transactions which involve third-party hardware, software and services, the determination of revenue recognition based on the gross amount or on a net basis requires the exercise of judgement in considering whether we control the third-party hardware, software or services prior to fulfilling the performance obligation.

Tax Accounting

As part of the process of preparing our consolidated financial statements, we are required to estimate our income tax expense in each of the jurisdictions in which we operate. In the ordinary course of a global business, there are many transactions and calculations where the ultimate tax outcome is uncertain. Some of these uncertainties arise as a consequence of revenue sharing and reimbursement arrangements among related entities, the process of identifying items of revenue and expenses that qualify for preferential tax treatment and segregation of foreign and domestic income and expense to avoid double taxation. We also assess temporary differences resulting from differing treatment of items, such as deferred revenue, for tax and accounting differences. These differences result in deferred tax assets and liabilities, which are included within our consolidated balance sheet. We may record a valuation allowance to reduce our deferred tax assets to the amount of future tax benefit that is more likely than not to be realized.

Although we believe that our estimates are reasonable and that we have considered future taxable income and ongoing prudent and feasible tax strategies in estimating our tax outcome and in assessing the need for the valuation allowance, there is no assurance that the final tax outcome and the valuation allowance will not be different than those that are reflected in our historical income tax provisions and accruals. Such differences could have a material effect on our income tax provision, net income and cash balances in the period in which such determination is made.

We recognize the tax benefit from an uncertain tax position only if the weight of available evidence indicates that it is more likely than not that the position will be sustained on audit, including resolution of related appeals or litigation processes, if any. The tax benefits recognized in the financial statements from such a position should be measured based on the largest benefit that has a greater than 50% likelihood of being realized upon ultimate settlement.

Significant judgment is required in evaluating our uncertain tax positions and determining our provision for income taxes. Although we believe our reserves are reasonable, no assurance can be given that the final tax outcome of these matters will not be different from that which is reflected in our historical income tax provisions and accruals. We adjust these reserves in light of changing facts and circumstances, such as the closing of a tax audit, or changes in tax law. To the extent that the final tax outcome of these matters is different than the amounts recorded, such differences will affect the provision for income taxes in the period in which such determination is made. The provision for income taxes includes the effect of reserve provisions and changes to reserves that are considered appropriate, as well as the related net interest.

We have filed or are in the process of filing tax returns that are subject to audit by the respective tax authorities. Although the ultimate outcome is unknown, we believe that any adjustments that may result from tax return audits are not likely to have a material, adverse effect on our consolidated results of operations, financial condition or cash flows.

Business Combinations

In accordance with business combinations accounting, assets acquired and liabilities assumed, as well as any contingent consideration that may be part of the acquisition agreement, are recorded at their respective fair values at the date of acquisition. For acquisitions that include contingent consideration, the fair value is estimated on the acquisition date as the present value of the expected contingent payments, determined using weighted probabilities of possible payments. We remeasure the fair value of the contingent consideration at each reporting period until the contingency is resolved. Except for measurement period adjustments, the changes in fair value are recognized in the consolidated statements of income.

In accordance with business combinations accounting, we allocate the purchase price of acquired companies to the tangible and intangible assets acquired and liabilities assumed, as well as to in-process research and development based on their estimated fair values. Such valuations require management to make significant estimates and assumptions, especially with respect to intangible assets. As a result of the significant judgments that need to be made, we obtain the assistance of independent valuation firms. We complete these assessments as soon as practical after the closing dates. Any excess of the purchase price over the estimated fair values of the identifiable net assets acquired is recorded as goodwill.

Although we believe the assumptions and estimates of fair value we have made in the past have been reasonable and appropriate, they are based in part on historical experience and information obtained from the management of the acquired companies and are inherently uncertain and subject to refinement. Critical estimates in valuing certain assets acquired and liabilities assumed include but are not limited to: future expected cash flows from license and service sales, maintenance, customer contracts and acquired developed technologies, expected costs to develop the in-process research and development into commercially viable products and estimated cash flows from the projects when completed and the acquired company's brand awareness and discount rate. Unanticipated events and circumstances may occur that may affect the accuracy or validity of such assumptions, estimates or actual results. 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, if the changes are related to conditions that existed at the time of the acquisition. 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, based on events that occurred subsequent to the acquisition date, are recorded in our consolidated statements of income.

We estimate the fair values of our services, hardware, software license and maintenance obligations assumed. The estimated fair values of these performance obligations are determined utilizing a cost build-up approach. The cost build-up approach determines fair value by estimating the costs related to fulfilling the obligations plus a normal profit margin.

As discussed above under "Tax Accounting", we may establish a valuation allowance for certain deferred tax assets and estimate the value of uncertain tax positions of a newly acquired entity. This process requires significant judgment and analysis.

Goodwill, Intangible Assets and Long-Lived Assets — Impairment Assessment

Goodwill is measured as the excess of the cost of a business acquisition over the sum of the amounts assigned to tangible and identifiable intangible assets acquired less liabilities assumed. Goodwill is subject to periodic impairment tests. Goodwill impairment is deemed to exist if the net book value of a reporting unit exceeds its estimated fair value. The goodwill impairment test involves a two-step process. The first step, identifying a potential impairment, compares the fair value of a reporting unit with its carrying amount, including goodwill. If the carrying value of the reporting unit exceeds its fair value, the second step would need to be conducted; otherwise, no further steps are necessary as no potential impairment exists. The second step, measuring the impairment loss, compares the implied fair value of the reporting unit goodwill with the carrying amount of that goodwill. Any excess of the reporting unit goodwill carrying value over the respective implied fair value is recognized as an impairment loss.

We perform an annual goodwill impairment test during the fourth quarter of each fiscal year, or more frequently if impairment indicators are present. We operate in one operating segment, and this segment comprises our only reporting unit. In calculating the fair value of the reporting unit, we used our market capitalization and a discounted cash flow methodology. There was no impairment of goodwill in fiscal years 2019, 2018 or 2017.

We test long-lived assets, including definite life intangible assets, for impairment in the event an indication of impairment exists. Impairment indicators include any significant changes in the manner of our use of the

assets or the strategy of our overall business, significant negative industry or economic trends and significant decline in our share price for a sustained period. If the sum of expected future cash flows (undiscounted and without interest charges) of the long-lived assets is less than the carrying amount of such assets, an impairment would be recognized, and the assets would be written down to their estimated fair values, based on expected future discounted cash flows. There was no impairment of long-lived assets in fiscal years 2019, 2018 or 2017.

Derivative and Hedge Accounting

During fiscal years 2019, 2018 and 2017, approximately 70% to 80% of our revenue and 50% to 60% of our operating expenses were denominated in U.S. dollars or linked to the U.S. dollar. We enter into foreign exchange forward contracts and options to hedge a significant portion of our foreign currency net exposure resulting from revenue and expense in major foreign currencies in which we operate, in order to reduce the impact of foreign currency on our results. We also enter into foreign exchange forward contracts and options to reduce the impact of foreign currency on balance sheet items. The effective portion of changes in the fair value of forward exchange contracts and options that are classified as cash flow hedges are recorded in other comprehensive income (loss). We estimate the fair value of such derivative contracts by reference to forward and spot rates quoted in active markets.

Establishing and accounting for foreign exchange contracts involve judgments, such as determining the fair value of the contracts, determining the nature of the exposure, assessing its amount and timing, and evaluating the effectiveness of the hedging arrangement.

Although we believe that our estimates are accurate and meet the requirement of hedge accounting, if actual results differ from these estimates, such difference could cause fluctuation of our recorded revenue and expenses.

Accounts Receivable Reserves

The allowance for doubtful accounts is for estimated losses resulting from accounts receivable for which their collection is not reasonably assured. We evaluate accounts receivable to determine if they ultimately will be collected. Significant judgments and estimates are involved in performing this evaluation, which we base on factors that may affect a customer's ability and intent to pay, such as past experience, credit quality of the customer, age of the receivable balance and current economic conditions. If the fee is not collectible at the time the transaction is consummated, we exclude the relevant fee from the transaction price. If we estimate that our customers' ability and intent to make payments have been impaired, additional allowances may be required.

Within the context of these critical accounting policies, we are not currently aware of any reasonably likely events or circumstances that would result in materially different amounts being reported.

Recent Accounting Standards

Please see Note 2 to our consolidated financial statements.

ITEM 6. DIRECTORS, SENIOR MANAGEMENT AND EMPLOYEES

Directors and Senior Management

We rely on the executive officers of our principal operating subsidiaries to manage our business. In addition, Amdocs Management Limited, our management subsidiary, performs certain executive coordination functions for all of our operating subsidiaries. As of December 5, 2019, our directors and officers were as follows:

Name	Age	Position
Robert A. Minicucci(1)(2)	67	Chairman of the Board
Adrian Gardner(1)	57	Director and Chairman of the Audit Committee
Julian A. Brodsky(3)	86	Director
James S. Kahan(3)	72	Director and Chairman of the Nominating and Corporate Governance Committee
Richard T.C. LeFave(1)(2)(4)	67	Director
Giora Yaron(4)	71	Director and Chairman of the Technology and Innovation Committee
Ariane de Rothschild(3)	54	Director
Rafael de la Vega(2)	68	Director and Chairman of the Management Resources and Compensation Committee
Eli Gelman(4)	61	Director
John A. MacDonald(2)(4)	66	Director
Shuky Sheffer	59	Director, President and Chief Executive Officer
Tamar Rapaport-Dagim	48	Chief Financial Officer and Chief Operating Officer
Rajat Raheja	50	Division President, Amdocs Development Center India Pvt. Ltd.
Matthew Smith	47	Secretary; Head of Investor Relations

- (1) Member of the Audit Committee
- (2) Member of the Management Resources and Compensation Committee
- (3) Member of the Nominating and Corporate Governance Committee
- (4) Member of the Technology and Innovation Committee

Robert A. Minicucci has been Chairman of the Board of Directors of Amdocs since 2011 and a director since 1997. Mr. Minicucci joined Welsh, Carson, Anderson & Stowe, or WCAS, in 1993. Mr. Minicucci has served as a managing member of the general partners of certain funds affiliated with WCAS and has focused on the information and business services industry. Until 2003, investment partnerships affiliated with WCAS had been among our largest shareholders. From 1992 to 1993, Mr. Minicucci served as Senior Vice President and Chief Financial Officer of First Data Corporation, a provider of information processing and related services for credit card and other payment transactions. From 1991 to 1992, he served as Senior Vice President and Treasurer of the American Express Company. He served for 12 years with Lehman Brothers (and its predecessors) until his resignation as a Managing Director in 1991. Mr. Minicucci is a director of one other publicly-held company, Alliance Data Systems, Inc. He is also a director of several private companies. Mr. Minicucci's career in information technology investing, including as a director of more than 20 different public and private companies, and his experience as chief financial officer to a public company and treasurer of another public company, have provided him with strong business acumen and strategic and financial expertise.

Adrian Gardner has been a director of Amdocs since 1998 and is Chairman of the Audit Committee. Mr. Gardner serves as Chief Operating Officer of Stonehage Fleming Family & Partners Limited, an international Multi-Family Office business, since October 2019. Mr. Gardner has served as a member of the Audit & Risk Committee of Worcester College, Oxford University since May 2017. From 2016 to 2019, Mr. Gardner served as Chief Financial Officer of Ipes Holdings Limited, a provider of outsourced services to

private equity firms. From 2014 to September 2016, Mr. Gardner served as Chief Financial Officer of International Personal Finance plc, an international home credit business. Mr. Gardner was Chief Financial Officer and a director of RSM Tenon Group PLC, a London-based accounting and advisory firm from 2011 until the acquisition in 2013 of its operating subsidiaries by Baker Tilly UK Holdings Limited, since renamed RSM UK Limited. Mr. Gardner was Chief Financial Officer of PA Consulting Group, a London-based business consulting firm from 2007 to 2011. Mr. Gardner was Chief Financial Officer and a director of ProStrakan Group plc, a pharmaceuticals company based in the United Kingdom and listed on the London Stock Exchange, from 2002 until 2007. Prior to joining ProStrakan, he was a Managing Director of Lazard LLC, based in London, where he worked with technology and telecommunications-related companies. Prior to joining Lazard in 1989, Mr. Gardner qualified as a chartered accountant with Price Waterhouse (now PricewaterhouseCoopers). Mr. Gardner's extensive experience as an accountant, technology investment banker and chief financial officer enables him to make valuable contributions to our strategic and financial affairs.

Julian A. Brodsky has been a director of Amdocs since 2003. Since 2011, Mr. Brodsky has served as a senior advisor to Comcast Corporation. Mr. Brodsky served as a director of Comcast Corporation from 1969 to 2011, and as Vice Chairman of Comcast Corporation from 1989 to 2011. From 1999 to 2004, Mr. Brodsky was Chairman of Comcast Ventures (formerly Comcast Interactive Capital, LP), a venture fund affiliated with Comcast. He is a director of RBB Fund, Inc. Mr. Brodsky brings to our Board of Directors deep and extensive knowledge of business in general and of the cable industry in particular gained through his longstanding executive leadership roles at Comcast, as well as financial expertise in capital markets, accounting and tax matters gained through his experience as Chief Financial Officer of Comcast and as a practicing CPA.

James S. Kahan has been a director of Amdocs since 1998 and is Chairman of the Nominating and Corporate Governance Committee. From 1983 until his retirement in 2007, he worked at SBC Communications Inc., which is now AT&T, and served as a Senior Executive Vice President from 1992 until 2007. AT&T is our most significant customer. Prior to joining AT&T, Mr. Kahan held various positions at several telecommunications companies, including Western Electric, Bell Laboratories, South Central Bell and AT&T Corp. Mr. Kahan also serves on the Board of Directors of Live Nation Entertainment, Inc., a publicly-traded live music and ticketing entity, as well as one private company. Mr. Kahan's long service at SBC Communications Inc. and AT&T, as well as his management and financial experience at several public and private companies, have provided him with extensive knowledge of the telecommunications industry, particularly with respect to corporate development, mergers and acquisitions and business integration.

Richard T.C. LeFave has been a director of Amdocs since 2011. Since 2008, Mr. LeFave has been a Principal at D&L Partners, LLC, an information technology consulting firm. Mr. LeFave served as Chief Information Officer for Nextel Communications, a telecommunications company, from 1999 until its merger with Sprint Corporation in 2005, after which he served as Chief Information Officer for Sprint Nextel Corporation until 2008. From 1995 to 1999, Mr. LeFave served as Chief Information Officer for Southern New England Telephone Company, a provider of communications products and services. Mr. LeFave has held the CISO position and duties for a U.S.-based manufacturing firm and attended Harvard Business School courses in Board Compensation and Audit Committee strategies. We believe Mr. LeFave's qualifications to sit on our board include his extensive experience and leadership in the information technology and telecommunications industry.

Giora Yaron has been a director of Amdocs since 2009 and is Chairman of the Technology and Innovation Committee. Dr. Yaron co-founded Itamar Medical Ltd., a publicly-traded medical technology company, and has been its co-chairman since 1997 and since 2015, served as its chairman. Dr. Yaron provides consulting services to Itamar Medical and to various other technology companies. He co-founded P-cube, Pentacom, Qumranet, Exanet and Comsys, privately-held companies sold to multinational corporations. In 2009, Dr. Yaron also co-founded Qwilt, Inc., a privately-held video technology company and serves as one of its directors. Dr. Yaron served as a director of Hyperwise Security, a company focused on providing a comprehensive APT protection, which was sold to Checkpoint in early 2015, serves as Chairman of the Board at Excelero (ExpressIO), a company focused on providing ultra-fast block storage solution and Equalum focused on streaming in real-time

changes from a variety of data bases to a unified platform for real-time Big Data Analytics. Since 2010, Dr. Yaron has been the chairman of The Executive Council of Tel Aviv University, an institution of higher education and a director of Ramot, which is the Tel Aviv University's technology transfer company until 2015. Dr. Yaron has served on the advisory board of Rafael Advanced Defense Systems, Ltd., a developer of high-tech defense systems, since 2008, and on the advisory board of the Israeli Ministry of Defense since 2011. Dr. Yaron served from 1996 to 2006 as a member of the Board of Directors of Mercury Interactive, a publicly-traded IT optimization software company acquired by Hewlett-Packard, including as chairman from 2004 to 2006. We believe that Dr. Yaron's qualifications to sit on our Board of Directors include his experience as an entrepreneur and the various leadership positions he has held on the boards of directors of software and technology companies.

Baroness Ariane de Rothschild has been a director of Amdocs since January 2018. Since January 2015, she has served as the Chairwoman of the Executive Committee of Edmond de Rothschild Group. Since 2009, Baroness de Rothschild has served as the vice-president of Edmond de Rothschild Group's supervisory board and has also served as the vice-president of the Edmond de Rothschild Holding SA since 1999. Baroness de Rothschild now holds various board positions across Holding Benjamin & Edmond de Rothschild Pregny, Compagnie Benjamin de Rothschild Conseil S.A., Siaci Saint-Honoré Insurance Broker, and Barons and Baronne Associés. We believe Baroness de Rothschild's qualifications to sit on our Board of Directors include her strong financial and banking expertise and her international business experience.

Rafael de la Vega has been a director of Amdocs since January 2018 and is Chairman of the Management Resources and Compensation Committee. Since 2017, he has served as the Chairman and Founder of the De La Vega Group, a consultancy and advisory services firm. From February 2016 to December 2016, Mr. de la Vega served as the Vice Chairman of AT&T Inc. and CEO of Business Solutions & International. From 2014 to 2016 Mr. de la Vega served as President and CEO of AT&T Mobile and Business Solutions and from 2007 to 2014 he served as the President and CEO of AT&T Mobility. Mr. de la Vega also held various positions at several telecommunications companies, including Cingular Wireless and Bell South Latin America. During his time at Cingular Wireless, he was responsible for the integration of AT&T Wireless and Cingular Wireless. He also serves on the boards of American Express Company and New York Life Insurance Company. He served on the Executive Committee of the Boy Scouts of America until May 2018 and served as Chairman of the 2017 Boy Scouts Jamboree. He is the former Chairman of Junior Achievement Worldwide and continues to serve on its board of directors. In June of 2018, Mr. de la Vega joined as the Vice Chairman of the Board of Directors of Ubicquia LLC. In September of 2018 he joined the Board of Advisors of RapidSOS. Mr. de la Vega also recently joined Forté Ventures as a Limited Partner. We believe Mr. de la Vega's qualifications to sit on our Board of Directors includes his extensive experience and leadership in the telecommunications industry.

Eli Gelman has been a director of Amdocs since 2002. Since January 2019 Mr. Gelman serves as the chairman of the Executive Council of Tel Aviv University. Mr. Gelman served as our President and Chief Executive Officer from 2010 to September 30, 2018. From 2010 until 2013, Mr. Gelman served as a director of Retalix, a global software company, and during 2010, he also served as its Chairman. From 2008 to 2010, Mr. Gelman devoted his time to charitable matters focused on youth education. He served as Executive Vice President of Amdocs Management Limited from 2002 until 2008 and as our Chief Operating Officer from 2006 until 2008. Prior to 2002, he was a Senior Vice President, where he headed our U.S. sales and marketing operations and helped spearhead our entry into the customer care and billing systems market. Before that, Mr. Gelman was an account manager for our major European and North American installations, and has led several major software development projects. Before joining Amdocs, Mr. Gelman was involved in the development of real-time software systems for communications networks and software projects for NASA. Mr. Gelman's qualifications to serve on our Board of Directors include his more than two decades of service to Amdocs and its customers, including as our Chief Operating Officer and President and Chief Executive Officer. With more than 30 years of experience in the software industry, he possesses a vast institutional knowledge and strategic understanding of our organization and industry.

John A. MacDonald has been a director of Amdocs since 2019. Mr. MacDonald is an experienced senior executive who has worked at some of Canada's largest technology organizations and serves as a board member

of Rogers Communications Inc. and BookJane Inc. From 2003 to 2008, Mr. MacDonald served as the President, Enterprise Division of MTS Allstream. Before that, between 2002 to 2003, Mr. MacDonald was a President and Chief Operating Officer AT&T Canada. AT&T Canada was re-branded Allstream in 2003 and was subsequently acquired by MTS the following year. In 1994 Mr. MacDonald joined Bell Canada as its Chief Technology Officer and retired from Bell Canada in 1999 as its President and Chief Operating Officer. From 1977 to 1994 Mr. MacDonald worked at NBTel, where he became Chief Executive Officer in 1994. We believe Mr. MacDonald's qualifications to sit on our Board of Directors includes his extensive experience and leadership in the telecommunications industry.

Shuky Sheffer is a director and has been our President and Chief Executive Officer since October 1, 2018. Mr. Sheffer previously served as Senior Vice President and President of the Global Business Group from October 2013 to September 30, 2018. Mr. Sheffer served as Chief Executive Officer of Retalix Ltd., a global software company, from 2009 until its acquisition by NCR Corporation in 2013. Following the acquisition, he served as a General Manager of Retalix through September 2013. From 1986 to 2009, Mr. Sheffer served at various managerial positions at Amdocs, most recently as President of the Emerging Markets Divisions.

Tamar Rapaport-Dagim has been our Chief Financial Officer since 2007, and our Chief Operating Officer since October 1, 2018. Ms. Rapaport-Dagim served as our Vice President of Finance from 2004 until 2007. Prior to joining Amdocs, from 2000 to 2004, Ms. Rapaport-Dagim was the Chief Financial Officer of Emblaze, a provider of multimedia solutions over wireless and IP networks. She has also served as controller of Teledata Networks (formerly a subsidiary of ADC Telecommunications) and has held various finance management positions in public accounting.

Rajat Raheja has been our Division President for India operations since February 2016. Mr. Raheja has close to 23 years of experience and most recently served as Director, Global Services at Deloitte Consulting. Prior to joining Amdocs, Mr. Raheja held leadership positions in Deloitte Consulting, Arthur Andersen, PricewaterhouseCoopers and Tata Telecom.

Matthew Smith has been Secretary of Amdocs Limited since January 2015. Mr. Smith joined Amdocs in October 2012 as Director of Investor Relations and has been Head of Investor Relations since January 2014. Prior to joining Amdocs, from April 2006 to August 2012, Mr. Smith was a research director at A.I. Capital Management, a hedge fund, where he covered many sectors, including the technology sub-sectors of IT hardware, semiconductors, software and IT services. From April 2001 to April 2006, Mr. Smith was an equity analyst at CIBC World Markets (now Oppenheimer Co.).

Compensation

During fiscal 2019, each of our directors who was not our employee, or Non-Employee Directors, received compensation for their services as directors in the form of cash and restricted shares. Each Non-Employee Director received an annual cash payment of \$80,000. Each member of our Audit Committee who is a Non-Employee Director and who is not the chairman of such committee received an annual cash payment of \$30,000. Each member of our Management Resources and Compensation Committee who is a Non-Employee Director and who is not a committee chairman received an annual cash payment of \$20,000. Each member of our Nominating and Corporate Governance and Technology and Innovation Committees who is a Non-Employee Director and who is not a committee chairman received an annual cash payment of \$15,000. The Chairman of our Audit Committee received an annual cash payment of \$42,500 and the Chairman of our Management Resources and Compensation Committee received an annual cash payment of \$32,500. The Chairmen of our Nominating and Corporate Governance and Technology and Innovation Committees each received an annual cash payment of \$27,500. Each Non-Employee Director received an annual grant of restricted shares at a total value of \$245,000. The Chairman of the Board of Directors received an additional annual amount equal to \$200,000 awarded in the form of restricted shares. The restricted share awards to our Non-Employee Directors vest quarterly. The price per share for the purpose of determining the value of the grants to our Non-Employee

Directors was the Nasdaq closing price of our shares on the last trading day preceding the grant date. We also reimburse all of our Non-Employee Directors for their reasonable travel expenses incurred in connection with attending Board or committee meetings. Cash compensation paid to our Non-Employee Directors is prorated for partial year service.

A total of 16 persons who served either as directors or officers of Amdocs during all or part of fiscal 2019 received remuneration from Amdocs. The aggregate remuneration paid or accrued by us to such persons in fiscal 2019 was approximately \$5.4 million, compared to \$7 million in each of fiscal 2018 and fiscal 2017, respectively, which includes amounts set aside or accrued to provide cash bonuses, pension, retirement or similar benefits, but does not include amounts expended by us for automobiles made available to such persons, expenses (including business travel, professional and business association dues) or other fringe benefits. During fiscal 2019, we granted to such persons options to purchase an aggregate of 176,757 ordinary shares at a weighted average price of \$66.05 per share with vesting generally over four-year terms and expiring ten years from the date of grant, and an aggregate of 127,802 restricted shares typically subject to three to four-year vesting and often times, achievement of certain performance thresholds, and in the case of our directors, subject to quarterly vesting. All options and restricted share awards were granted pursuant to our 1998 Stock Option and Incentive Plan, as amended. See discussion below — “Share Ownership — Employee Stock Option and Incentive Plan.”

Board Practices

Eleven directors currently serve on our Board of Directors, ten of whom were elected at our annual meeting of shareholders on January 31, 2019, and one director, Mr. John A. MacDonald, elected by the Board of Directors on August 5, 2019. All directors hold office until the next annual meeting of our shareholders, which generally is in January or February of each calendar year, or until their respective successors are duly elected and qualified or their positions are earlier vacated by resignation or otherwise. In August 2017, the Board of Directors established a mandatory retirement age of 73 for directors. No person of or over the age of 73 years shall be nominated or elected to start a new term as director, unless the Chairman of the Board of Directors recommends to the Board of Directors, and the Board of Directors determines, to waive the retirement age for a specific director in exceptional circumstances. Once the waiver is granted, it must be renewed annually for it to stay in effect. Julian A. Brodsky was granted a waiver to continue as director past the age of 73 years in fiscal year 2019 in light of Mr. Brodsky’s vast experience in the Multiple System Operators (“MSO”) market which is in the midst of a major modernization cycle. Other than the employment agreement between us and our President and Chief Executive Officer, which provides for immediate cash severance upon termination of employment, there are currently no service contracts in effect between us and any of our directors providing for immediate cash severance upon termination of their employment. Mr. Julian Brodsky will retire from our Board of Directors on January 31, 2020 and will serve as “director emeritus” and provide us certain advisory services, see “Item 7. Major Shareholders and Related Party Transactions — Related Party Transactions.”

Board Committees

Our Board of Directors maintains four committees as set forth below. Members of each committee are appointed by the Board of Directors.

The Audit Committee reviews, acts on and reports to the Board of Directors with respect to various auditing and accounting matters, including the selection of our independent registered public accounting firm, the scope of the annual audits, fees to be paid to, and the performance of, such public accounting firm, and assists with the Board of Directors’ oversight of our accounting practices, financial statement integrity and compliance with legal and regulatory requirements, including establishing and maintaining adequate internal control over financial reporting, risk assessment and risk management. The current members of our Audit Committee are Messrs. Gardner (Chair), LeFave and Minicucci, all of whom are independent directors, as defined by the rules of Nasdaq, and pursuant to the categorical director independence standards adopted by our Board of Directors. The Board of Directors has determined that Mr. Gardner is an “audit committee financial expert” as defined by rules

promulgated by the SEC, and that each member of the Audit Committee is financially literate as required by the rules of Nasdaq. In particular, we believe that the professional experiences of Messrs. Gardner, LeFave and Minicucci provide important insights into their work on the Audit Committee. For example, we believe Mr. Gardner's extensive experience as an accountant, technology investment banker and chief financial officer enables him to make valuable contributions to the Committee. In addition, we believe that Mr. LeFave's experience as a seasoned Fortune 500 CIO and CISO for over 5 years provides a foundation of cyber awareness to the Audit Committee and also believe that Mr. LeFave's post-graduate training at Harvard Business School in Audit Committee and Board compensation best practices provides valuable contributions to the Committee. Similarly, we believe that Mr. Minucucci's experience as chief financial officer to a public company and treasurer of another public company have provided him with strong business acumen and strategic and financial expertise that benefits the Committee. The Audit Committee written charter is available on our website at www.amdocs.com.

The Nominating and Corporate Governance Committee identifies individuals qualified to become members of our Board of Directors, recommends to the Board of Directors the persons to be nominated for election as directors at the annual general meeting of shareholders, develops and makes recommendations to the Board of Directors regarding our corporate governance principles and oversees the evaluations of our Board of Directors. The current members of the Nominating and Corporate Governance Committee are Messrs. Kahan (Chair), Brodsky and Baroness de Rothschild, all of whom are independent directors, as required by the Nasdaq listing standards, and pursuant to the categorical director independence standards adopted by our Board of Directors. The Nominating and Corporate Governance Committee written charter is available on our website at www.amdocs.com. The Nominating and Corporate Governance Committee has approved corporate governance guidelines that are also available on our website at www.amdocs.com.

The Management Resources and Compensation Committee discharges the responsibilities of our Board of Directors relating to the compensation of the Chief Executive Officer of Amdocs Management Limited, makes recommendations to our Board of Directors with respect to the compensation of our other executive officers and oversees management succession planning for the executive officers of the Company. The current members of our Management Resources and Compensation Committee are Messrs. De la Vega (Chair), LeFave, Minicucci and MacDonald, all of whom are independent directors, as defined by the rules of Nasdaq, and pursuant to the categorical director independence standards adopted by our Board of Directors. The Management Resources and Compensation Committee written charter is available on our website at www.amdocs.com.

The Technology and Innovation Committee was established to assist the Board of Directors in reviewing our technological development, opportunities and innovation, in connection with the current and future business and markets. The current members of our Technology and Innovation Committee are Dr. Yaron (Chair), Gelman, LeFave and MacDonald.

Our non-employee directors receive no compensation from us, except in connection with their membership on the Board of Directors and its committees as described above regarding Non-Employee Directors under "— Compensation."

Workforce Personnel

The following table presents the approximate average number of our workforce for each of the fiscal years indicated, by function and by geographical location (in each of which we operate at multiple sites):

	Fiscal Year,		
	2019	2018	2017
Software and Information Technology, Sales and Marketing			
Americas	5,409	5,598	5,606
EMEA	6,063	6,306	6,408
APAC	11,472	10,851	10,650
	22,944	22,755	22,664
Management and Administration	1,572	1,626	1,573
Total Workforce	24,516	24,381	24,237

As a company with global operations, we are required to comply with various labor and immigration laws throughout the world. Our employees in certain countries of Europe, and to a limited extent in Canada and Brazil, are protected by mandatory collective bargaining agreements. To date, compliance with such laws has not been a material burden for us. As the number of our employees increases over time in specific countries, our compliance with such regulations could become more burdensome.

Our principal operating subsidiaries are not party to any collective bargaining agreements. However, our Israeli subsidiaries are subject to certain provisions of general extension orders issued by the Israeli Ministry of Labor and Welfare which derive from various labor related statutes. The most significant of these provisions provide for mandatory pension benefits and wage adjustments in relation to increases in the consumer price index, or CPI. The amount and frequency of these adjustments are modified from time to time.

A small number of our employees in Canada and Bulgaria, our employees in Brazil and our employees in Chile have union representation. We also have an affiliation with a non-active union in Mexico. We have a works council body in the Netherlands and Germany which represents the employees and with which we work closely to ensure compliance with the applicable local law. We also have an employee representative body in France, Hungary and in Finland.

In recent years, Israeli labor unions have increased their efforts to organize workers at companies with significant operations in Israel, including several companies in the technology sector. In addition, a national union and a group of our employees had attempted to secure the approval of the minimum number of employees needed for union certification with respect to our employees in Israel. While these efforts have not resulted in either group being recognized as a representative union, we cannot be certain there will be no such efforts in the future. In the event an organization is recognized as a representative union for our employees in Israel, we would be required to enter into negotiations to implement a collective bargaining agreement. See “Risk Factors — *The skilled and highly qualified workforce that we need to develop, implement and modify our solutions may be difficult to hire, train and retain, and we could face increased costs to attract and retain our skilled workforce.*”

We consider our relationship with our employees to be good and have never experienced an organized labor dispute, strike or work stoppage.

Share Ownership

Security Ownership of Directors and Senior Management and Certain Key Employees

As of December 5, 2019, the aggregate number of our ordinary shares beneficially owned by our directors and executive officers was 2,413,335 shares. As of December 5, 2019, none of our directors or members of senior management beneficially owned 1% or more of our outstanding ordinary shares.

Beneficial ownership by a person, as of a particular date, assumes the exercise of all options and warrants held by such person that are currently exercisable or are exercisable within 60 days of such date.

Stock Option and Incentive Plan

Our Board of Directors adopted, and our shareholders approved, our 1998 Stock Option and Incentive Plan, as amended, which we refer to as the Equity Incentive Plan, pursuant to which up to 67,550,000 of our ordinary shares may be issued.

The Equity Incentive Plan provides for the grant of restricted shares, stock options and other stock-based awards to our directors, officers, employees and consultants. The purpose of the Equity Incentive Plan is to enable us to attract and retain qualified personnel and to motivate such persons by providing them with an equity participation in Amdocs. As of September 30, 2019, of the 67,550,000 ordinary shares available for issuance under the Equity Incentive Plan, 55,555,012 ordinary shares had been issued as a result of option exercises and restricted share issuances. As of September 30, 2019, 5,053,813 ordinary shares remained available for future grants, subject to a sublimit applicable to the award of restricted shares or awards dominated in stock units. As of December 5, 2019, there were outstanding options to purchase an aggregate of 6,962,052 ordinary shares at exercise prices ranging from \$27.47 to \$69.30 per share and 105,393 shares are subject to outstanding restricted stock units.

The Equity Incentive Plan is administered by a committee of our Board of Directors, which determines the terms of awards for directors, employees and consultants as well as the manner in which awards may be made subject to the terms of the Equity Incentive Plan. The Board of Directors may amend or terminate the Equity Incentive Plan, provided that shareholder approval is required to increase the number of ordinary shares available under the Equity Incentive Plan, to materially increase the benefits accruing to participants, to change the class of employees eligible for participation, to decrease the basis upon which the minimum exercise price of options is determined or to extend the period in which awards may be granted or to grant an option that is exercisable for more than ten years. Ordinary shares subject to restricted stock awards are subject to certain restrictions on sale, transfer or hypothecation. Under its terms, no awards may be granted pursuant to the Equity Incentive Plan after January 28, 2025.

ITEM 7. MAJOR SHAREHOLDERS AND RELATED PARTY TRANSACTIONS

Major Shareholders

The following table sets forth specified information with respect to the beneficial ownership of the ordinary shares as of December 5, 2019 of (i) any person known by us to be the beneficial owner of more than 5% of our ordinary shares, and (ii) all of our directors and executive officers as a group. Beneficial ownership is determined in accordance with the rules of the SEC and, unless otherwise indicated, includes voting and investment power with respect to all ordinary shares, subject to community property laws, where applicable. The number of ordinary shares used in calculating the percentage beneficial ownership included in the table below is based on 134,737,409 ordinary shares outstanding as of December 5, 2019, net of shares held in treasury. Information concerning shareholders other than our directors and officers is based on periodic public filings made by such shareholders and may not necessarily be accurate as of December 5, 2019. None of our major shareholders have voting rights that are different from those of any other shareholder.

<u>Name</u>	<u>Shares Beneficially Owned</u>	<u>Percentage Ownership</u>
FMR LLC(1)	18,209,168	13.5%
Janus Henderson Group plc(2)	7,616,644	5.7%
All directors and officers as a group (14 persons)(3)	2,413,335	1.8%

- (1) Based on a Schedule 13G/A filed by FMR LLC, or FMR, with the SEC on February 13, 2019, as of December 31, 2018, FMR had sole power to vote or direct the vote over 1,444,363 shares and sole power to dispose or direct the disposition of 18,209,168 shares. Edward C. Johnson 3d is a Director and the Chairman of FMR and Abigail P. Johnson is a Director, the Vice Chairman, the Chief Executive Officer and the President of FMR. Members of the family of Edward C. Johnson 3d, including Abigail P. Johnson, directly or through trusts, own approximately 49% of the voting power of FMR. The address of FMR is 245 Summer Street, Boston, Massachusetts 02210.
- (2) Based on a Schedule 13G/A filed by Janus Henderson Group plc, or Janus Henderson, with the SEC on February 11, 2019, as of December 31, 2018, Janus had an indirect 97.11% ownership stake in IntechInvestment Management LLC (“Intech”) and a 100% ownership stake in Janus Capital Management LLC (“Janus Capital”), Perkins Investment Management LLC (“Perkins”), Geneva Capital Management LLC (“Geneva”), Henderson Global Investors Limited (“HGIL”), Janus Henderson Investors Australia Institutional Funds Management Limited (“HGIAIFML”) and Henderson Global Investors North America Inc. (“HGINA”), (each an “Asset Manager” and collectively as the “Asset Managers”). Due to the above ownership structure, holdings for the Asset Managers are aggregated for purposes of this filing. Each Asset Manager is an investment adviser registered or authorized in its relevant jurisdiction and each furnishing investment advice to various fund, individual and/or institutional clients (collectively referred to herein as “Managed Portfolios”). As a result of its role as investment adviser or sub-adviser to the Managed Portfolios, Janus Capital may be deemed to be the beneficial owner of 7,482,934 shares or 5.3% of the shares outstanding of Amdocs Common Stock held by such Managed Portfolios. However, Janus Capital does not have the right to receive any dividends from, or the proceeds from the sale of, the securities held in the Managed Portfolios and disclaims any ownership associated with such rights. As a result of its role as investment adviser or sub-adviser to the Managed Portfolios, Intech may be deemed to be the beneficial owner of 18,831 shares or 0.0% of the shares outstanding of Amdocs Common Stock held by such Managed Portfolios. However, Intech does not have the right to receive any dividends from, or the proceeds from the sale of, the securities held in the Managed Portfolios and disclaims any ownership associated with such rights. As a result of its role as investment adviser or sub-adviser to the Managed Portfolios, JCIL may be deemed to be the beneficial owner of 95,600 shares or 0.1% of the shares outstanding of Amdocs Common Stock held by such Managed Portfolios. However, JCIL does not have the right to receive any dividends from, or the proceeds from the sale of, the securities held in the Managed Portfolios and disclaims any ownership associated with such rights. The address of Janus Henderson is 201 Bishopsgate EC2M 3AE, United Kingdom.
- (3) Includes options held by such directors and executive officers that are exercisable within 60 days after December 5, 2019. As of such date, none of our directors or executive officers beneficially owned 1% or more of our outstanding ordinary shares.

As of December 5, 2019, our ordinary shares were held by 1,741 record holders. Based on a review of the information provided to us by our transfer agent, 798 record holders, holding approximately 89% of our outstanding ordinary shares held of record, were residents of the United States.

Related Party Transactions

Mr. Julian Brodsky will retire from our Board of Directors on January 31, 2020. We will enter into an agreement with Mr. Brodsky pursuant to which Mr. Brodsky will serve as “director emeritus” and provide us certain advisory services, and we will pay Mr. Brodsky an annual total payment equal to \$255,000 in equity and \$80,000 in cash.

ITEM 8. FINANCIAL INFORMATION

Financial Statements

See “Financial Statements” for our audited Consolidated Financial Statements and Financial Statement Schedule filed as part of this Annual Report.

Legal Proceedings

We are involved in various legal claims and proceedings arising in the normal course of our business. We accrue for a loss contingency when we determine that it is probable, after consultation with counsel, that a liability has been incurred and the amount of such loss can be reasonably estimated. At this time, we believe that the results of any such contingencies, either individually or in the aggregate, will not have a material adverse effect on our financial position, results of operations or cash flows.

Since 2014, we have been defending a lawsuit against certain of our subsidiaries in the U.S. District Court in Oregon alleging breach of contract and trade secret misappropriation. According to the suit, we improperly utilized information received in connection with our electronic payment processing solution, which is one of several components of our mobile financial services offerings. During fiscal year 2016, the District Court denied our motions to dismiss and to compel arbitration with respect to certain of the claims, and the proceedings continued. The District Court scheduled a tentative jury trial date for late October 2018. We filed a motion for summary judgment with the District Court during fiscal year 2018 and the District Court partially granted the motion with respect to two trade secrets. In October 2018, while continuing to deny the plaintiff's allegations, we entered into a settlement agreement with the plaintiff, which included a \$50 million settlement payment by us, in consideration for a mutual release of each party and its respective customers with no admission of liability or fault. As a result of the settlement, the lawsuit was dismissed with prejudice on November 13, 2018. During fiscal year 2019 we paid the settlement amount of \$50 million and \$5 million in legal and other fees which were accrued as of September 30, 2018.

Certain of our subsidiaries are currently in a dispute with a state-owned telecom enterprise in Ecuador, which appears to have political aspects. Our counterparty has claimed monetary damages. The dispute is over contracts, under which we were providing certain services, which have been terminated by the counterparty in connection with such dispute and which are under scrutiny by certain local governmental authorities. We believe we have solid arguments and vigorously defending our rights. To date, however, such defense efforts, including motions alleging constitutional defects, have encountered a dismissive approach by the Ecuadorian Courts, with reasoning that we believe is inconsistent with applicable law. We are unable to reasonably estimate the ultimate outcome of the above dispute.

Dividend Policy

Please refer to "Liquidity and Capital Resources — Cash Dividends" for a discussion of our dividend policy.

ITEM 9. THE OFFER AND LISTING

On December 19, 2013, we voluntarily withdrew our ordinary shares from the New York Stock Exchange and transferred our listing to the Nasdaq Global Select Market ("Nasdaq") and commenced trading on Nasdaq on December 20, 2013. Our ordinary shares were quoted on the New York Stock Exchange ("NYSE") from 1998 to 2013 under the symbol "DOX" and are now quoted on Nasdaq under the same symbol.

ITEM 10. ADDITIONAL INFORMATION

Memorandum and Articles of Incorporation

Amdocs Limited is registered as a company with limited liability pursuant to the laws of the Island of Guernsey with company number 19528 and whose registered office situated at Hirzel House, Smith Street, St Peter Port, Guernsey, GY1 2NG. The telephone number at that location is +44-1481-728444.

Our Memorandum of Incorporation, or the Memorandum, provides that the objects and powers of Amdocs Limited are not restricted and our Articles of Incorporation, or the Articles, provide that our business is to engage in any lawful act or activity for which companies may be organized under the Companies (Guernsey) Law, 2008, as amended, or the Companies Law.

The Articles grant the Board of Directors all the powers necessary for managing, directing and supervising the management of the business and affairs of Amdocs Limited.

Article 70(1) of the Articles provides that a director may vote in respect of any contract or arrangement in which such director has an interest notwithstanding such director's interest and an interested director will not be liable to us for any profit realized through any such contract or arrangement by reason of such director holding the office of director. Article 71(1) of the Articles provides that the directors shall be paid out of the funds of Amdocs Limited by way of fees such sums as the Board shall reasonably determine. Article 73 of the Articles provides that directors may exercise all the powers of Amdocs Limited to borrow money, and to mortgage or charge its undertaking, property and uncalled capital or any part thereof, and to issue securities whether outright or as security for any debt, liability or obligation of Amdocs Limited for any third party. Such borrowing powers can only be altered through an amendment to the Articles by special resolution. Our Memorandum and Articles do not impose a requirement on the directors to own shares of Amdocs Limited in order to serve as directors, however, the Board of Directors has adopted guidelines for minimum share ownership by the directors.

The Board of Directors is authorized to issue a maximum of (i) 25,000,000 preferred shares and (ii) 700,000,000 ordinary shares, consisting of voting and non-voting ordinary shares without further shareholder approval. As of September 30, 2019, 134,773,123 ordinary shares were outstanding (net of treasury shares) and no non-voting ordinary shares or preferred shares were outstanding. The rights, preferences and restrictions attaching to each class of the shares are set out in the Memorandum and Articles and are as follows:

Preferred Shares

- *Issue* — the preferred shares may be issued from time to time in one or more series of any number of shares up to the amount authorized.
- *Authorization to Issue Preferred Shares* — authority is vested in the directors from time to time to authorize the issue of one or more series of preferred shares and to provide for the designations, powers, preferences and relative participating, optional or other special rights and qualifications, limitations or restrictions thereon.
- *Relative Rights* — all shares of any one series of preferred shares must be identical with each other in all respects, except that shares of any one series issued at different times may differ as to the dates from which dividends shall accrue.
- *Liquidation* — in the event of any liquidation, dissolution or winding-up of Amdocs Limited, the holders of preferred shares are entitled to a preference with respect to payment over the holders of any shares ranking junior to the preferred in liquidation at the rate fixed in any resolution or resolutions adopted by the directors in such case plus an amount equal to all dividends accumulated to the date of final distribution to such holders. Except as provided in the resolution or resolutions providing for the issue of any series of preferred shares, the holders of preferred shares are entitled to no further payment. If upon any liquidation our assets are insufficient to pay in full the amount stated above, then such assets shall be distributed among the holders of preferred shares ratably in accordance with the respective amount such holder would have received if all amounts had been paid in full.
- *Voting Rights* — except as otherwise provided for by the directors upon the issue of any new series of preferred shares, the holders of preferred shares have no right or power to vote on any question or in any proceeding or to be represented at, or to receive notice of, any meeting of shareholders.

Ordinary Shares and Non-Voting Ordinary Shares

Except as otherwise provided by the Memorandum and Articles, the ordinary shares and non-voting ordinary shares are identical and entitle holders thereof to the same rights and privileges.

- *Dividends* — when and as dividends are declared on our shares, the holders of voting ordinary shares and non-voting shares are entitled to share equally, share for share, in such dividends except that if

dividends are declared that are payable in voting ordinary shares or non-voting ordinary shares, dividends must be declared that are payable at the same rate in both classes of shares.

- *Conversion of Non-Voting Ordinary Shares into Voting Ordinary Shares* — upon the transfer of non-voting ordinary shares from the original holder thereof to any third party not affiliated with such original holder, non-voting ordinary shares are redesignated in our books as voting ordinary shares and automatically convert into the same number of voting ordinary shares.
- *Liquidation* — upon any liquidation, dissolution or winding-up, any assets remaining after creditors and the holders of any preferred shares have been paid in full shall be distributed to the holders of voting ordinary shares and non-voting ordinary shares equally share for share.
- *Voting Rights* — the holders of voting ordinary shares are entitled to vote on all matters to be voted on by the shareholders, and the holders of non-voting ordinary shares are not entitled to any voting rights.
- *Preferences* — the voting ordinary shares and non-voting ordinary shares are subject to all the powers, rights, privileges, preferences and priorities of the preferred shares as are set out in the Articles.

As regards both preferred shares and voting and non-voting ordinary shares, we have the power to purchase any of our own shares, whether or not they are redeemable and may make a payment out of capital for such purchase. If we repurchase shares off market, the repurchase must be approved by special resolution of our shareholders. If we are making a market acquisition of our own shares, the acquisition must be approved by an ordinary resolution of our shareholders. In practice, we expect that we would continue to effect any future repurchases of our ordinary shares through our subsidiaries.

The Articles now provide that our directors, officers and other agents will be indemnified by us from and against all liabilities to Amdocs Limited or third parties (including our shareholders) sustained in connection with their performance of their duties, except to the extent prohibited by the Companies Law. Under the Companies Law, Amdocs Limited may not indemnify a director for certain excluded liabilities, which are:

- fines imposed in criminal proceedings;
- regulatory fines;
- expenses incurred in defending criminal proceedings resulting in a conviction;
- expenses incurred in defending civil proceedings brought by Amdocs Limited or an affiliated company in which judgment is rendered against the director; and
- expenses incurred in unsuccessfully seeking judicial relief from claims of a breach of duty.

In addition to the excluded liabilities listed above, directors may also not be indemnified by us for liabilities to us or any of our subsidiaries arising out of negligence, default, breach of duty or breach of trust of a director in relation to us or any of our subsidiaries. The Companies Law authorizes Guernsey companies to purchase insurance against such liabilities to companies or to third parties for the benefit of directors. We currently maintain such insurance. Judicial relief is available for an officer charged with a neglect of duty if the court determines that such person acted honestly and reasonably, having regard to all the circumstances of the case.

There are no provisions in the Memorandum or Articles that provide for a classified board of directors or for cumulative voting for directors.

If the share capital is divided into different classes of shares, Article 11 of the Articles provides that the rights attached to any class of shares (unless otherwise provided by the terms of issue) may be varied with the consent in writing of the holders of three-fourths of the issued shares of that class or with the sanction of a special resolution of the holders of the shares of that class.

A special resolution is defined by the Companies Law as being a resolution passed by a majority of shareholders representing not less than 75% of the total voting rights of the shareholders present in person or by proxy.

Rather than attend general or special meetings of our shareholders, shareholders may confer voting authority by proxy to be represented at such meetings. Generally speaking, proxies will not be counted as voting in respect of any matter as to which abstention is indicated, but abstentions will be counted as ordinary shares that are present for purposes of determining whether a quorum is present at a general or special meeting. Nominees who are members of NYSE and who, as brokers, hold ordinary shares in “street name” for customers have, by NYSE rules, the authority to vote on certain items in the absence of instructions from their customers, the beneficial owners of the ordinary shares. If such nominees or brokers indicate that they do not have authority to vote shares as to a particular matter, we will not count those votes in favor of such matter, however, such “broker non-votes” will be counted as ordinary shares that are present for purposes of determining whether a quorum is present.

Provisions in respect of the holding of general meetings and extraordinary general meetings are set out at Articles 22-41 of the Articles. The Articles provide that an annual general meeting must be held once in every calendar year (provided that not more than 15 months have elapsed since the last such meeting) at such time and place as the directors appoint. The shareholders of the Company may waive the requirement to hold an annual general meeting in accordance with the Companies Law. The directors may, whenever they deem fit, convene an extraordinary general meeting. General meetings may be convened by any shareholders holding more than 10% in the aggregate of Amdocs Limited’s share capital. Shareholders may participate in general meetings by video link, telephone conference call or other electronic or telephonic means of communication.

A minimum of ten days’ written notice is required in connection with an annual general meeting and a minimum of 14 days’ written notice is required for an extraordinary general meeting, although a general meeting may be called by shorter notice if all shareholders entitled to attend and vote agree. The notice shall specify the place, the day and the hour of the meeting, and in the case of any special business, the general nature of that business and details of any special resolutions, waiver resolutions or unanimous resolutions being proposed at the meeting. The notice must be sent to every shareholder and every director and may be published on a website.

At general meetings, the Chairman of the Board may choose whether a resolution put to a vote shall be decided by a show of hands or by a poll. However, a poll may be demanded by not less than five shareholders having the right to vote on the resolution or by shareholders representing not less than 10% of the total voting rights of all shareholders having the right to vote on the resolution.

A shareholder is entitled to appoint another person as his proxy to exercise all or any of his rights to attend and to speak and vote at a meeting of Amdocs Limited.

Amdocs Limited may pass resolutions by way of written resolution.

There are no limitations on the rights to own securities, including the rights of non-resident or foreign shareholders to hold or exercise voting rights on the securities.

There are no provisions in the Memorandum or Articles that would have the effect of delaying, deferring or preventing a change in control of Amdocs Limited or that would operate only with respect to a merger, acquisition or corporate restructuring involving us (or any of our subsidiaries).

There are no provisions in the Memorandum or Articles governing the ownership threshold above which our shareholder ownership must be disclosed. U.S. federal law, however, requires that all directors, executive officers and holders of 10% or more of the stock of a company that has a class of stock registered under the Securities Exchange Act of 1934, as amended (other than a foreign private issuer, such as Amdocs Limited), disclose such ownership. In addition, holders of more than 5% of a registered equity security of a company (including a foreign private issuer) must disclose such ownership.

The directors may reduce our share capital or any other capital subject to us satisfying the solvency requirements set out in the Companies Law.

Material Contracts

In December 2017, we entered into an Amended and Restated Credit Agreement among us, certain of our subsidiaries, the lenders from time to time party thereto, JPMorgan Chase Bank, N.A., as administrative agent, J.P. Morgan Europe Limited, as London agent, and JPMorgan Chase Bank, N.A., Toronto branch, as Canadian agent, providing for an unsecured \$500 million five-year revolving credit facility with a syndicate of banks. The facility is available for general corporate purposes, including acquisitions and repurchases of our ordinary shares that we may consider from time to time, and has a maturity date in December 2022. The Amended and Restated Credit Agreement replaces our Credit Agreement, dated as of December 12, 2014, by and among us, certain of our subsidiaries, JPMorgan Chase Bank, N.A., as administrative agent, J.P. Morgan Europe Limited, as London agent, and JPMorgan Chase Bank, N.A., Toronto branch, as Canadian agent. A copy of the Amended and Restated Credit Agreement is included as Exhibit 4.c to this Annual Report.

In February 2017, we entered into a Master Services Agreement with AT&T Services, Inc., which replaces in its entirety the Software and Professional Services that we entered into with AT&T Services, Inc. effective August 7, 2003. The agreement provides that Amdocs will provide software and services to AT&T as specified therein and remains in effect until September 30, 2021. A copy of the Master Services Agreement is included as Exhibit 4.a.1 to this Annual Report.

In the past two years, we have not entered into any material contracts other than contracts entered into in the ordinary course of our business.

Taxation

Taxation of the Company

The following is a summary of certain material tax considerations relating to Amdocs and our subsidiaries. To the extent that the discussion is based on tax legislation that has not been subject to judicial or administrative interpretation, there can be no assurance that the views expressed in the discussion will be accepted by the tax authorities in question. The discussion is not intended, and should not be construed, as legal or professional tax advice and is not exhaustive of all possible tax considerations.

General

Our effective tax rate was 15.6% for fiscal 2019, compared to 15.9% for fiscal 2018 and 14.8% for fiscal 2017.

Our effective tax rate may fluctuate between periods as a result of discrete items that may affect a particular period and there can be no assurance that our effective tax rate will not change over time as a result of a change in corporate income tax rates or other changes in the tax laws of Guernsey, the jurisdiction in which our holding company is organized, or of the various countries in which we operate, including the potential impact, which we are continuously assessing, of the recent tax reform in the United States. Moreover, our effective tax rate in future years may be adversely affected in the event that a tax authority challenges the manner in which items of income and expense are allocated among us and our subsidiaries. In addition, we and certain of our subsidiaries benefit from certain special tax benefits. The loss of any such tax benefits could have an adverse effect on our effective tax rate.

Certain Guernsey Tax Considerations

Tax legislation in Guernsey subjects us to the standard rate of corporate income tax for a Guernsey resident company of zero percent.

Certain Indian Tax Considerations

Through subsidiaries, we operate development centers and a business processing operations center in India. In 2019, the corporate tax rate applicable in India on trading activities was 34.94% for development center and reduced corporate tax at 27.82% for business processing operations having gross turnover up to a prescribed threshold. Our main subsidiary in India operates under specific favorable tax entitlements that are based upon pre-approved information technology related services activity. As a result, these activities are entitled to considerable corporate income tax exemptions on eligible profits from export of services derived from such pre-approved information technology activity, provided our subsidiary continues to meet the conditions required for such tax benefits.

During the year 2016-17 our main subsidiary in India changed its corporate legal structure from a private limited company (PLC) to a limited liability partnership (LLP) through conversion by process of law effective February 28, 2017. Thereafter, all rights and liabilities of the PLC under agreements are vested in the LLP by operation of law.

As of April 1, 2011, the Minimum Alternative Tax, or MAT, became applicable to all of our PLC Indian operations. The MAT is levied on book profits at the effective rate of 21.55% and can be carried forward for 15 years to be credited against corporate income taxes. As for the LLP, as a result of the conversion certain accumulated tax credits will not be available to be set off against future income of the LLP, however, for LLP the Alternative Minimum Tax, or AMT, provisions are applicable such that LLPs are subject to AMT at a rate of 21.55% on adjusted total income (Income as computed under the normal provisions, increased by prescribed adjustments) if tax on income under normal provisions is lower than the AMT, and can be carried forward for 15 years.

Our main Indian subsidiary is subject to a separate tax entitlement under which its operating units are exempt from tax on the respective tax incentive-eligible activity for the first five years of operations and enjoys a 50% reduction on its corporate income tax for such activity for the following five years. Further, an additional 50% deduction is available for another 5 years, if 50% of the profits of the unit are credited to a specific reserve provided that such reserve is utilized for the purpose of investments in plant & machinery within three years from the end of the year in which reserve is created. If such reserve is not utilized for the purpose specified in the Indian Tax Laws, the same will be deemed as income in the year immediately following the period of three years in which the reserve is made.

Further, in 2018 a new operation was commenced in another subsidiary in India with effect from May 1, 2018. The activity conducted by this entity is generally entitled to a 100 % reduction on its corporate income tax for the first five years of operation and a 50% reduction for the following 5 years. MAT is levied on book profits at an effective rate of 20.58% and can be carried forward for 15 years to be credited against corporate income taxes.

Certain Israeli Tax Considerations

Our primary Israeli subsidiary, Amdocs (Israel) Limited, operates one of our largest development centers. Discussed below are certain Israeli tax considerations relating to this subsidiary.

General Corporate Taxation in Israel. The general corporate tax rate on taxable income is 23%. However, the effective tax rate applicable to the taxable income of an Israeli company that is eligible for tax benefits by virtue of the Law for the Encouragement of Capital Investments may be considerably lower.

Law for the Encouragement of Capital Investments, 1959. Certain production and development facilities of our primary Israeli subsidiary have been granted “Approved Enterprise” status pursuant to the Law for the Encouragement of Capital Investments, 1959, or the Investment Law, which provides certain tax and financial benefits to investment programs that have been granted such status.

In general, investment programs of our primary Israeli subsidiary that have obtained instruments of approval for an Approved Enterprise issued by the Israeli Investment Center prior to the change in legislation in 2005 continue to be subject to the old provisions of the Investment Law as described below. In addition, our primary Israeli subsidiary made several expansions to its Approved Enterprise under the terms of the Investment Law of 2005.

Tax Benefits.

Our primary Israeli subsidiary has elected the alternative benefits' route with respect to its existing Approved Enterprise and its expansions, pursuant to which it enjoys, in relation to its Approved Enterprise operations, certain tax holidays, based on the location of activities within Israel, for a period of two to ten years and, in the case of a two year tax holiday, reduced tax rates for an additional period of up to eight years (and, in certain cases, up to 13 years). In case it pays a dividend, at any time, out of exempt income generated during the tax holiday period in respect of its Approved Enterprise, it will be subject to corporate tax at the otherwise applicable rate of 10% of the income from which such dividend has been paid. This tax is in addition to the withholding tax on dividends as described below. The tax benefits, available with respect to an Approved Enterprise only to taxable income attributable to that specific enterprise, are provided according to an allocation formula set forth in the Investment Law or in the relevant approval, and are contingent upon the fulfillment of the conditions stipulated by the Investment Law, the regulations issued thereunder and the instruments of approval for the specific investments in the Approved Enterprises. In the event our primary Israeli subsidiary fails to comply with these conditions, the tax and other benefits could be rescinded, in whole or in part, and the subsidiary might be required to refund the amount of the rescinded benefits, with the addition of CPI linkage differences and interest. We believe that the Approved Enterprise of our primary Israeli subsidiary substantially complies with all such conditions currently, but there can be no assurance that it will continue to do so.

Dividends. Dividends paid out of income derived by an Approved Enterprise are subject to withholding tax at a reduced rate (15%, compared with the general rate of 30%). If a dividend is paid by our primary Israeli subsidiary, such dividend may be distributed out of income from both Approved Enterprises and non-Approved Enterprises. As such, we expect the weighted average withholding tax rate applicable to such dividend to be approximately 20%. This withholding tax shall be levied in addition to the corporate tax to which our primary Israeli subsidiary shall be subject in the event it pays a dividend out of earnings generated during the tax holiday period related to its Approved Enterprise status.

In recent years changes were introduced to the Investment Law, specifically a major amendment of the Investment Law in 2011 and 2017.

The 2011 amendment ("Preferred Enterprise")

Among other things, these changes include a prospective termination of all tax incentives available under the law prior to the amendment. The amendment to the Investment Law also introduced a new concept of "Preferred Enterprise." However, under the transition rules, with respect to the applicability of the provisions of the Investment Law as amended in 2011, benefits granted pursuant to incentive programs commenced prior to 2011 would continue to apply until their expiration, unless the company affirmatively elects to apply the regime provided pursuant to the amended Investment Law. Our primary Israeli subsidiary has not yet made such election.

The 2017 amendment ("Preferred Technological Enterprises")

Amendment 73 to the Investment Law, which came into effect January 1, 2017, was followed by regulations promulgated on May 28, 2017, which incorporated the "Nexus Principles," based on OECD guidelines recently published as part of the Base Erosion and Profit Shifting (BEPS) project, into Israeli law. The OECD has since then confirmed that the regime adopted by Israel is "not harmful".

The new incentives regime applies to “Preferred Technological Enterprises” that meet certain conditions.

The corporate tax rate applicable to the Preferred Technological Income generated by a Special Preferred Technological Enterprise (companies which are part of a group with annual consolidated revenue in excess of NIS 10 billion - approximately US\$2.9 billion at current exchange rates -) is 6%. The reduced tax rate applies only with respect to the revenue attributable to the portion of intellectual property developed in Israel.

The withholding tax on dividends paid to a foreign parent company holding at least 90% of the shares of the distributing company out of earnings that are eligible for the reduced corporate tax rate (in our case, 6%) is 4%. For other dividend distributions out of earnings of a Preferred Technological Enterprise, the withholding tax rate is 20% (or a lower rate under a tax treaty, if applicable).

In 2019, our primary Israeli subsidiary continues to apply the benefits under the terms of the law as provided prior to the 2011 amendment. We are continuously evaluating the potential benefits of applying the 2011 and 2017 amendments.

Taxation Of Holders Of Ordinary Shares

Certain Guernsey Tax Considerations

Under the laws of Guernsey as currently in effect, a holder of our ordinary shares who is not a resident of Guernsey (which includes Alderney and Herm for these purposes) and who does not carry on business in Guernsey through a permanent establishment situated there is not subject to Guernsey income tax on dividends paid with respect to the ordinary shares and is not liable for Guernsey income tax on gains realized upon sale or disposition of such ordinary shares. In addition, Guernsey does not impose a withholding tax on dividends paid by us to a holder of our ordinary shares who is not a resident of Guernsey and who does not carry on business in Guernsey through a permanent establishment situated there. Under Guernsey tax legislation, a holder of our ordinary shares who is a Guernsey resident or who carries on business in Guernsey through a permanent establishment may, depending on their circumstances, be subject to Guernsey income tax in connection with dividends paid by us and where such holder is a Guernsey resident individual, such tax may be collected by way of withholding from the dividend. We do not believe this legislation affects the taxation of a holder of ordinary shares who is not a resident of Guernsey and who does not carry on business in Guernsey through a permanent establishment situated there.

There are no capital gains, gift or inheritance taxes levied by Guernsey, and the ordinary shares generally are not subject to any transfer taxes, stamp duties or similar charges on issuance or transfer.

Certain United States Federal Income Tax Considerations

The following discussion describes material U.S. federal income tax consequences to a U.S. holder of the ownership or disposition of our ordinary shares. A U.S. holder is a beneficial owner of our ordinary shares that is:

- (i) an individual who is a citizen or resident of the United States;
- (ii) a corporation created or organized in, or under the laws of, the United States or of any state thereof;
- (iii) an estate, the income of which is includible in gross income for U.S. federal income tax purposes regardless of its source; or
- (iv) a trust, if a court within the United States is able to exercise primary supervision over the administration of the trust and one or more U.S. persons has the authority to control all substantial decisions of the trust.

This summary generally considers only U.S. holders that own ordinary shares as capital assets. This summary does not discuss the U.S. federal income tax consequences to an owner of ordinary shares that is not a U.S. holder.

This discussion is based on current provisions of the Internal Revenue Code of 1986, as amended, or the Code, current and proposed Treasury regulations promulgated thereunder, and administrative and judicial decisions as of the date hereof, all of which are subject to change, possibly on a retroactive basis. This discussion does not address all aspects of U.S. federal income taxation that may be relevant to a U.S. holder of ordinary shares based on such holder's particular circumstances, U.S. federal income tax consequences to certain U.S. holders that are subject to special treatment (such as broker-dealers, insurance companies, tax-exempt organizations, financial institutions, U.S. holders that hold ordinary shares as part of a "straddle," "hedge" or "conversion transaction" with other investments, U.S. holders that hold ordinary shares in connection with a trade or business outside the United States, or U.S. holders owning directly, indirectly or by attribution at least 10% of the ordinary shares), or any aspect of state, local or non-U.S. tax laws. Additionally, this discussion does not consider the tax treatment of persons who hold ordinary shares through a partnership or other pass-through entity, the possible application of U.S. federal gift or estate taxes or any alternative minimum or Medicare contribution tax consequences.

This summary is for general information only and is not binding on the Internal Revenue Service, or the IRS. There can be no assurance that the IRS will not challenge one or more of the statements made herein. U.S. holders are urged to consult their own tax advisers as to the particular tax consequences to them of owning and disposing of our ordinary shares. Except as described in "–Passive Foreign Investment Company Considerations" below, this discussion assumes that we are not and have not been a passive foreign investment company (a "PFIC") for any taxable year.

Dividends. In general, a U.S. holder receiving a distribution with respect to the ordinary shares will be required to include such distribution (including the amount of non-U.S. taxes, if any, withheld therefrom) in gross income as a taxable dividend to the extent such distribution is paid from our current or accumulated earnings and profits as determined under U.S. federal income tax principles. Any distributions in excess of such earnings and profits will first be treated, for U.S. federal income tax purposes, as a nontaxable return of capital to the extent of the U.S. holder's tax basis in the ordinary shares, and then, to the extent in excess of such tax basis, as gain from the sale or exchange of a capital asset. However, since we do not calculate our earnings and profits under U.S. federal income tax principles, it is expected that any distribution will be reported as a dividend. In general, U.S. corporate shareholders will not be entitled to any deduction for distributions received as dividends on the ordinary shares.

Dividend income is taxed as ordinary income. However, a preferential U.S. federal income tax rate applies to "qualified dividend income" received by individuals (as well as certain trusts and estates), provided that certain holding period and other requirements are met. "Qualified dividend income" includes dividends paid on shares of a foreign corporation that are readily tradable on an established securities market in the United States. Since our ordinary shares are listed on the Nasdaq, we believe that dividends paid by us with respect to our ordinary shares should constitute "qualified dividend income" for U.S. federal income tax purposes, provided that the applicable holding period and other applicable requirements are satisfied. U.S. holders should consult their tax advisers regarding the availability of these preferential rates in their particular circumstances.

Dividends paid by us generally will be foreign source "passive category income" or, in certain cases, "general category income" for U.S. foreign tax credit purposes, which may be relevant in calculating a U.S. holder's foreign tax credit limitation.

Disposition of Ordinary Shares. Subject to the PFIC rules described below, upon the sale, exchange or other disposition of our ordinary shares, a U.S. holder generally will recognize capital gain or loss in an amount equal to the difference between the amount realized on the disposition by such U.S. holder and its tax basis in the

ordinary shares. Such capital gain or loss will be long-term capital gain or loss if the U.S. holder has held the ordinary shares for more than one year at the time of the disposition. In the case of a U.S. holder that is an individual, trust or estate, long-term capital gains realized upon a disposition of the ordinary shares generally will be subject to a preferential U.S. federal income tax rate. Gains realized by a U.S. holder on a sale, exchange or other disposition of ordinary shares generally will be treated as U.S. source income for U.S. foreign tax credit purposes.

Passive Foreign Investment Company Considerations. If, for any taxable year, 75% or more of our gross income consists of certain types of passive income, or 50% or more of the average value of our assets including goodwill (generally determined on a quarterly basis) consists of passive assets (generally assets that generate passive income), we will be treated as a PFIC for such year. If we are treated as a PFIC for any taxable year during which a U.S. holder owns our ordinary shares, the U.S. holder generally will be subject to increased tax liability upon the sale of our ordinary shares or upon the receipt of certain excess distributions, unless such U.S. holder makes an election to mark our ordinary shares to market annually.

We believe that we were not a PFIC for our taxable year ended September 30, 2019. However, because the tests for determining PFIC status for any taxable year are dependent upon a number of factors, some of which are beyond our control, including the value of our assets, which may be determined by reference to the market price of our ordinary shares (which may be volatile), and the amount and type of our gross income, we cannot guarantee that we will not become a PFIC for the current or any future taxable year or that the IRS will agree with our conclusion regarding our current PFIC status.

In addition, if we were a PFIC for any taxable year in which we make a distribution or the preceding taxable year, the preferential rules on “qualified dividend income” described above would not apply. If a U.S. holder owns ordinary shares during any year in which we are a PFIC, the U.S. holder generally must file annual reports to the IRS.

Information Reporting and Backup Withholding. U.S. holders generally will be subject to information reporting requirements with respect to dividends that are paid within the United States or through U.S.-related financial intermediaries, as well as with respect to gross proceeds from disposition of our ordinary shares, unless the U.S. holder is an “exempt recipient.” U.S. holders may also be subject to backup withholding (currently at a 24% rate) on such payments, unless the U.S. holder provides a taxpayer identification number and a duly executed IRS Form W-9 or otherwise establishes an exemption. Backup withholding is not an additional tax and the amount of any backup withholding will be allowed as a credit against a U.S. holder’s U.S. federal income tax liability and may entitle such holder to a refund, provided that the required information is timely furnished to the IRS.

Certain U.S. holders who are individuals or entities closely-held by individuals are required to report information with respect to their investment in our ordinary shares not held through a custodial account with a U.S. financial institution to the IRS. In general a U.S. holder holding specified “foreign financial assets” (which generally would include our ordinary shares not held through a custodial account with a financial institution or a custodial account with a non-U.S. financial institution through which our ordinary shares may be held) with an aggregate value exceeding certain threshold amounts should report information about those assets on IRS Form 8938, which must be attached to the U.S. holder’s annual income tax return. Investors who fail to report required information could become subject to substantial penalties.

Documents On Display

We are subject to the reporting requirements of foreign private issuers under the U.S. Securities Exchange Act of 1934. Pursuant to the Exchange Act, we file reports with the SEC, including this Annual Report on Form 20-F. We also submit reports to the SEC, including Form 6-K Reports of Foreign Private Issuers. You may call the SEC at 1-800-SEC-0330 for further information about the Public Reference Room. Such reports are also

available to the public on the SEC's website at www.sec.gov. Some of this information may also be found on our website at www.amdocs.com.

You may request copies of our reports, at no cost, by writing to or telephoning us as follows:

Amdocs, Inc.
Attention: Matthew E. Smith
1390 Timberlake Manor Parkway,
Chesterfield, Missouri 63017
Telephone: 314-212-8328

ITEM 11. QUANTITATIVE AND QUALITATIVE DISCLOSURES ABOUT MARKET RISK

Foreign Currency Risk

We manage our foreign subsidiaries as integral direct components of our operations. The operations of our foreign subsidiaries provide the same type of services with the same type of expenditures throughout the Amdocs group. We have determined that the U.S. dollar is our functional currency. We periodically assess the applicability of the U.S. dollar as our functional currency by reviewing the salient indicators as indicated in the authoritative guidance for foreign currency matters.

During fiscal year 2019, approximately 70% to 80% of our revenue and approximately 50% to 60% of our operating expenses were in U.S. dollars or linked to the U.S. dollar. If more customers seek contracts in currencies other than the U.S. dollar, the percentage of our revenue and operating expenses in the U.S. dollar or linked to the U.S. dollar may decrease over time and our exposure to fluctuations in currency exchange rates could increase.

In managing our foreign exchange risk, we enter into various foreign exchange contracts. We do not hedge all of our exposure in currencies other than the U.S. dollar, but rather our policy is to hedge significant net exposures in the major foreign currencies in which we operate, assuming the costs of executing these contracts are worthwhile. We use such contracts to hedge net exposure to changes in foreign currency exchange rates associated with revenue denominated in a foreign currency, primarily in Canadian dollar and European Euros, and anticipated costs to be incurred in a foreign currency, primarily Israeli shekels and Indian rupees. We also use such contracts to hedge the net impact of the variability in exchange rates on certain balance sheet items such as accounts receivable and employee related accruals denominated primarily in Israeli shekels, Indian rupees and European Euros, as well as other foreign currency of jurisdictions in which we operate. We seek to minimize the net exposure that the anticipated cash flow from sales of our products and services, cash flow required for our expenses and the net exposure related to our balance sheet items, denominated in a currency other than our functional currency will be affected by changes in exchange rates. Please see Note 7 to our consolidated financial statements.

The table below presents the total volume or notional amounts and fair value of our derivative instruments as of September 30, 2019. Notional values are in U.S. dollars and are translated and calculated based on forward rates as of September 30, 2019, for forward contracts, and based on spot rates as of September 30, 2019 for options.

	Notional Value*	Fair Value of Derivatives
Foreign exchange contracts (in millions)	\$ 1,103	\$ 7.9

(*) Gross notional amounts do not quantify risk or represent assets or liabilities of the Company, but are used in the calculation of settlements under the contracts.

Interest Rate Risk

Our interest expenses and income are sensitive to changes in interest rates, as all of our cash investments and some of our borrowings, are subject to interest rate changes. Our short-term interest-bearing investments, if applicable, are generally invested in short-term conservative debt instruments, primarily U.S. dollar-denominated, and consist mainly of bank deposits, corporate bonds, money market funds, U.S. government treasuries, and U.S. agency securities.

ITEM 12. DESCRIPTION OF SECURITIES OTHER THAN EQUITY SECURITIES

Not applicable.

PART II

ITEM 13. DEFAULTS, DIVIDEND ARREARAGES AND DELINQUENCIES

Not applicable.

ITEM 14. MATERIAL MODIFICATIONS TO THE RIGHTS OF SECURITY HOLDERS AND USE OF PROCEEDS

Not applicable.

ITEM 15. CONTROLS AND PROCEDURES

Our management is responsible for establishing and maintaining adequate internal control over financial reporting. With the participation of the Chief Executive Officer and Chief Financial Officer of Amdocs Management Limited, our management evaluated the effectiveness of our disclosure controls and procedures as of September 30, 2019. The term “disclosure controls and procedures,” as defined in Rules 13a-15(e) and 15d-15(e) under the Exchange Act, means controls and other procedures of a company that are designed to ensure that information required to be disclosed by a company in the reports that it files or submits under the Exchange Act is recorded, processed, summarized and reported, within the time period specified in the SEC’s rules and forms. Disclosure controls and procedures include, without limitation, controls and procedures designed to ensure that information required to be disclosed by a company in the reports that it files or submits under the Exchange Act is accumulated and communicated to the company’s management, including its principal executive and principal financial officers, as appropriate to allow timely decisions regarding required disclosure. Management recognizes that any controls and procedures, no matter how well designed and operated, can provide only reasonable assurance of achieving their objectives and management necessarily applies its judgment in evaluating the cost-benefit relationship of possible controls and procedures. Based on the evaluation of our disclosure controls and procedures as of September 30, 2019, the Chief Executive Officer and the Chief Financial Officer of Amdocs Management Limited concluded that, as of such date, our disclosure controls and procedures were effective at the reasonable assurance level. Ernst and Young LLP, the independent registered public accounting firm that audited the financial statements included in this Annual Report on Form 20-F, has issued an attestation report on our internal control over financial reporting as of September 30, 2019, which is included herein.

No change in our internal control over financial reporting (as defined in Rules 13a-15(f) and 15d-15(f) under the Exchange Act) occurred during the fiscal year ended September 30, 2019 that has materially affected, or is reasonably likely to materially affect, our internal control over financial reporting.

Management’s report on our internal control over financial reporting (as such defined in Rules 13a-15(f) and 15d-15(f) under the Exchange Act), and the related reports of our independent public accounting firm, are included on pages F-2, F-3 and F-4 of this Annual Report on Form 20-F, and are incorporated herein by reference.

ITEM 16A. AUDIT COMMITTEE FINANCIAL EXPERT

Our Board of Directors has determined that there is at least one audit committee financial expert, Adrian Gardner, serving on our Audit Committee. Our Board of Directors has determined that Mr. Gardner is an independent director.

ITEM 16B. CODE OF ETHICS

Our Board of Directors has adopted a Code of Ethics and Business Conduct that sets forth legal and ethical standards of conduct for our directors and employees, including our principal executive officer, principal financial officer and other executive officers, of our subsidiaries and other business entities controlled by us worldwide.

Our Code of Ethics and Business Conduct is available on our website at www.amdocs.com, or you may request a copy of our code of ethics, at no cost, by writing to or telephoning us as follows:

Amdocs, Inc.
Attention: Matthew E. Smith
1390 Timberlake Manor Parkway,
Chesterfield, Missouri 63017
Telephone: 314-212-8328

We intend to post on our website within five business days all disclosures that are required by law or Nasdaq rules concerning any amendments to, or waivers from, any provision of the code.

ITEM 16C. PRINCIPAL ACCOUNTANT FEES AND SERVICES

During each of the last three fiscal years, Ernst & Young LLP has acted as our independent registered public accounting firm.

Audit Fees

Ernst & Young billed us approximately \$3.8 million for audit services for fiscal 2019, including fees associated with the annual audit and reviews of our quarterly financial results submitted on Form 6-K, consultations on various accounting issues and performance of local statutory audits. Ernst & Young billed us approximately \$4.0 million for audit services for fiscal 2018.

Audit-Related Fees

Ernst & Young billed us approximately \$1.5 million for audit-related services for fiscal 2019. Audit-related services principally include SOC 1 report issuances and due diligence examinations. Ernst & Young billed us approximately \$2.3 million for audit-related services for fiscal 2018.

Tax Fees

Ernst & Young billed us approximately \$1.8 million for tax advice, including fees associated with tax compliance, tax advice and tax planning services for fiscal 2019. Ernst & Young billed us approximately \$1.6 million for tax advice in fiscal 2018.

All Other Fees

Ernst & Young did not bill us for services other than Audit Fees, Audit-Related Fees and Tax Fees described above for fiscal 2019 or fiscal 2018.

Pre-Approval Policies for Non-Audit Services

The Audit Committee has adopted policies and procedures relating to the approval of all audit and non-audit services that are to be performed by our independent registered public accounting firm. These policies generally provide that we will not engage our independent registered public accounting firm to render audit or non-audit services unless the service is specifically approved in advance by the Audit Committee or the engagement is entered into pursuant to the pre-approval procedure described below.

From time to time, the Audit Committee may pre-approve specified types of services that are expected to be provided to us by our independent registered public accounting firm during the next 12 months. Any such pre-approval is detailed as to the particular service or type of services to be provided and is also generally subject to a maximum dollar amount. In fiscal 2019, our Audit Committee approved all of the services provided by Ernst & Young.

ITEM 16D. EXEMPTION FROM THE LISTING STANDARDS FOR AUDIT COMMITTEES

Not applicable.

ITEM 16E. PURCHASES OF EQUITY SECURITIES BY THE ISSUER AND AFFILIATED PURCHASERS

The following table provides information about purchases by us and our affiliated purchasers during the fiscal year ended September 30, 2019 of equity securities that are registered by us pursuant to Section 12 of the Exchange Act:

Ordinary Shares

Period	(a) Total Number of Shares Purchased	(b) Average Price Paid per Share(1)	(c) Total Number of Shares Purchased as Part of Publicly Announced Plans or Programs	(d) Maximum Number (or Approximate Dollar Value) of Shares that May Yet Be Purchased Under the Plans or Programs(2)
10/1/18-10/31/18	408,629	\$ 63.34	408,629	\$ 611,244,191
11/1/18-11/30/18	549,168	\$ 64.82	549,168	\$ 575,645,377
12/1/18-12/31/18	621,986	\$ 60.57	621,986	\$ 537,969,723
01/1/19-01/31/19	512,003	\$ 57.81	512,003	\$ 508,370,524
02/1/19-02/28/19	631,061	\$ 55.96	631,061	\$ 473,057,105
03/1/19-03/31/19	1,002,877	\$ 54.93	1,002,877	\$ 417,970,342
04/1/19-04/30/19	423,146	\$ 54.35	423,146	\$ 394,971,008
05/1/19-05/31/19	463,771	\$ 57.21	463,771	\$ 368,437,600
06/1/19-06/30/19	644,541	\$ 60.92	644,541	\$ 329,170,948
07/1/19-07/31/19	347,700	\$ 63.13	347,700	\$ 307,221,984
08/1/19-08/31/19	561,900	\$ 63.85	561,900	\$ 271,343,972
09/1/19-09/30/19	489,041	\$ 65.79	489,041	\$ 239,171,042
Total	6,655,823	\$ 59.79	6,655,823	\$ 239,171,042

(1) Excludes broker and transaction fees.

(2) On November 8, 2017, our Board of Directors adopted a share repurchase plan authorizing the repurchase of up to \$800.0 million of our outstanding ordinary shares and on November 12, 2019, adopted another share repurchase plan for the repurchase of up to an additional \$800.0 million of our outstanding ordinary shares. The authorizations have no expiration date and permit us to purchase our ordinary shares in open market or privately negotiated transactions at times and prices that we consider appropriate.

ITEM 16F. CHANGE IN REGISTRANT'S CERTIFYING ACCOUNTANT

Not applicable.

ITEM 16G. CORPORATE GOVERNANCE

We believe there are no significant ways that our corporate governance practices differ from those followed by U.S. domestic companies under the Nasdaq listing standards. For further information regarding our corporate governance practices, please refer to our Notice and Proxy Statement to be mailed to our shareholders in December 2018, and to our website at www.amdocs.com.

ITEM 16H. MINE SAFETY DISCLOSURE

Not applicable.

PART III

ITEM 17. FINANCIAL STATEMENTS

Not applicable.

ITEM 18. FINANCIAL STATEMENTS

Financial Statements And Schedule

The following Financial Statements and Financial Statement Schedule of Amdocs Limited, with respect to financial results for the fiscal years ended September 30, 2019, 2018 and 2017, are included at the end of this Annual Report:

Audited Financial Statements of Amdocs Limited

Reports of Independent Registered Public Accounting Firm
Consolidated Balance Sheets as of September 30, 2019 and 2018
Consolidated Statements of Income for the fiscal years ended September 30, 2019, 2018 and 2017
Consolidated Statements of Comprehensive Income for the fiscal years ended September 30, 2019, 2018 and 2017
Consolidated Statements of Changes in Equity for the fiscal years ended September 30, 2019, 2018 and 2017
Consolidated Statements of Cash Flows for the fiscal years ended September 30, 2019, 2018 and 2017
Notes to the Consolidated Financial Statements

Financial Statement Schedules of Amdocs Limited

Valuation and Qualifying Accounts

All other schedules have been omitted since they are either not required or not applicable, or the information has otherwise been included.

ITEM 19. EXHIBITS

The exhibits listed hereof are filed herewith in response to this Item.

EXHIBIT INDEX

Exhibit No.	Description
1.1	Amended and Restated Memorandum of Incorporation of Amdocs Limited (incorporated by reference to Exhibit 99.1 to Amdocs' Form 6-K filed January 26, 2009)
1.2	Amended and Restated Articles of Incorporation of Amdocs Limited (incorporated by reference to Exhibit 1.2 to Amdocs' Annual Report on Form 20-F, filed December 7, 2010)
2	Description of rights of each applicable class of securities registered under Section 12 of the Securities Exchange Act of 1934
4.a.1†	Agreement between Amdocs, Inc. and AT&T Services, Inc. for Software and Professional Services, effective February 28, 2017 (incorporated by reference to Exhibit 4.b.6 to Amdocs' Annual Report on Form 20-F, filed December 11, 2017)
4.a.2†	Supplemental Agreement dated September 30, 2018 to the Agreement for Software and Professional Services effective February 28, 2017 that is filed as Exhibit 4.a.1 hereto (incorporated by reference to Exhibit 4.a.2. to Amdocs' Annual Report on Form 20-F, filed December 10, 2018)
4.a.3†	Amendment No. 1 to Agreement between Amdocs, Inc. and AT&T Services, Inc. for Software and Professional Services, effective November 8, 2018
4.a.4†	Amendment No. 2 to Agreement between Amdocs, Inc. and AT&T Services, Inc. for Software and Professional Services, effective December 27, 2018
4.b	Amdocs Limited 1998 Stock Option and Incentive Plan, as amended (incorporated by reference to Exhibit 99.1 to Amdocs' Registration Statement on Form S-8, filed on February 12, 2018)
4.c	Amended and Restated Credit Agreement, dated as of December 11, 2017, among Amdocs Limited, certain of its subsidiaries, the lenders from time to time party thereto, JPMorgan Chase Bank, N.A., as administrative agent, J.P. Morgan Europe Limited, as London agent, and JPMorgan Chase Bank, N.A., Toronto branch, as Canadian agent (incorporated by reference to Exhibit 4.d to Amdocs' Annual Report on Form 20-F, filed on December 11, 2017)
8	Subsidiaries of Amdocs Limited
12.1	Certification of Chief Executive Officer pursuant to Rule 13a-14(a)/15d-14(a)
12.2	Certification of Chief Financial Officer pursuant to Rule 13a-14(a)/15d-14(a)
13.1	Certification of Chief Executive Officer pursuant to 18 U.S.C. 1350
13.2	Certification of Chief Financial Officer pursuant to 18 U.S.C. 1350
14.1	Consent of Ernst & Young LLP
100.1	The following financial information from Amdocs Limited's Annual Report on Form 20-F for the year ended September 30, 2019, formatted in Extensible Business Reporting Language (XBRL): (i) Consolidated Balance Sheets as of September 30, 2019 and 2018, (ii) Consolidated Statements of Income for the years ended September 30, 2019, 2018 and 2017, (iii) Consolidated Statements of Comprehensive Income for the years ended September 30, 2019, 2018 and 2017, (iv) Consolidated Statements of Changes in Equity for the fiscal years ended September 30, 2019, 2018 and 2017, (v) the Consolidated Statements of Cash Flows for the years ended September 30, 2019, 2018 and 2017, and (vi) Notes to Consolidated Financial Statements

† Confidential treatment requested as to portions of the exhibit. Confidential materials omitted and filed separately with the Securities and Exchange Commission.

SIGNATURES

The registrant hereby certifies that it meets all of the requirements for filing on Form 20-F and that it has duly caused and authorized the undersigned to sign this annual report on its behalf.

AMDOCS LIMITED

By: /s/ Matthew E. Smith

Name: Matthew E. Smith

Title: *Secretary and Authorized Signatory*

Date: December 16, 2019

AMDOCS LIMITED

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MANAGEMENT'S REPORT ON INTERNAL CONTROL OVER FINANCIAL REPORTING

The management of the Company is responsible for establishing and maintaining adequate internal control over financial reporting for the Company. Internal control over financial reporting is a process designed to provide reasonable assurance regarding the reliability of financial reporting and the preparation of financial statements for external purposes in accordance with generally accepted accounting principles and includes those policies and procedures that:

- Pertain to the maintenance of records that in reasonable detail accurately and fairly reflect the transactions and dispositions of the assets of the Company;
- 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
- Provide reasonable assurance regarding prevention or timely detection of unauthorized acquisition, use or disposition of the Company's assets that could have a material effect on the financial statements.

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

The Company's management assessed the effectiveness of the Company's internal control over financial reporting as of September 30, 2019. In making this assessment, the Company's management used the criteria set forth by the Committee of Sponsoring Organizations of the Treadway Commission (2013 framework) in Internal Control-Integrated Framework.

Based on its assessment, management concluded that, as of September 30, 2019, the Company's internal control over financial reporting is effective based on those criteria.

The financial statements and internal control over financial reporting have been audited by Ernst & Young LLP, an independent registered public accounting firm which has issued an attestation report on the Company's internal control over financial reporting included elsewhere in this Annual Report on Form 20-F.

REPORT OF INDEPENDENT REGISTERED PUBLIC ACCOUNTING FIRM

The Board of Directors and Shareholders of Amdocs Limited

Opinion on the Financial Statements

We have audited the accompanying consolidated balance sheets of Amdocs Limited (the “Company”) as of September 30, 2019 and 2018, the related consolidated statements of income, comprehensive income, changes in equity and cash flows for each of the three years in the period ended September 30, 2019, and the related notes and the financial statement schedule listed in the Index at Item 18 of Part III (collectively referred to as the “consolidated financial statements”). In our opinion, the consolidated financial statements present fairly, in all material respects, the financial position of the Company at September 30, 2019 and 2018, and the results of its operations and its cash flows for each of the three years in the period ended September 30, 2019, in conformity with U.S. generally accepted accounting principles.

We also have audited, in accordance with the standards of the Public Company Accounting Oversight Board (United States) (“PCAOB”), the Company’s internal control over financial reporting as of September 30, 2019, based on criteria established in Internal Control-Integrated Framework issued by the Committee of Sponsoring Organizations of the Treadway Commission (2013 framework), and our report dated December 16, 2019 expressed an unqualified opinion thereon.

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.

Critical Audit Matters

The critical audit matters communicated below are matters arising from the current period audit of the financial statements that were communicated or required to be communicated to the audit committee and that: (1) relate to accounts or disclosures that are material to the financial statements and (2) involved our especially challenging, subjective or complex judgments. The communication of critical audit matters does not alter in any way our opinion on the consolidated financial statements, taken as a whole, and we are not, by communicating the critical audit matters below, providing separate opinions on the critical audit matters or on the accounts or disclosures to which they relate.

Revenue recognition for projects

*Description of
the Matter*

As discussed in Note 2 to the consolidated financial statements, the Company’s software solutions usually require significant customization, modification, implementation and

integration. As a result, a significant portion of the Company's project revenue is recognized over time, based on the percentage that incurred labor effort to date bears to total projected labor effort.

Auditing the recognition of the Company's project revenue was especially subjective and complex because of the significant estimation required by management to determine the total projected labor effort to complete a project. Determining the estimate of labor effort requires the knowledge of project-specific circumstances, including the specific terms and conditions of the contract, remaining performance obligations, changes to the project schedule, and complexity of the project. Changes in this estimate can have a material effect on when revenue is recognized.

*How We
Addressed the Matter in
Our Audit*

We obtained an understanding, evaluated the design and tested the operating effectiveness of controls over the projected labor effort estimation process. For example, for a sample of projects, we tested controls over management's review of the initial estimate of total projected labor effort to complete the project, as well as the ongoing evaluation of those estimates. Additionally, for a sample of completed projects, we tested the retrospective review controls performed by management to assess the reasonableness of the estimated labor effort throughout the life of the project.

Our audit procedures included, among others, evaluating the significant assumptions and the accuracy and completeness of the underlying data used in management's estimate. For example, for a sample of contracts, we tested management's estimate of total projected labor effort through a combination of analytical procedures, such as comparison of the estimated labor effort period over period and inspection of contracts to understand the specific terms and conditions as well as the remaining obligations in the contract. For selected contracts, we also met with various executives throughout the organization, including project managers, to obtain an understanding of project status and other factors considered in developing the estimate of remaining labor effort including project challenges, completed milestones, customer change orders and delays. In addition, we performed a retrospective review of actual labor effort incurred compared to previously estimated projected labor effort to evaluate the Company's historical ability to accurately estimate expected labor effort.

Uncertain Tax Positions

*Description of
the Matter*

As discussed in Notes 2 and 11 to the consolidated financial statements, the Company operates in a multinational tax environment and is subject to tax treaty arrangements and transfer pricing guidelines for intercompany transactions. The Company uses significant judgment to (1) determine whether, based on the technical merits, a tax position is more likely than not to be sustained and (2) measure the amount of tax benefit that qualifies for recognition. As of September 30, 2019, the total amount of unrecognized tax benefits for uncertain tax positions was \$169.3 million.

Auditing management's analysis of the Company's uncertain tax positions was especially subjective and complex due to the significant judgments made by management to determine the provisions for tax uncertainties. These provisions are based on interpretations of complex tax laws and legal rulings across various jurisdictions in which the Company operates and determination of arm's length pricing for certain intercompany transactions. The assumptions underlying the provisions for uncertain tax positions include the potential tax exposure resulting from management's interpretations and the determination of the cumulative probability that the uncertain tax position will be upheld upon regulatory examination.

*How We
Addressed the Matter in
Our Audit*

We obtained an understanding, evaluated the design and tested the operating effectiveness of controls over the Company's process to assess and review their uncertain tax positions. For example, we tested the controls over the review of assumptions used in the estimation calculation such as the Company's review over existing and potential tax controversies and tax audit results, and the computation of the impact to uncertain tax positions and tax reserves.

We involved our tax professionals to assist us with obtaining an understanding of the Company's tax structure, assessing the Company's compliance with tax laws, related developments in administrative rulings and court cases, identifying tax law changes in jurisdictions that may impact the Company's unrecognized tax benefits and assessing the technical merits of the Company's tax positions. We inspected the Company's correspondence with the relevant tax authorities and evaluated the income tax opinions. Our audit procedures also included, among others, evaluating the assumptions the Company used to develop its uncertain tax positions and related unrecognized income tax benefit amounts by jurisdiction and testing the completeness and accuracy of the underlying data used by the Company to calculate its uncertain tax positions. For certain tax positions related to intercompany transactions, we assessed the assumptions and pricing method used in setting arm's length prices and the documentation to support the pricing. We also evaluated the adequacy of the Company's financial statement disclosures related to these tax matters.

/s/ Ernst & Young LLP

We have served as the Company's auditor since 1988.
New York, NY
December 16, 2019

REPORT OF INDEPENDENT REGISTERED PUBLIC ACCOUNTING FIRM

The Board of Directors and Shareholders of Amdocs Limited

Opinion on Internal Control over Financial Reporting

We have audited Amdocs Limited's internal control over financial reporting as of September 30, 2019, based on criteria established in Internal Control — Integrated Framework issued by the Committee of Sponsoring Organizations of the Treadway Commission (2013 framework), (the COSO criteria). In our opinion, Amdocs Limited (the "Company") maintained, in all material respects, effective internal control over financial reporting as of September 30, 2019, based on the COSO criteria.

We also have audited, in accordance with the standards of the Public Company Accounting Oversight Board (United States) (PCAOB), the consolidated balance sheets of the Company as of September 30, 2019 and 2018, the related consolidated statements of income, comprehensive income, changes in equity and cash flows for each of the three years in the period ended September 30, 2019, and the related notes and the financial statement schedule listed in the Index at Item 18 of Part III and our report dated December 16, 2019 expressed an unqualified opinion thereon.

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.

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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/ Ernst & Young LLP
New York, NY
December 16, 2019

AMDOCS LIMITED
CONSOLIDATED BALANCE SHEETS
(In thousands, except per share data)

	As of September 30,	
	2019	2018
ASSETS		
Current assets:		
Cash and cash equivalents	\$ 471,632	\$ 418,783
Short-term interest-bearing investments	—	100,433
Accounts receivable, net	987,858	971,502
Prepaid expenses and other current assets	216,084	229,999
Total current assets	1,675,574	1,720,717
Property and equipment, net	525,314	496,585
Goodwill	2,462,835	2,444,895
Intangible assets, net	205,162	265,249
Other noncurrent assets	423,941	420,369
Total assets	\$ 5,292,826	\$ 5,347,815
LIABILITIES AND EQUITY		
Current liabilities:		
Accounts payable	\$ 176,508	\$ 194,738
Accrued expenses and other current liabilities	647,657	706,637
Accrued personnel costs	265,583	261,168
Deferred revenue	118,182	132,414
Total current liabilities	1,207,930	1,294,957
Deferred income taxes and taxes payable	207,508	224,572
Other noncurrent liabilities	334,922	336,244
Total liabilities	1,750,360	1,855,773
Equity:		
Amdocs Limited Shareholders' equity:		
Preferred Shares — Authorized 25,000 shares; £0.01 par value; 0 shares issued and outstanding	—	—
Ordinary Shares — Authorized 700,000 shares; £0.01 par value; 277,148 and 275,896 issued and 134,773 and 140,177 outstanding, in 2019 and 2018, respectively	4,452	4,436
Additional paid-in capital	3,667,662	3,587,625
Treasury stock, at cost — 142,375 and 135,719 ordinary shares in 2019 and 2018, respectively	(5,182,409)	(4,784,352)
Accumulated other comprehensive (loss) income	(2,547)	(32,731)
Retained earnings	5,012,799	4,673,901
Total Amdocs Limited shareholders' equity	3,499,957	3,448,879
Noncontrolling interests	42,509	43,163
Total equity	3,542,466	3,492,042
Total liabilities and equity	\$ 5,292,826	\$ 5,347,815

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

AMDOCS LIMITED
CONSOLIDATED STATEMENTS OF INCOME
(In thousands, except per share data)

	Year Ended September 30,		
	2019	2018	2017
Revenue	\$ 4,086,669	\$ 3,974,837	\$ 3,867,155
Operating expenses:			
Cost of revenue	2,653,172	2,595,276	2,507,656
Research and development	273,936	276,615	259,097
Selling, general and administrative	492,457	481,093	472,778
Amortization of purchased intangible assets and other	97,358	108,489	110,291
Non-recurring charges	—	85,057	—
	<u>3,516,923</u>	<u>3,546,530</u>	<u>3,349,822</u>
Operating income	569,746	428,307	517,333
Interest and other expense, net	1,859	6,766	4,421
Income before income taxes	567,887	421,541	512,912
Income taxes	88,441	67,145	76,086
Net income	\$ 479,446	\$ 354,396	\$ 436,826
Basic earnings per share	\$ 3.49	\$ 2.49	\$ 2.99
Diluted earnings per share	\$ 3.47	\$ 2.47	\$ 2.96

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

AMDOCS LIMITED
CONSOLIDATED STATEMENTS OF COMPREHENSIVE INCOME
(In thousands)

	Year Ended September 30,		
	2019	2018	2017
Net income	\$479,446	\$354,396	\$436,826
Other comprehensive income (loss), net of tax:			
Net change in fair value of cash flow hedges(1)	30,553	(51,116)	11,994
Net change in fair value of available-for-sale securities(2)	1,592	(1,182)	(978)
Net actuarial (loss) gain on defined benefit plan(3)	(1,961)	777	1,679
Other comprehensive income (loss), net of tax	30,184	(51,521)	12,695
Comprehensive income	<u>\$509,630</u>	<u>\$302,875</u>	<u>\$449,521</u>

- (1) Net of tax (expense) benefit of \$(2,458), \$4,482 and \$651 for the fiscal years ended September 30, 2019, 2018 and 2017, respectively.
(2) Net of tax benefit (expense) of \$0, \$9 and \$(4) for the fiscal years ended September 30, 2019, 2018 and 2017, respectively.
(3) Net of tax benefit (expense) of \$1,080, \$(254) and \$(697) for the fiscal years ended September 30, 2019, 2018 and 2017, respectively.

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

AMDOCS LIMITED
CONSOLIDATED STATEMENTS OF CHANGES IN EQUITY
(In thousands, except per share data)

	Ordinary Shares		Additional Paid-in Capital	Treasury Stock	Accumulated Other Comprehensive (Loss) Income(1)	Retained Earnings	Total Amdocs Limited Shareholders' Equity	Non- controlling interests(2)	Total Equity
	Shares	Amount							
Balance as of September 30, 2016	147,134	\$ 4,377	\$3,322,789	\$ (4,024,527)	\$ 6,095	\$4,144,827	\$ 3,453,561	\$ —	\$3,453,561
Comprehensive income:									
Net income	—	—	—	—	—	436,826	436,826	—	436,826
Other comprehensive income	—	—	—	—	12,695	—	12,695	—	12,695
Comprehensive income							449,521	—	449,521
Employee stock options exercised	2,220	28	87,948	—	—	—	87,976	—	87,976
Repurchase of shares	(5,519)	—	—	(340,597)	—	—	(340,597)	—	(340,597)
Tax benefit from equity-based awards	—	—	3,611	—	—	—	3,611	—	3,611
Cash dividends declared (\$0.855 per ordinary share)	—	—	—	—	—	(124,546)	(124,546)	—	(124,546)
Issuance of restricted stock, net of forfeitures	556	5	—	—	—	—	5	—	5
Equity-based compensation expense related to employees	—	—	44,539	—	—	—	44,539	—	44,539
Balance as of September 30, 2017	144,391	\$ 4,410	\$3,458,887	\$ (4,365,124)	\$ 18,790	\$4,457,107	\$ 3,574,070	\$ —	\$3,574,070
Comprehensive income:									
Net income(2)	—	—	—	—	—	354,396	354,396	—	354,396
Other comprehensive loss	—	—	—	—	(51,521)	—	(51,521)	—	(51,521)
Comprehensive income							302,875	—	302,875
Employee stock options exercised	1,800	24	81,262	—	—	—	81,286	—	81,286
Repurchase of shares	(6,337)	—	—	(419,228)	—	—	(419,228)	—	(419,228)
Cash dividends declared (\$0.970 per ordinary share)	—	—	—	—	—	(137,602)	(137,602)	—	(137,602)
Issuance of restricted stock, net of forfeitures	323	2	—	—	—	—	2	—	2
Equity-based compensation expense related to employees	—	—	47,476	—	—	—	47,476	—	47,476
Changes in Noncontrolling interests	—	—	—	—	—	—	—	43,163	43,163
Balance as of September 30, 2018	140,177	\$ 4,436	\$3,587,625	\$ (4,784,352)	\$ (32,731)	\$4,673,901	\$ 3,448,879	\$ 43,163	\$3,492,042
Cumulative effect adjustment(3)	—	—	—	—	—	10,434	10,434	—	10,434
Comprehensive income:									
Net income(2)	—	—	—	—	—	479,446	479,446	—	479,446
Other comprehensive income	—	—	—	—	30,184	—	30,184	—	30,184
Comprehensive income							509,630	—	509,630
Employee stock options exercised	874	11	41,487	—	—	—	41,498	—	41,498
Repurchase of shares	(6,656)	—	—	(398,057)	—	—	(398,057)	—	(398,057)
Cash dividends declared (\$1.105 per ordinary share)	—	—	—	—	—	(150,982)	(150,982)	—	(150,982)
Issuance of restricted stock, net of forfeitures	378	5	—	—	—	—	5	—	5
Equity-based compensation expense related to employees	—	—	38,550	—	—	—	38,550	—	38,550
Changes in Noncontrolling interests	—	—	—	—	—	—	—	(654)	(654)
Balance as of September 30, 2019	<u>134,773</u>	<u>\$ 4,452</u>	<u>\$3,667,662</u>	<u>\$ (5,182,409)</u>	<u>\$ (2,547)</u>	<u>\$5,012,799</u>	<u>\$ 3,499,957</u>	<u>\$ 42,509</u>	<u>\$3,542,466</u>

- (1) As of September 30, 2019, 2018 and 2017, accumulated other comprehensive (loss) income is comprised of unrealized gain (loss) on derivatives, net of tax, of \$3,945, \$(26,608) and \$24,508, unrealized loss on short-term interest-bearing investments, net of tax, of \$0, \$(1,592) and \$(410) and unrealized loss on defined benefit plan, net of tax, of \$(6,492), \$(4,531) and \$(5,308).
- (2) In fiscal years 2019 and 2018, all of the Company's net income is attributable to Amdocs Limited as the net income attributable to the Non-controlling interests is negligible.
- (3) The Cumulative effect adjustments as of October 1, 2018 include an increase of \$14,294 to retained earnings due to the impact of adoptions of ASU No. 2014-09 (ASC 606) and decrease of \$3,860 to retained earnings due to adoption of ASU No. 2016-16.

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

AMDOCS LIMITED
CONSOLIDATED STATEMENTS OF CASH FLOWS
(In thousands)

	Year Ended September 30,		
	2019	2018	2017
Cash Flow from Operating Activities:			
Net income	\$ 479,446	\$ 354,396	\$ 436,826
Reconciliation of net income to net cash provided by operating activities:			
Depreciation and amortization	205,772	211,224	214,885
Equity-based compensation expense	38,550	47,476	44,539
Deferred income taxes	(13,950)	25,098	6,551
Excess tax benefit from equity-based compensation	—	—	(4,666)
Loss from short-term interest-bearing investments	737	1,324	9
Net changes in operating assets and liabilities, net of amounts acquired:			
Accounts receivable, net	6,589	(66,451)	(41,075)
Prepaid expenses and other current assets	25,907	(18,736)	11,002
Other noncurrent assets	(1,635)	9,674	(52,667)
Accounts payable, accrued expenses and accrued personnel	(60,042)	25,348	72,049
Deferred revenue	(37,855)	7,650	(50,230)
Income taxes payable, net	6,025	(31,036)	(15,145)
Other noncurrent liabilities	6,833	(8,718)	14,034
Net cash provided by operating activities	656,377	557,249	636,112
Cash Flow from Investing Activities:			
Purchase of property and equipment, net(1)	(128,086)	(231,146)	(133,392)
Proceeds from sale of short-term interest-bearing investments	101,287	303,090	278,066
Purchase of short-term interest-bearing investments	—	(76,037)	(281,983)
Net cash paid for acquisitions	(60,572)	(355,142)	(18,064)
Other	615	(3,157)	(29,940)
Net cash used in investing activities	(86,756)	(362,392)	(185,313)
Cash Flow from Financing Activities:			
Borrowings under financing arrangements	—	120,000	200,000
Payments under financing arrangements	—	(120,000)	(400,000)
Repurchase of shares	(398,057)	(419,228)	(340,597)
Proceeds from employee stock option exercises	41,483	81,280	87,586
Payments of dividends	(147,616)	(134,292)	(121,503)
Investment by noncontrolling interests, net(1)	(4,776)	47,013	—
Payment of contingent consideration from a business acquisition	(7,470)	—	—
Excess tax benefit from equity-based compensation and other	(336)	(458)	4,666
Net cash used in financing activities	(516,772)	(425,685)	(569,848)
Net increase (decrease) in cash and cash equivalents	52,849	(230,828)	(119,049)
Cash and cash equivalents at beginning of year	418,783	649,611	768,660
Cash and cash equivalents at end of year	<u>\$ 471,632</u>	<u>\$ 418,783</u>	<u>\$ 649,611</u>
Supplementary Cash Flow Information			
Interest and Income Taxes Paid			
Cash paid for:			
Income taxes, net of refunds	\$ 75,790	\$ 55,938	\$ 67,544
Interest(2)	7,348	2,009	1,145

- (1) The amounts under "Purchase of property and equipment, net", include proceeds of \$9,676 relating to refund of betterment levy for the year ended September 30, 2019 (\$4,776 of which was a refund to the noncontrolling interest), proceeds from sale of property and equipment of \$151, \$459 and \$57 for the year ended September 30, 2019, 2018 and 2017, respectively.
- (2) The amounts under "Interest", include payments of interest to financial institution, tax authorities and other.

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

AMDOCS LIMITED

NOTES TO THE CONSOLIDATED FINANCIAL STATEMENTS
(dollar and share amounts in thousands, except per share data)

Note 1 — Nature of Entity

Amdocs Limited (the “Company”) is a leading provider of software and services to communications, cable and satellite, entertainment and media industry service providers of all sizes throughout the world. The Company and its consolidated subsidiaries operate in one segment and design, develop, market, support, implement and operate amdocsONE, an open and modular solution set.

The Company is a Guernsey corporation, which directly or indirectly holds numerous subsidiaries around the world, the vast majority of which are wholly-owned. The majority of the Company’s customers are in North America, Europe, Asia-Pacific and the Latin America region. The Company’s main development facilities are located in Brazil, Canada, Cyprus, India, Ireland, Israel, Mexico, the Philippines, the United Kingdom and the United States.

Note 2 — Summary of Significant Accounting Policies

Basis of Presentation

The consolidated financial statements are prepared in accordance with U.S. generally accepted accounting principles, or GAAP and are denominated in U.S. Dollars.

Consolidation

The consolidated financial statements include the accounts of the Company and its subsidiaries, the vast majority of which are wholly-owned. All intercompany transactions and balances have been eliminated in consolidation.

In December 2017, the Company entered into agreements with Union Investments and Development Limited (“Union”) to partner through a legal entity that is equally owned by the Company and Union for the purpose of acquiring specific land which the Company expects to use as the site for a new campus in Ra’anana, Israel. On January 2, 2018 the Company completed the acquisition of the land. Pursuant to the agreements between the Company and Union, as the Company has control over the construction and ongoing operations of the new campus, the new entity’s financial information is consolidated into the Company’s consolidated financial statements with the portion not owned classified as non-controlling interests. The Company is obligated to distribute in the future the new entity’s earnings under certain conditions, in fiscal years 2019 and 2018 the new entity had negligible earnings or losses and, therefore, an immaterial effect on consolidated financial statements of Amdocs Limited.

Use of Estimates

The preparation of financial statements in conformity with 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 dates of the financial statements, and the reported amounts of revenue and expenses during the reporting period. Actual results could differ from those estimates.

Reclassifications

From time to time, certain immaterial amounts in prior year financial statements may be reclassified to conform to the current year presentation.

AMDOCS LIMITED

NOTES TO THE CONSOLIDATED FINANCIAL STATEMENTS
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Functional Currency

The Company manages its foreign subsidiaries as integral direct components of its operations. The operations of the Company's foreign subsidiaries provide the same type of services with the same type of expenditures throughout the Amdocs group. The Company has determined that its functional currency is the U.S. dollar. The Company periodically assesses the applicability of the U.S. dollar as the Company's functional currency by reviewing the salient indicators as indicated in the authoritative guidance for foreign currency matters.

Cash and Cash Equivalents

Cash and cash equivalents consist of cash and interest-bearing investments with insignificant interest rate risk and maturities from acquisition date of 90 days or less.

Accounts Receivable Factoring

From time to time, the Company uses non-recourse factoring arrangements, to sell accounts receivable to third-party financial institutions. The sale of the receivables in these arrangements are accounted for as a true sale.

Investments

The Company classifies all of its short-term interest-bearing investments as available-for-sale securities. Such short-term interest-bearing investments, if applicable, generally consist primarily of bank deposits, corporate bonds, money market funds, U.S. government treasuries, and U.S. agency securities, which are stated at market value. Unrealized gains and losses are comprised of the difference between market value and amortized costs of such securities and are reflected, net of tax, as "accumulated other comprehensive (loss) income" in equity, unless a security is other than temporarily impaired. The Company recognizes an impairment charge in earnings when a decline in the fair value of its investments below the cost basis is judged to be other-than-temporary. For securities with an unrealized loss that the Company intends to sell, or it is more likely than not that the Company will be required to sell before recovery of their amortized cost basis, the entire difference between amortized cost and fair value is recognized in earnings. For securities that do not meet these criteria, the amount of impairment recognized in earnings is limited to the amount related to credit losses, while other declines in fair value related to other factors are recognized in other comprehensive income (loss). The Company uses a discounted cash flow analysis to determine the portion of the impairment that relates to the credit losses. To the extent that the net present value of the projected cash flows is less than the amortized cost of the security, the difference is considered a credit loss. Realized gains and losses on short-term interest-bearing investments are included in earnings and are derived using the first-in-first-out (FIFO) method for determining the cost of securities.

Property and Equipment

Property and equipment are stated at cost. Depreciation is computed using the straight-line method over the estimated useful life of the asset, which primarily ranges from three to ten years. Leasehold improvements are amortized over the shorter of the estimated useful lives or the term of the related lease. Property and equipment that have been fully depreciated and are no longer in use are netted against accumulated depreciation.

The Company capitalizes certain expenditures for software that is internally developed for use in the business, which is classified as computer equipment. Amortization of internal use software begins when the software is ready for service and continues on the straight-line method over the estimated useful life.

AMDOCS LIMITED

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(dollar and share amounts in thousands, except per share data)

The Company capitalizes the expenditures related to the new campus in Israel, which are classified as building and land. Amortization will begin when the new campus is ready for use and will be amortized on the straight-line basis over the estimated useful life.

Goodwill, Intangible Assets and Long-Lived Assets

Goodwill and intangible assets deemed to have indefinite lives are subject to an annual impairment test or more frequently if impairment indicators are present. Goodwill impairment is deemed to exist if the net book value of a reporting unit exceeds its estimated fair value. The goodwill impairment test involves a two-step process. The first step, identifying a potential impairment, compares the fair value of a reporting unit with its carrying amount, including goodwill. If the carrying value of the reporting unit exceeds its fair value, the second step would need to be conducted; otherwise, no further steps are necessary as no potential impairment exists. The second step, measuring the impairment loss, compares the implied fair value of the reporting unit goodwill with the carrying amount of that goodwill. Any excess of the reporting unit goodwill carrying value over the respective implied fair value is recognized as an impairment loss.

The total purchase price of business acquisitions accounted for using the purchase method is allocated first to identifiable assets and liabilities based on estimated fair values. The excess of the purchase price over the fair value of net assets of purchased businesses is recorded as goodwill.

Other definite-life intangible assets consist primarily of core technology and customer relationships. Core technology acquired by the Company is amortized over its estimated useful life on a straight-line basis.

Some of the acquired customer relationships are amortized over their estimated useful lives in proportion to the economic benefits realized. This accounting policy generally results in accelerated amortization of such customer relationships as compared to the straight-line method. All other acquired customer relationships are amortized over their estimated useful lives on a straight-line basis.

The Company tests long-lived assets, including definite life intangible assets, for impairment whenever events or changes in circumstances indicate that the carrying amount of such assets may not be recoverable. Determination of recoverability of long-lived assets is based on an estimate of the undiscounted future cash flows resulting from the use of the cash generating unit and its eventual disposition. Measurement of an impairment loss for long-lived assets, including definite life intangible assets that management expects to hold and use is based on the fair value of the cash generating unit. Long-lived assets, including definite life intangible assets, to be disposed of are reported at the lower of carrying amount or fair value less costs to sell.

Comprehensive Income

Comprehensive income, net of related taxes where applicable, includes, in addition to net income:

- (i) net change in fair value of available-for-sale securities;
- (ii) net change in fair value of cash flow hedges; and
- (iii) net actuarial gains and losses on defined benefit plans.

Treasury Stock

The Company repurchases its ordinary shares from time to time on the open market or in other transactions and holds such shares as treasury stock. The Company presents the cost to repurchase treasury stock as a reduction of equity.

AMDOCS LIMITED

NOTES TO THE CONSOLIDATED FINANCIAL STATEMENTS
(dollar and share amounts in thousands, except per share data)

Business Combinations

In accordance with business combinations accounting, assets acquired and liabilities assumed, as well as any contingent consideration that may be part of the acquisition agreement, are recorded at their respective fair values at the date of acquisition. For acquisitions that include contingent consideration, the fair value is estimated on the acquisition date as the present value of the expected contingent payments, determined using weighted probabilities of possible payments. The Company remeasures the fair value of the contingent consideration at each reporting period until the contingency is resolved. Except for measurement period adjustments, the changes in fair value are recognized in the consolidated statements of income. Any earn-out which is not considered a contingent consideration is recognized as compensation expense over expected service period.

In accordance with business combinations accounting, the Company allocates the purchase price of acquired companies to the tangible and intangible assets acquired and liabilities assumed, as well as to in-process research and development based on their estimated fair values. Such valuations require management to make significant estimates and assumptions, especially with respect to intangible assets. As a result of the significant judgments that need to be made, the Company obtains the assistance of independent valuation firms. The Company completes these assessments as soon as practical after the closing dates. Any excess of the purchase price over the estimated fair values of the identifiable net assets acquired is recorded as goodwill.

Although the Company believes the assumptions and estimates of fair value it has made in the past have been reasonable and appropriate, they are based in part on historical experience and information obtained from the management of the acquired companies and are inherently uncertain and subject to refinement. Critical estimates in valuing certain assets acquired and liabilities assumed include but are not limited to: future expected cash flows from license and service sales, maintenance, customer contracts and acquired developed technologies, expected costs to develop the in-process research and development into commercially viable products and estimated cash flows from the projects when completed and the acquired company's brand awareness and discount rate. Unanticipated events and circumstances may occur that may affect the accuracy or validity of such assumptions, estimates or actual results. As a result, during the measurement period, which may be up to one year from the acquisition date, the Company records adjustments to the assets acquired and liabilities assumed with the corresponding offset to goodwill, if the changes are related to conditions that existed at the time of the acquisition. 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, based on events that occurred subsequent to the acquisition date, are recorded in its consolidated statements of income.

The Company estimates the fair values of its services, hardware, software license and maintenance obligations assumed. The estimated fair values of these performance obligations are determined utilizing a cost build-up approach. The cost build-up approach determines fair value by estimating the costs related to fulfilling the obligations plus a normal profit margin.

The Company may establish a valuation allowance for certain deferred tax assets and estimate the value of uncertain tax positions of a newly acquired entity. This process requires significant judgment and analysis.

Income Taxes

The Company records deferred income taxes to reflect the net tax effects of temporary differences between the carrying amounts of assets and liabilities for financial reporting and tax purposes. Deferred taxes are computed based on enacted tax rates anticipated to be in effect when the deferred taxes are expected to be paid or realized. A valuation allowance is provided for deferred tax assets if it is more likely than not, the Company will not be able to realize their benefit.

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Deferred tax liabilities and assets are classified as noncurrent on the balance sheet. Deferred tax liabilities also include anticipated withholding taxes due on subsidiaries' earnings when paid as dividends to the Company.

The Company recognizes the tax benefit from an uncertain tax position only if the weight of available evidence indicates that it is more likely than not that the position will be sustained on audit, including resolution of related appeals or litigation processes, if any. The tax benefits recognized in the financial statements from such a position is measured based on the largest benefit that has a greater than 50% likelihood of being realized upon ultimate settlement. Interest and penalties related to uncertain tax positions are recognized in the provision for income taxes. See Note 11 to the consolidated financial statements.

Revenue Recognition

The Company recognizes revenue under the five-step methodology required under ASC 606, which requires the Company to identify the contract with the customer, identify the performance obligations in the contract, determine the transaction price, allocate the transaction price to the performance obligations identified, and recognize revenue when (or as) each performance obligation is satisfied.

Revenue is recognized net of any revenue-based taxes assessed by a governmental authority that are both imposed on and concurrent with a specific revenue-producing transaction and collected by the Company from a customer (for example, sales, use and value added taxes).

The Company's primary revenue categories, related performance obligations, and associated recognition patterns are as follows:

Revenue Recognition for projects — The Company usually sells its software licenses as part of an overall solution offered to a customer including significant customization, modification, implementation and integration. Those services are deemed essential to the software. As a result, revenue related to these projects is recognized over time, usually based on a percentage that incurred labor effort to date bears to total projected labor effort. Incurred effort represents work performed, which corresponds with, and thereby best depicts, the transfer of control to the customer. Revenue from customization, implementation, modification and integration services is also recognized over the course of the projects. When total cost estimates for these types of arrangements exceed revenues in a fixed-price arrangement, the estimated losses are recognized immediately based upon the cost applicable to the delivering unit. Significant judgment is required when estimating total labor effort and progress to completion on these arrangements, as well as whether a loss is expected to be incurred on the project.

As a significant portion of the Company's revenue is satisfied over time as work progresses, the annual and quarterly operating results may be affected by the size and timing of the initiation of customer projects as well as the Company's progress in completing such projects.

Revenue Recognition for subsequent license fee — Subsequent license fee revenue is recognized when the customer has access to the license and the right to use and benefit from the license. In cases when the conditions require delivery, then delivery must have occurred for purposes of revenue recognition. Subsequent license fee is based on a customer's subscriber level, transaction volume or other measurements when greater than the level specified in the contract for the initial license fee.

Revenue Recognition for term-based license and perpetual license — Revenue related to software solutions that do not require significant customization, implementation and modification are recognized upon delivery.

AMDOCS LIMITED

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Revenue Recognition for maintenance — Maintenance revenue is recognized ratably over the term of the maintenance agreement.

Revenue Recognition for ongoing services — Revenue from ongoing support services is recognized as work is performed, revenue from other ongoing services is recognized over time as services are preformed, using one method of measuring performance such as time elapsed, output produced, volume of data processed or subscriber count that provides the most faithful depiction of the transfer of services.

Revenue Recognition for managed services arrangement — Managed services arrangements include management of data center operations and IT infrastructure, application management and ongoing support, management of end-to-end business processes, and managed transformation that includes both a transformation project as well as taking over managed services responsibility.

The revenue from managed services arrangement is recognized for each individual performance obligation according to its relevant revenue category, including but not limited to, revenue from the management of a customer's operations, revenue from projects and revenue from ongoing support services.

Revenue from the management of a customer's operations pursuant to managed services arrangements, is recognized over time as services are preformed, using one method of measuring performance such as time elapsed, output produced, volume of data processed or subscriber count that provides the most faithful depiction of the transfer of services, pursuant to the specific contract terms of the managed services arrangement. Typically, managed services arrangements are long term in duration and are not subject to significant seasonality.

Revenue Recognition for third-party hardware and software — Third-party hardware sales are recognized upon delivery or installation, and revenue from third-party software sales is recognized upon delivery. Maintenance revenue is recognized ratably over the term of the maintenance agreement. Revenue from third-party hardware and software sales is recorded at gross amount for transactions in which the Company control the third-party hardware and software prior to fulfilling the performance obligation. In specific circumstances where the Company do not meet the above criteria, revenue is recognized on a net basis. In certain arrangements, the Company may earn revenue from other third-party services which is recorded at a gross amount as it controls the services before transferring them to the customer.

Arrangements with Multiple Performance Obligations — Many of the Company's agreements include multiple performance obligations. The Company allocates the transaction price for each contract to each performance obligation identified in the contract based on the relative standalone selling price (SSP). The Company determines SSP for the purposes of allocating the transaction price to each performance obligation by considering several external and internal factors including, but not limited to, transactions where the specific performance obligation sold separately, historical actual pricing practices and geographies in which the Company offers its services in accordance with ASC 606. The determination of SSP requires the exercise of judgement. If a specific performance obligation is sold for a broad range of amounts (that is, the selling price is highly variable) or if the Company has not yet established a price for that good or service, and the good or service has not previously been sold on a standalone basis (that is, the selling price is uncertain), the Company applies the residual approach whereby all other performance obligations within a contract are first allocated a portion of the transaction price based upon their respective SSPs with any residual amount of transaction price allocated to the remaining specific performance obligation.

Billing terms and conditions generally vary by contract category. Amounts are typically billed as work progresses in accordance with agreed-upon contractual terms, either at periodic intervals (e.g., monthly or

AMDOCS LIMITED

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quarterly) or upon achievement of contractual milestones. In cases where timing of revenue recognition significantly differs from the timing of invoicing, the Company is considering whether a significant financing component exists. The Company elected to use the practical expedient in assessing the financing component in contracts where the time between cash collection and performance is less than one year.

Accounts Receivable — Billed — Billed accounts receivables include all outstanding invoices to customers, as well as amounts allowed to be billed according to contractual billing terms with customers.

Accounts Receivable — Unbilled — Unbilled accounts receivable include all revenue amounts that had not been billed as of the balance sheet date due to contractual billing terms with customers. Unbilled accounts receivable that are expected to be billed beyond the next 12 months are considered long-term unbilled receivables and included in other noncurrent assets.

Deferred Revenue — Deferred revenue represents billings to customers for which revenue has not yet been recognized. Deferred revenue that is expected to be recognized beyond the next 12 months is considered long-term deferred revenue and included in other noncurrent liabilities.

Assets Recognized from the Costs to Obtain a Contract with a Customer — Incremental costs of obtaining a contract (e.g., sales commissions) are capitalized and amortized on a pro-rata basis over the contract period if the Company expects to recover those costs. Commissions on renewals are commensurate with the commission from the initial arrangement. Incremental costs of obtaining a contract include only those costs the Company incurs to obtain a contract that it would not have incurred if the contract had not been obtained. The Company has determined that certain sales commissions programs meet the requirements to be capitalized, which prior to the adoption of ASC 606, were previously expensed as incurred. Additionally, as a practical expedient, the Company expenses costs to obtain a contract as incurred if the amortization period would have been a year or less. The amortization of these costs is included in selling, general and administrative expenses in the Company's consolidated statements of income.

In certain circumstances where the Company enters into a contract with a customer for the provision of managed services for a defined period of time, the Company defers certain direct costs incurred at the inception of the contract. These costs include expenses incurred in association with the origination of a contract. In addition, if the revenue for a delivered item is not recognized because it is not separable from the undelivered item, then the Company also defers the cost of the delivered item. The deferred costs are amortized on a straight-line basis over the managed services period, or over the recognition period of the undelivered item. Revenue associated with these capitalized costs is deferred and is recognized over the same period.

Cost of Revenue

Cost of revenue consists of all costs associated with providing software licenses and services to customers, third party hardware and software including identified losses on contracts. Estimated losses on contracts satisfied over time as work performed are recognized in the period in which the loss is identified.

Cost of revenue also includes costs of third-party products associated with selling third-party computer hardware and software products to customers and other third-party services, when the related revenue is recorded at the gross amount. Customers purchasing third-party products and services from the Company generally do so in conjunction with the purchase of the Company's software and services.

AMDOCS LIMITED

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(dollar and share amounts in thousands, except per share data)

Research and Development

Research and development expenditures consist of costs incurred in the development of new software modules and product offerings, either as part of the Company's internal product development programs, which are sold, leased or otherwise marketed. Research and development costs are expensed as incurred.

Based on the Company's product development process, technological feasibility is established upon completion of a detailed program design or, in the absence thereof, completion of a working model. Costs incurred by the Company after achieving technological feasibility and before the product is ready for customer release have been insignificant.

Equity-Based Compensation

The Company measures and recognizes the compensation expense for all equity-based payments to employees and directors based on their estimated fair values. The Company estimates the fair value of employee stock options at the date of grant using a Black-Scholes valuation model and values restricted stock based on the market value of the underlying shares at the date of grant. The Company recognizes compensation costs using the graded vesting attribution method that results in an accelerated recognition of compensation costs in comparison to the straight-line method.

The Company uses a combination of implied volatility of the Company's traded options and historical stock price volatility ("blended volatility") as the expected volatility assumption required in the Black-Scholes option valuation model. As equity-based compensation expense recognized in the Company's consolidated statements of income is based on awards ultimately expected to vest, it has been reduced for estimated forfeitures.

Concentrations of Credit Risk

Financial instruments that potentially subject the Company to concentration of credit risk consist principally of cash and cash equivalents, short-term interest-bearing investments, and trade receivables. Cash and cash equivalents are maintained with several financial institutions. Generally, these deposits may be redeemed upon demand and are maintained with financial institutions with reputable credit and therefore bear minimal credit risk. The Company seeks to mitigate its credit risks by spreading such risks across multiple financial institutions and monitoring the risk profiles of these counterparties. The Company has conservative investment policy guidelines under which it invests its excess cash primarily in highly liquid U.S. dollar-denominated securities. The Company's revenue is generated primarily in North America. To a lesser extent, revenue is generated in Europe and the rest of the world. Most of the Company's customers are among the largest communications and media companies in the world (or are owned by them). The Company's business is subject to the effects of general global economic conditions and market conditions in the communications industry. The Company performs ongoing credit analyses of its customer base and generally does not require collateral.

The Company evaluates accounts receivable to determine if they ultimately will be collected. Significant judgments and estimates are involved in performing this evaluation, which are based on factors that may affect a customer's ability to pay, such as past experience, credit quality of the customer, age of the receivable balance and current economic conditions. The allowance for doubtful accounts is for estimated losses resulting from accounts receivable for which their collection is not reasonably probable. The allowance for doubtful accounts as of September 30, 2019 and 2018, was \$36,121 and \$21,211, respectively. As of September 30, 2019, the Company had one customer with an accounts receivable balance of more than 10% of total accounts receivable, amounting to 16%, which was lower than its respective portion of total revenue. As of September 30, 2018, the

AMDOCS LIMITED

NOTES TO THE CONSOLIDATED FINANCIAL STATEMENTS
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Company had one customer with an accounts receivable balance of more than 10% of total accounts receivable, amounting to 19%, which was lower than its respective portion of total revenue.

Earnings per Share

Basic earnings per share is calculated using the weighted average number of shares outstanding during the period. Diluted earnings per share is computed on the basis of the weighted average number of shares outstanding and the effect of dilutive outstanding equity-based awards using the treasury stock method. The Company includes participating securities (unvested restricted shares that contain non-forfeitable rights to dividends or dividend equivalents) in the computation of earnings per share pursuant to the two-class method, which calculates earnings per share for common shares and participating securities.

Derivatives and Hedging

The Company carries out transactions involving foreign currency exchange derivative financial instruments. The transactions are designed to hedge the Company's exposure in currencies other than the U.S. dollar. The Company recognizes derivative instruments as either assets or liabilities and measures those instruments at fair value. If a derivative meets the definition of a cash flow hedge and is so designated, changes in the fair value of the derivative are recognized in other comprehensive income (loss) until the hedged item is recognized in earnings. The ineffective portion of a derivative designated as a cash flow hedge is recognized in earnings. If a derivative does not meet the definition of a cash flow hedge, the changes in the fair value are included in earnings.

Recent Accounting Standards

In November 2018, the Financial Accounting Standards Board, or FASB, issued Accounting Standard Update, or ASU, No. 2018-18, "*Collaborative Arrangements*". The ASU clarifies the interaction between collaborative arrangements and the new revenue standards. This ASU will be effective for the Company on October 1, 2020, and early adoption is permitted. The Company currently expects that adoption of this ASU will not have a material impact on its consolidated financial statements.

In August 2018, the FASB issued ASU No. 2018-15, "*Customer's Accounting for Implementation Costs Incurred in a Cloud Computing Arrangement That Is a Service Contract*". The ASU amends the definition of hosting arrangement and requires a customer in a hosting arrangement that is a service contract to capitalize certain implementation costs as if the arrangement was an internal-use software project. This ASU will be effective for the Company on October 1, 2020, and early adoption is permitted. The Company currently expects that adoption of this ASU will not have a material impact on its consolidated financial statements.

In August 2018, the FASB issued ASU No. 2018-13, "*Fair Value Measurement*". The ASU eliminates, adds and modifies certain disclosure requirements for fair value measurements. This ASU will be effective for the Company on October 1, 2020, and early adoption is permitted with specific limitations. The Company currently expects that adoption of this ASU may result in changes to its financial statements disclosure and will not have a material impact on its consolidated financial statements.

In August 2018, the FASB issued ASU No. 2018-14, "*Changes to the Disclosure Requirements for Defined Benefit Plans*". The ASU makes minor changes to the disclosure requirement for employers that sponsor defined pension and/or other post retirement benefit plans. This ASU will be effective for the Company on October 1, 2020, and early adoption is permitted. The Company expects that the adoption of this ASU will not have a material impact on its consolidated financial statements.

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In June 2018, the FASB issued ASU No. 2018-07, “*Improvements to Nonemployee Share-Based Payment Accounting*”. The ASU aligns the measurement and classification for share-based payments to nonemployees with the guidance for share-based payments to employees, with certain exceptions. This ASU will be effective for the Company on October 1, 2019, and early adoption is permitted with certain limitations. The Company expects that the adoption of this ASU will not have a material impact on its consolidated financial statements.

In August 2017, the FASB issued ASU No. 2017-12, “*Targeted Improvements to Accounting for Hedging Activities*”. The ASU amends existing guidance to simplify the application of hedge accounting in certain situations and allows companies to better align their hedge accounting with their risk management activities. This ASU will be effective for the Company on October 1, 2020, and earlier adoption by one year is permitted. The Company currently expects that adoption of this ASU will not have a material impact on its consolidated financial statements.

In June 2016, the FASB issued ASU No. 2016-13, “*Measurement of Credit Losses on Financial Instruments*”. The ASU which introduces an impairment model that is based on expected losses rather than incurred losses and will apply to financial assets subject to credit losses and measured at amortized cost, and certain off-balance sheet credit exposures. This ASU will be effective for the Company on October 1, 2020, and earlier adoption by one year is permitted. The Company is currently evaluating the impact of adoption of this ASU on its consolidated financial statements.

In February 2016, the FASB issued ASU No. 2016-02, “*Leases*”. The ASU increases transparency and comparability by providing additional information to users of financial statements regarding an entity’s leasing activities. The ASU requires reporting entities to recognize lease assets and lease liabilities on the balance sheet for most leases, including operating leases, with a term greater than twelve months. This ASU, will be effective for the Company on October 1, 2019. The Company will adopt this ASU using a modified retrospective method. The Company is finalizing the implementation of this new standard including analyzing its lease contracts and evaluating changes to system, business processes and controls needed to support recognition, including currencies exposures and disclosure. The Company expects its leases designated as operating leases will be reported on the consolidated balance sheet upon adoption, as of October 1, 2019, which will increase its total assets and liabilities in total amount of approximately \$260 million to \$310 million. In addition, as a material portion of the Company’s leases are denominated in currencies other than the functional currency, the associated lease liabilities will be remeasured using the current exchange rate in the future reporting periods, which may result, if not fully hedged, in foreign exchange gains or losses. The Company currently expects that the adoption of this ASU will not have a material impact on its consolidated statement of income and on its consolidated statement of cash flow.

Adoption of New Accounting Standards

In December 2017, the SEC issued Staff Accounting Bulletin No. 118 (“SAB No. 118”) in response to the new tax legislation in the United States (The Tax Cuts and Jobs Act or “The Act”). The Act, which was enacted on December 22, 2017, reduces the US federal corporate tax rate from 35% to 21%, which requires the payment of a one-time transition tax on earnings of certain foreign subsidiaries and creates new taxes on certain foreign sourced earnings. The guidance provided in SAB No.118 allowed the Company to record provisional amounts of income tax effects of the Act during a one-year measurement period. As of December 31, 2018, the Company has completed its accounting for the tax effects of enactment of the Act and made a reasonable estimate of the effects on its existing deferred tax balances and the one-time transition tax. There was no material impact on the Company’s consolidated financial statements, see also Note 11 to the consolidated financial statements.

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In January 2017, the FASB issued ASU No. 2017-01, “*Clarifying the Definition of a Business*”. The ASU revises and narrows the definition of a business and provides a framework that gives entities a basis for making reasonable judgments about whether a transaction involves an asset or a business. The Company prospectively adopted this ASU effective October 1, 2018. As of the date of the adoption there was no impact on the Company’s consolidated financial statements.

In October 2016, the FASB issued ASU No. 2016-16, “*Intra-Entity Transfers of Assets Other Than Inventory*”. The ASU requires the Company to recognize the income tax consequences of intra-entity transfers, other than inventory, when the transfer occurs. The Company adopted this ASU as of October 1, 2018, using the modified retrospective transition approach, which resulted in a cumulative adjustment of \$3,860 decrease of the retained earnings.

In August 2016, the FASB issued ASU No. 2016-15, “*Classification of Certain Cash Receipts and Cash Payments*”. The ASU intends to reduce diversity in practice in how certain transactions are classified in the statement of cash flows. The Company retrospectively adopted this ASU effective October 1, 2018, which resulted in the classification of certain cash payments of contingent consideration in financing activities on the Company’s consolidated statement of cash flow during the year ended September 30, 2019. There was no such impact during the year ended September 30, 2018.

In January 2016, the FASB issued ASU No. 2016-01, “*Financial Instruments — Overall*”. The ASU updates certain aspects of recognition and measurement of financial assets and financial liabilities. The ASU affects the accounting for equity investments, financial liabilities under the fair value option, and the presentation and disclosure requirements for financial instruments. The Company prospectively adopted this ASU effective October 1, 2018. There was no material impact on the Company’s consolidated financial statements, see also Note 5 to the consolidated financial statements.

In May 2014, the FASB issued ASU No. 2014-09, or ASC 606, “*Revenue from Contracts with Customers*”. The ASU on revenue from contracts with customers, or the new revenue standard, which outlines a single comprehensive model for entities to use in accounting for revenue arising from contracts with customers and supersedes most current revenue recognition guidance. Prior to the adoption of ASC 606 the Company developed a transition plan, including changes to policies, processes and internal controls, as well as system enhancements to generate the information necessary for new disclosure requirements and recently completed an assessment to identify the potential areas of impact that this new revenue recognition standard will have on its consolidated financial statement and internal control environment. As part of the assessment, the Company reviewed a representative sample of its contracts across its various customers and geographies to identify potential differences that could result from applying the requirements of the new standard. As of October 1, 2018, the Company adopted this ASU using the modified retrospective transition approach. This method was applied to contracts that were not complete as of the date of adoption.

The cumulative impact of adopting ASC 606, which was immaterial, was a net increase in the opening balance of retained earnings as of October 1, 2018, of \$14,294, net of tax, from total amount of \$4,673,901 to \$4,688,195. The impact was primarily related to (i) the removal of the limitation on contingent revenue, as revenue allocated to satisfied performance obligations is no longer restricted to the amount that is not contingent upon the satisfaction of additional performance obligations (ii) the change of definition of contract term to represent the period for which enforceable rights and obligations exist, and (iii) the capitalization and amortization of certain sales commissions in accordance with ASC 606.

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The following table depicts the impact of adoption as of October 1, 2018, on the Company's consolidated balance sheet:

	As of October 1, 2018		
	Balance as of September 30, 2018	Adjustments due to ASC 606	Balance as of October 1, 2018
Balance Sheet:			
Account receivable — unbilled	\$ 263,997	\$ 10,039	\$ 274,036
Prepaid expenses and other current assets	229,999	(971)	229,028
Other noncurrent assets	420,369	15,636	436,005
Deferred revenue (current)	132,414	14,048	146,462
Accrued expenses and other current liabilities	706,637	(14,062)	692,575
Deferred income taxes and taxes payable	224,572	10,424	234,996
Retained Earnings	4,673,901	14,294	4,688,195

The impact of adopting the new standard for the year ended September 30, 2019, was an increase of approximately \$26,096 to revenue, most of which was recorded against Account receivable — unbilled and decrease of approximately \$11,051 to cost of revenue most of which was recorded against Accrued expenses and other current liabilities.

Note 3 — Acquisitions

Entities acquired by the Company during the last three fiscal years have been consolidated into the Company's results of operations since their respective acquisition dates. These acquisitions, individually and in the aggregate, were not material in any fiscal year. During fiscal year 2019, the Company acquired TTS Wireless for approximately \$50,000 in cash and potential additional consideration based on the achievement of certain performance metrics. TTS Wireless is a leading provider of mobile network engineering services, specializing in network optimization, planning and software-enabled solutions. During fiscal year 2018, the Company acquired three technology companies for an aggregate consideration of \$355,142 in cash: Vubiquity, a leading provider of premium content services and technology solutions, projekt202, a leader in experience-driven software design and development, and UXP systems ("UXP") whose User Lifecycle Management solution is a leading platform for empowering digital user relationships and digital identity. See Note 9 to the consolidated financial statement.

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Note 4 — Revenue

Contract Balances

The following table provides information about Accounts receivable, both billed and unbilled and deferred revenue:

	September 30, 2018	As of October 1, 2018 (as adjusted)	September 30, 2019
Accounts receivable — billed (net of allowances for doubtful accounts of \$21,211 as of September 30 and October 1, 2018 and \$36,121 as of September 30, 2019)	\$ 707,505	\$ 707,505	\$ 760,797
Accounts receivable — unbilled (current)	\$ 263,997	\$ 274,036	\$ 227,061
Accounts receivable — unbilled (non-current)	\$ 15,686	\$ 13,185	\$ 16,987
Total Accounts receivable — unbilled	\$ 279,683	\$ 287,221	\$ 244,048
Deferred revenue (current)	\$ (132,414)	\$ (146,462)	\$ (118,182)
Deferred revenue (non-current)	\$ (27,977)	\$ (27,977)	\$ (23,785)
Total Deferred revenue	\$ (160,391)	\$ (174,439)	\$ (141,967)

Revenue recognized during the year ended September 30, 2019, which was included in deferred revenue (current) as of October 1, 2018 was \$93,508. Amounts billed during the year ended September 30, 2019, which was included in unbilled accounts receivable (current) as of October 1, 2018, was \$129,230.

Remaining Performance Obligations from Contracts with Customer

As of September 30, 2019, the aggregate amount of the transaction price allocated to remaining performance obligations that are unsatisfied or partially unsatisfied was approximately \$5.5 billion. Remaining performance obligations typically include the remaining non-cancelable, committed and fixed portion of contracts for their entire duration and therefore it is not comparable to what the Company considers to be next 12 months backlog. Given the profile of contract terms, the majority of this amount is expected to be recognized as revenue over the next three years.

Disaggregation of Revenue

The Company considers information that is regularly reviewed by its chief operating decision makers in evaluating financial performance to disaggregate revenue, see Note 21 — Segment Information and Sales to Significant Customers.

Note 5 — Fair Value Measurements

The Company accounts for certain assets and liabilities at fair value. Fair value is the price that would be received from selling an asset or that would be paid to transfer a liability in an orderly transaction between market participants at the measurement date. When determining the fair value measurements for assets and liabilities required or permitted to be recorded at fair value, the Company considers the principal or most advantageous market in which it would transact and it considers assumptions that market participants would use when pricing the asset or liability.

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The hierarchy below lists three levels of fair value based on the extent to which inputs used in measuring fair value are observable in the market. The Company categorizes each of its fair value measurements in one of these three levels based on the lowest level input that is significant to the fair value measurement in its entirety.

The three levels of inputs that may be used to measure fair value are as follows:

Level 1: Quoted prices in active markets for identical assets or liabilities;

Level 2: Observable inputs other than quoted prices included in Level 1, such as quoted prices for similar assets or liabilities in active markets, quoted prices for identical or similar assets or liabilities in markets with insufficient volume or infrequent transactions (less active markets), or other inputs that are observable (model-derived valuations in which significant inputs are observable) or can be derived principally from, or corroborated by, observable market data; and

Level 3: Unobservable inputs that are supported by little or no market activity that is significant to the fair value of the assets or liabilities.

The following tables present the Company's assets and liabilities measured at fair value on a recurring basis as of September 30, 2019 and 2018:

	As of September 30, 2019			
	Level 1	Level 2	Level 3	Total
Available-for-sale securities:				
Money market funds	\$69,370	\$ —	\$ —	\$ 69,370
Total available-for-sale securities	69,370	—	—	69,370
Equity Investment	—	—	18,008	18,008
Derivative financial instruments, net	—	7,890	—	7,890
Other liabilities	—	—	(29,805)	(29,805)
Total	\$69,370	\$ 7,890	\$ (11,797)	\$ 65,463

	As of September 30, 2018			
	Level 1	Level 2	Level 3	Total
Available-for-sale securities:				
Corporate bonds	\$ —	\$ 47,531	\$ —	\$ 47,531
Money market funds	30,883	—	—	30,883
U.S. government treasuries	23,258	—	—	23,258
U.S. agency securities	—	16,033	—	16,033
Asset backed obligations	—	9,177	—	9,177
Supranational and sovereign debt	—	4,434	—	4,434
Total available-for-sale securities	54,141	77,175	—	131,316
Derivative financial instruments, net	—	(27,842)	—	(27,842)
Other liabilities	—	—	(37,954)	(37,954)
Total	\$54,141	\$ 49,333	\$ (37,954)	\$ 65,520

Available-for-sale securities that are classified as Level 2 assets are priced using observable data that may include quoted market prices for similar instruments, market dealer quotes, market spreads, non-binding market

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prices that are corroborated by observable market data and other observable market information. The Company's derivative instruments are classified as Level 2 as they represent foreign currency forward and option contracts valued primarily based on observable inputs including forward rates and yield curves. The Company did not have any transfers between Level 1 and Level 2 fair value measurements during fiscal year 2019. Level 3 liabilities relate to certain acquisition-related liabilities, which were generally valued using a Monte-Carlo simulation model. These liabilities were included in both accrued expenses and other current liabilities and other noncurrent liabilities as of September 30, 2019 and 2018. The decrease in Level 3 liabilities is primarily related to payments of certain acquisition-related liabilities offset by an increase against goodwill. Level 3 assets relate to equity investments, which were valued based on price changes in orderly transactions for similar investments of the same issuer.

Fair Value of Financial Instruments

The carrying amounts of cash and cash equivalents, accounts receivable, accounts payable, accrued personnel costs, short-term financing arrangements and accrued expenses and other current liabilities approximate their fair value because of the relatively short maturity of these items.

Note 6 — Available-For-Sale Securities

In fiscal year 2019 the Company sold most of its available-for-sale securities, in total amount of \$101,287, the realized losses recognized from this sale were immaterial and were recorded in the consolidated statements of income.

Available-for-sale securities consist of the following interest-bearing investments:

	As of September 30, 2019			Fair Value
	Amortized Cost	Gross Unrealized Gains	Gross Unrealized Losses	
Money market funds	\$ 69,370	\$ —	\$ —	\$ 69,370
Total(1)	\$ 69,370	\$ —	\$ —	\$ 69,370

- (1) Available-for-sale securities with maturities longer than 90 days from the date of acquisition were classified as short-term interest-bearing investments and available-for-sale securities with maturities of 90 days or less from the date of acquisition were included in cash and cash equivalents on the Company's balance sheet. As of September 30, 2019, all the securities were classified as cash and cash equivalents.

	As of September 30, 2018			Fair Value
	Amortized Cost	Gross Unrealized Gains	Gross Unrealized Losses	
Corporate bonds	\$ 48,252	\$ —	\$ 721	\$ 47,531
Money market funds	30,883	—	—	30,883
U.S. government treasuries	23,656	—	398	23,258
U.S. agency securities	16,297	—	264	16,033
Asset backed obligations	9,312	—	135	9,177
Supranational and sovereign debt	4,508	—	74	4,434
Total(1)	\$132,908	\$ —	\$ 1,592	\$131,316

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- (1) Available-for-sale securities with maturities longer than 90 days from the date of acquisition were classified as short-term interest-bearing investments and available-for-sale securities with maturities of 90 days or less from the date of acquisition were included in cash and cash equivalents on the Company's balance sheet. As of September 30, 2018, \$100,433 of securities were classified as short-term interest-bearing investments and \$30,883 of securities were classified as cash and cash equivalents.

As of September 30, 2019, the unrealized losses attributable to the Company's available-for-sale securities were primarily due to credit spreads and interest rate movements. The Company assessed whether such unrealized losses for the investments in its portfolio were other-than-temporary. Based on this assessment, the Company did not recognize any credit losses in fiscal years 2019, 2018 and 2017.

As of September 30, 2019, the Company's available-for-sale securities had the following maturity dates:

	<u>Market Value</u>
Due within one year	<u>\$ 69,370</u>

Note 7 — Derivative Financial Instruments

The Company's risk management strategy includes the use of derivative financial instruments to reduce the volatility of earnings and cash flows associated with changes in foreign currency exchange rates. The Company does not enter into derivative transactions for trading purposes.

The Company's derivatives expose it to credit risks from possible non-performance by counterparties. The Company utilizes standard counterparty master netting agreements that net certain foreign currency transactions in the event of the insolvency of one of the parties to the transaction. These master netting arrangements permit the Company to net amounts due from the Company to counterparty with amounts due to the Company from the same counterparty. Although all of the Company's recognized derivative assets and liabilities are subject to enforceable master netting arrangements, the Company has elected to present these assets and liabilities on a gross basis. Taking into account the Company's right to net certain gains with losses, the maximum amount of loss due to credit risk that the Company would incur if all counterparties to the derivative financial instruments failed completely to perform, according to the terms of the contracts, based on the gross fair value of the Company's derivative contracts that are favorable to the Company, was approximately \$11,373 as of September 30, 2019. The Company has limited its credit risk by entering into derivative transactions exclusively with investment-grade rated financial institutions and monitors the creditworthiness of these financial institutions on an ongoing basis.

The Company classifies cash flows from its derivative transactions as cash flows from operating activities in the consolidated statements of cash flow.

The table below presents the total volume or notional amounts of the Company's derivative instruments as of September 30, 2019. Notional values are in U.S. dollars and are translated and calculated based on forward rates as of September 30, 2019 for forward contracts, and based on spot rates as of September 30, 2019 for options.

	<u>Notional Value*</u>
Foreign exchange contracts	<u>\$ 1,103,169</u>

- (*) Gross notional amounts do not quantify risk or represent assets or liabilities of the Company but are used in the calculation of settlements under the contracts.

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The Company records all derivative instruments on the balance sheet at fair value. For further information, see Note 5 to the consolidated financial statements. The fair value of the open foreign exchange contracts recorded as an asset or a liability by the Company on its consolidated balance sheets as of September 30, 2019 and September 30, 2018, is as follows:

	<u>As of September 30,</u>	
	<u>2019</u>	<u>2018</u>
Derivatives designated as hedging instruments		
Prepaid expenses and other current assets	\$ 9,344	\$ 221
Other noncurrent assets	585	25
Accrued expenses and other current liabilities	(2,977)	(17,681)
Other noncurrent liabilities	(2,072)	(10,030)
	<u>4,880</u>	<u>(27,465)</u>
Derivatives not designated as hedging instruments		
Prepaid expenses and other current assets	5,086	2,758
Accrued expenses and other current liabilities	(2,076)	(3,135)
	<u>3,010</u>	<u>(377)</u>
Net fair value	<u>\$ 7,890</u>	<u>\$ (27,842)</u>

Cash Flow Hedges

In order to reduce the impact of changes in foreign currency exchange rates on its results, the Company enters into foreign currency exchange forward and option contracts to purchase and sell foreign currencies to hedge a significant portion of its foreign currency net exposure resulting from revenue and expense transactions denominated in currencies other than the U.S. dollar. The Company designates these contracts for accounting purposes as cash flow hedges. The Company currently hedges its exposure to the variability in future cash flows for a maximum period of approximately three years. A significant portion of the forward and option contracts outstanding as of September 30, 2019 is scheduled to mature within the next 12 months.

The effective portion of the gain or loss on the derivative instruments is initially recorded as a component of other comprehensive income (loss), a separate component of equity, and subsequently reclassified into earnings in the same line item as the related forecasted transaction and in the same period or periods during which the hedged exposure affects earnings. The cash flow hedges are evaluated for effectiveness quarterly. As the critical terms of the forward contract or option and the hedged transaction are matched at inception, the hedge effectiveness is assessed generally based on changes in the fair value for cash flow hedges, as compared to the changes in the fair value of the cash flows associated with the underlying hedged transactions. Hedge ineffectiveness, if any, and hedge components, such as time value, excluded from assessment of effectiveness testing for hedges of estimated revenue from customers, are recognized immediately in interest and other expense, net.

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The effect of the Company's cash flow hedging instruments in the consolidated statements of income for the fiscal years ended September 30, 2019, 2018 and 2017, respectively, which partially offsets the foreign currency impact from the underlying exposures, is summarized as follows:

Line item in consolidated statements of income:	(Losses) Gains Reclassified from Other Comprehensive Income (Loss) (Effective Portion) Year Ended September 30,		
	2019	2018	2017
Revenue	\$ 19	\$ (1,129)	\$ (1,021)
Cost of revenue	(8,627)	15,877	21,783
Research and development	(2,059)	3,127	4,282
Selling, general and administrative	(2,309)	3,462	3,305
Total	<u><u>\$ (12,976)</u></u>	<u><u>\$ 21,337</u></u>	<u><u>\$ 28,349</u></u>

The activity related to the changes in net unrealized gains (losses) on cash flow hedges recorded in accumulated other comprehensive (loss) income, net of tax, is as follows:

	Year Ended September 30,		
	2019	2018	2017
Net unrealized (loss) gain on cash flow hedges, net of tax, beginning of period	<u>\$ (26,608)</u>	<u>\$ 24,508</u>	<u>\$ 12,514</u>
Changes in fair value of cash flow hedges, net of tax	19,228	(31,908)	36,765
Reclassification of loss (gain) into earnings, net of tax	11,325	(19,208)	(24,771)
Net unrealized gain (loss) on cash flow hedges, net of tax, end of period	<u><u>\$ 3,945</u></u>	<u><u>\$ (26,608)</u></u>	<u><u>\$ 24,508</u></u>

Net unrealized gain (loss) from cash flow hedges recognized in other comprehensive income (loss) were \$20,035, \$(34,260) and \$39,692, or \$19,228, \$(31,908) and \$36,765, net of taxes, during the fiscal years ended September 30, 2019, 2018 and 2017, respectively.

Of the net gains related to derivatives designated as cash flow hedges and recorded in accumulated other comprehensive (loss) income as of September 30, 2019, a net gain of \$5,085 will be reclassified into earnings during fiscal 2020 and will partially offset the foreign currency impact from the underlying exposures. The amount ultimately realized in earnings will likely differ due to future changes in foreign exchange rates.

The ineffective portion of the change in fair value of a cash flow hedge, including the time value portion excluded from effectiveness testing for the fiscal years ended September 30, 2019, 2018 and 2017, was not material.

Cash flow hedges are required to be discontinued in the event it becomes probable that the underlying forecasted hedged transaction will not occur. The Company did not discontinue any cash flow hedges during any of the periods presented nor does the Company anticipate any such discontinuance in the normal course of business.

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Other Risk Management Derivatives

The Company also enters into foreign currency exchange forward and option contracts that are not designated as hedging instruments under hedge accounting and are used to reduce the impact of foreign currency on certain balance sheet exposures and certain revenue and expense transactions.

These instruments are generally short-term in nature, with typical maturities of less than 12 months, and are subject to fluctuations in foreign exchange rates.

The effect of the Company's derivative instruments not designated as hedging instruments in the consolidated statements of income for the fiscal years ended September 30, 2019, 2018 and 2017, respectively, which partially offsets the foreign currency impact from the underlying exposure, is summarized as follows:

	Gains (Losses) Recognized in Income Year Ended September 30,		
	2019	2018	2017
Line item in statements of income:			
Cost of revenue	\$ 401	\$(4,577)	\$ 4,639
Research and development	14	(736)	957
Selling, general and administrative	294	(950)	1,723
Interest and other income (expense), net	5,845	7,038	(10,514)
Income taxes	(528)	1,581	(1,653)
Total	<u>\$6,026</u>	<u>\$ 2,356</u>	<u>\$ (4,848)</u>

Note 8 — Property and Equipment, Net

The components of property and equipment, net are:

	As of September 30,	
	2019	2018
Computers, related equipment and software	\$1,109,465	\$1,027,825
Building and land	109,446	97,782
Leasehold improvements	230,817	222,812
Furniture, fixtures and other	47,813	43,518
Property and equipment, gross	1,497,541	1,391,937
Less accumulated depreciation	(972,227)	(895,352)
Property and equipment, net	<u>\$ 525,314</u>	<u>\$ 496,585</u>

Total depreciation expense for fiscal years 2019, 2018 and 2017, was \$111,387, \$105,439 and \$105,027, respectively.

As of September 30, 2019 and 2018, the costs, net of accumulated depreciation of software assets developed for internal use were \$171,331 and \$152,366, respectively, and are presented under Computer equipment in the table above.

In fiscal year 2018, the Company purchased a land and capitalized costs related to the new building, see also Note 2.

AMDOCS LIMITED**NOTES TO THE CONSOLIDATED FINANCIAL STATEMENTS**
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The following table presents details of the Company's total goodwill:

As of October 1, 2017	\$ 2,221,209
Goodwill resulting from acquisitions(1)	227,283
Other	(3,597)
As of September 30, 2018	\$ 2,444,895
Goodwill resulting from acquisitions(2)	17,484
Other	456
As of September 30, 2019	\$ 2,462,835

- (1) Mainly relates to the acquisitions of Vubiquity, projekt202 and UXP. In allocating the total purchase price for Vubiquity, based on estimated fair values, the Company recorded \$148,184 of goodwill, \$38,630 of customer relationships to be amortized over approximately nine years, \$45,692 of core technology to be amortized over approximately five years, \$10,104 of trade mark to be amortized over eight years. In allocating the total purchase price of projekt202, based on estimated fair values, the Company recorded \$34,390 of goodwill and \$19,835 of customer relationships to be amortized over four years. In allocating the total purchase price of UXP, based on estimated fair values, the Company recorded \$40,629 of goodwill, \$31,552 of core technology to be amortized over five years and \$6,552 of customer relationships to be amortized over approximately five years.
- (2) Mainly relates to the acquisitions of TTS. In allocating the total preliminary purchase price for TTS, based on estimated fair values, the Company recorded \$10,032 of goodwill, \$29,500 of customer relationships to be amortized over approximately six years, \$2,100 of core technology to be amortized over approximately six years and \$1,300 of trade mark to be amortized over four years.

The Company performs an annual goodwill impairment test during the fourth quarter of each fiscal year, or more frequently if impairment indicators are present. The Company operates in one operating segment, and this segment comprises its only reporting unit. In calculating the fair value of the reporting unit, the Company uses its market capitalization and a discounted cash flow methodology. There was no impairment of goodwill in fiscal years 2019, 2018 or 2017.

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The following table presents details regarding the Company's total definite-lived purchased intangible assets:

	<u>Gross</u>	<u>Accumulated Amortization</u>	<u>Net</u>
September 30, 2019			
Core technology(1)	\$ 775,479	\$ (690,961)	\$ 84,518
Customer relationships	594,555	(483,313)	111,242
Other	44,946	(35,544)	9,402
Total	<u>\$ 1,414,980</u>	<u>\$ (1,209,818)</u>	<u>\$ 205,162</u>
September 30, 2018			
Core technology(1)	\$ 773,380	\$ (628,932)	\$ 144,448
Customer relationships	563,656	(453,137)	110,519
Other	43,646	(33,364)	10,282
Total	<u>\$ 1,380,682</u>	<u>\$ (1,115,433)</u>	<u>\$ 265,249</u>

- (1) Amounts previously presented separately as Intellectual property rights and purchased computer software are included in Core Technology as the nature of the intangible is consistent with the Core technology category. The asset was fully amortized as of 2019 and 2018, and consisted of gross asset of \$51,996 and accumulated amortization of \$51,996.

The following table presents the amortization expense of the Company's definite-lived purchased intangible assets, included in each financial statement caption reported in the consolidated statements of income:

	<u>Year Ended September 30,</u>		
	<u>2019</u>	<u>2018</u>	<u>2017</u>
Cost of revenue	\$ 180	\$ 572	\$ 1,405
Amortization of definite-lived purchased intangible assets	94,205	105,213	108,453
Total	<u>\$94,385</u>	<u>\$105,785</u>	<u>\$109,858</u>

The estimated future amortization expense of definite-lived purchased intangible assets as of September 30, 2019 is as follows:

Fiscal year:	<u>Amount</u>
2020	\$ 70,138
2021	47,114
2022	34,940
2023	18,904
2024	11,186
Thereafter	22,880
Total	<u>\$ 205,162</u>

AMDOCS LIMITED**NOTES TO THE CONSOLIDATED FINANCIAL STATEMENTS**
(dollar and share amounts in thousands, except per share data)**Note 10 — Non-recurring charges**

During fiscal year 2018 the Company incurred non-recurring charges of a loss incurred to settle a long-running legal dispute in total amount of \$55,000 including legal costs and also incurred restructuring charges of \$30,057 primarily related to employee severance expenses. During fiscal year 2019 the Company paid the settlement amount of \$50,000 and \$5,000 in legal and other fees. During fiscal year 2019 and 2018 the Company paid most of the restructuring charges, and the remaining amount will be paid over the next several quarters.

Note 11 — Income Taxes

The provision (benefit) for income taxes consists of the following:

	Year Ended September 30,		
	2019	2018	2017
Current	\$102,391	\$42,047	\$69,535
Deferred	(13,950)	25,098	6,551
Income taxes	<u>\$ 88,441</u>	<u>\$67,145</u>	<u>\$76,086</u>

All income taxes are from continuing operations reported by the Company in the applicable taxing jurisdiction. Income taxes also include anticipated withholding taxes due on subsidiaries' earnings when paid as dividends to the Company.

The Company maintained a tax receivable balance of \$53,143 and \$55,198 as of September 30, 2019 and 2018, respectively, which is included in Prepaid expenses and other current assets.

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NOTES TO THE CONSOLIDATED FINANCIAL STATEMENTS
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Deferred income taxes are comprised of the following components:

	As of September 30,	
	2019	2018
Deferred tax assets:		
Deferred revenue	\$ 30,659	\$ 30,596
Employee compensation and benefits	76,327	72,218
Intangible assets, computer software and intellectual property	11,805	9,793
Tax credits, net capital and operating loss carryforwards	153,062	184,450
Other	73,249	49,732
Total deferred tax assets	345,102	346,789
Valuation allowances	(85,533)	(112,727)
Total deferred tax assets, net	259,569	234,062
Deferred tax liabilities:		
Anticipated withholdings on subsidiaries' earnings	(70,961)	(68,394)
Intangible assets, computer software and intellectual property	(104,926)	(114,094)
Other	(81,736)	(31,750)
Total deferred tax liabilities	(257,623)	(214,238)
Net deferred tax assets	<u>\$ 1,946</u>	<u>\$ 19,824</u>

The effective income tax rate varied from the statutory Guernsey tax rate as follows:

	Year Ended September 30,		
	2019	2018	2017
Statutory Guernsey tax rate	0%	0%	0%
Foreign taxes(1)	15.6	15.9	14.8
Effective income tax rate	<u>15.6%</u>	<u>15.9%</u>	<u>14.8%</u>

As a Guernsey company subject to a corporate tax rate of zero percent, the Company's overall effective tax rate is attributable to foreign taxes. The Company's income before income tax expense is considered to be foreign income.

(1) Foreign taxes for the year ended Sep 30, 2019:

In fiscal year 2019, foreign taxes included a benefit of \$26,529 that was primarily attributable to the expiration of the periods set forth in statutes of limitations and to a lesser extent from the conclusions of tax audits related to unrecognized tax benefits accumulated over several years in certain jurisdictions.

Foreign taxes in fiscal year 2019 also included a benefit of \$12,650 resulting from the release of valuation allowances on deferred tax assets at certain of the Company's subsidiaries, which will, more likely than not, be realized due to the Company's projections of future taxable income.

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NOTES TO THE CONSOLIDATED FINANCIAL STATEMENTS
(dollar and share amounts in thousands, except per share data)

Foreign taxes for the year ended Sep 30, 2018:

In fiscal year 2018, foreign taxes included a benefit of \$9,564 due to conclusions of tax audits in certain jurisdictions, which resulted in an increase to the Company's tax credits carryforwards and a reduction to the Company's provision for gross unrecognized tax benefits. In addition, foreign taxes in fiscal year 2018 included a benefit of \$18,022 that was attributable to the expiration of the periods set forth in statutes of limitations related to unrecognized tax benefits accumulated over several years in certain jurisdictions. Foreign taxes in fiscal year 2018 also included a tax expenses of \$12,032 resulting from the creation of valuation allowances on deferred tax assets at certain of the Company's subsidiaries, which may not be realized based on the Company's projections of future taxable income.

In addition, foreign taxes in fiscal year 2018 included a provisional expense of \$2,321 relating to changes in tax law in the United States pursuant to SAB No. 118 (see Note 2). The provisional expense is attributable to deemed repatriation of foreign income partially offset by a benefit resulting from the re-evaluation of the Company's deferred tax assets and liabilities due to the expected lower blended effective U.S. federal tax rate when the assets and liabilities are expected to be utilized.

As an indirect consequence to the changes in tax law in the United States the Company no longer makes a permanently reinvest assertion relating to one of its subsidiaries, therefore, a provisional tax liability of \$4,059 was recorded related to the tax implications of remitting earnings that were previously asserted as permanently reinvested.

During fiscal year 2018, as a result of funding decisions for the construction of the Company's new campus in Israel, see also Note 2, the Company recorded a tax benefit of \$28,795 related to the release of withholding and income tax reserves for unremitted earnings.

During fiscal year 2019, the net decrease in valuation allowances was \$27,194. The valuation allowances, related to the uncertainty of realizing tax benefits primarily for tax credits, net capital and operating loss carryforwards related to certain of the Company's subsidiaries. As of September 30, 2019, the Company had tax credits, net capital and operating loss carryforwards of \$797,091 of which \$244,711 have expiration dates through 2039, and the remainder do not expire.

During fiscal year 2018, the net increase in valuation allowances was \$18,154, which related to the uncertainty of realizing tax benefits primarily for tax credits, net capital and operating loss carryforwards related to certain of the Company's subsidiaries. As of September 30, 2018, the Company had tax credits, net capital and operating loss carryforwards of \$894,997 of which \$322,816 have expiration dates through 2038, and the remainder do not expire.

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The aggregate changes in the balance of the Company's gross unrecognized tax benefits were as follows:

	Year Ended September 30,		
	2019	2018	2017
Balance at beginning of fiscal year	\$187,646	\$193,024	\$196,668
Additions based on tax positions related to the current year	19,530	20,329	22,319
Additions (reduction) for tax positions of prior years	24,980	(3,805)	12,261
Settlements with tax authorities(1)	(37,672)	(3,880)	(9,450)
Lapse of statute of limitations	(25,162)	(18,022)	(28,774)
Balance at end of fiscal year	<u>\$169,322</u>	<u>\$187,646</u>	<u>\$193,024</u>

- (1) The changes in the year ended September 30, 2019, in the balance of the Company's gross unrecognized tax benefits that relate to settlements with tax authorities is \$37,672, the vast majority of which was offset by income tax payments and increase in Tax Payables and Deferred Tax Liabilities.

The total amount of unrecognized tax benefits, which includes interest and penalties, was \$169,322 as of September 30, 2019, and \$187,646 as of September 30, 2018, all of which would affect the effective tax rate if realized.

The Company recognizes interest and penalties related to unrecognized tax benefits in the provision for income taxes. As of September 30, 2019, the Company had accrued \$31,108 in income taxes payable for interest and penalties relating to unrecognized tax benefits, of which \$4,679 was recognized in the statements of income in fiscal year 2019, net of interest and penalty reversals. As of September 30, 2018, the Company had accrued \$30,807 in income taxes payable for interest and penalties relating to unrecognized tax benefits, of which a benefit of \$2,579 was recognized in the statements of income in fiscal year 2018, net of interest and penalty reversals.

The Company is currently under tax audit in several jurisdictions for the tax years 2007 and onwards. Timing of the resolution of audits is highly uncertain and therefore, as of September 30, 2019, the Company cannot estimate the change in unrecognized tax benefits resulting from these audits within the next 12 months.

It is reasonably possible that the amount of unrecognized tax benefits may decrease by up to \$12,763 during fiscal year 2020 as a result of lapse of statutes of limitations in jurisdictions in which the Company operates.

Note 12 — Repurchase of Shares

From time to time, the Company's Board of Directors can adopt share repurchase plans authorizing the repurchase of the Company's outstanding ordinary shares. On November 8, 2017, the Company's Board of Directors adopted another share repurchase plan for the repurchase of up to an additional \$800,000 of the Company's outstanding ordinary shares with no expiration date. In April 2018, the Company completed the repurchase of the remaining authorized amount of ordinary shares under the February 2016 plan and began executing repurchases under the November 2017 plan. In fiscal year 2019, the Company repurchased approximately 6,656 ordinary shares at an average price of \$59.79 per share (excluding broker and transaction fees). The November 2017 plan permits the Company to purchase its ordinary shares in open market or privately negotiated transactions at times and prices that it considers appropriate. As of September 30, 2019, the Company

AMDOCS LIMITED**NOTES TO THE CONSOLIDATED FINANCIAL STATEMENTS**
(dollar and share amounts in thousands, except per share data)

had remaining authority to repurchase up to \$239,171 of its outstanding ordinary shares under the November 2017 plan. On November 12, 2019, the Company's Board of Directors adopted another share repurchase plan for the repurchase of up to an additional \$800,000 of Company's outstanding ordinary shares which brings the unused authorization as of September 30, 2019 to \$1,039,171. The November 2019 plan authorizations have no expiration date and permit the Company to purchase its ordinary shares in open market or privately negotiated transactions at times and prices that it considers appropriate.

Note 13 — Financing Arrangements

In December 2011, the Company entered into a \$500,000 five-year revolving credit facility with a syndicate of banks. In December 2014 and in December 2017, the credit facility was amended and restated to, among other things, extend the maturity date of the facility to December 2019 and December 2022, respectively. The credit facility is available for general corporate purposes, including acquisitions and repurchases of ordinary shares that the Company may consider from time to time. The interest rate for borrowings under the revolving credit facility is chosen at the Company's option from several pre-defined alternatives, depends on the circumstances of any advance and is based in part on the Company's credit ratings. In March 2017, the Company borrowed an aggregate of \$200,000 under the facility and repaid it in April 2017. In March 2018, the Company borrowed an aggregate of \$120,000 under the facility and repaid it in April 2018. As of September 30, 2019, the Company was in compliance with the financial covenants under the revolving credit facility and had no outstanding borrowings under this facility.

As of September 30, 2019, the Company had additional uncommitted lines of credit available for general corporate and other specific purposes and had outstanding letters of credit and bank guarantees from various banks totaling \$91,291. These were supported by a combination of the uncommitted lines of credit that the Company maintains with various banks.

Note 14 — Accrued Expenses and Other Current Liabilities

Accrued expenses and other current liabilities consist of the following:

	As of September 30,	
	2019	2018
Ongoing accrued expenses	\$259,661	\$256,012
Project-related provisions	140,701	155,739
Taxes payable	28,335	27,843
Dividends payable(1)	38,413	35,046
Derivative instruments(2)	5,053	20,821
Other	175,494	211,176
	<u>\$647,657</u>	<u>\$706,637</u>

(1) The amounts payable as a result of the August 7, 2019 and the July 31, 2018 dividend declarations. See Note 19 to the consolidated financial statements.

(2) Includes derivatives that are designated as hedging instruments and derivatives that are not designated as hedging instruments. See Note 7 to the consolidated financial statements.

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(dollar and share amounts in thousands, except per share data)

Note 15 — Interest and other expense, net

Interest and other expense, net, consists of the following:

	Year Ended September 30,		
	2019	2018	2017
Interest income	\$ 6,225	\$ 6,602	\$ 7,972
Interest expense	(3,911)	(2,764)	(1,600)
Foreign exchange loss	(7,860)	(6,173)	(8,246)
Other, net	3,687	(4,431)	(2,547)
	<u>\$ (1,859)</u>	<u>\$ (6,766)</u>	<u>\$ (4,421)</u>

Note 16 — Contingencies and Commitments

Commitments

The Company leases office space and vehicles under non-cancelable operating leases in various countries in which it does business. Future minimum non-cancelable lease payments, which include rent and other payments the Company is obligated to make, based on the Company's contractual obligations as of September 30, 2019 are as follows:

For the year ended September 30,	
2020	\$ 69,043
2021	60,544
2022	51,863
2023	31,951
2024	24,350
Thereafter	93,845
	<u>\$ 331,596</u>

Rent expense net of sublease income was approximately \$65,692, \$63,603 and \$55,480 for fiscal years 2019, 2018 and 2017, respectively. The Company had immaterial committed future sublease income as of September 30, 2019.

Legal Proceedings

The Company is involved in various legal claims and proceedings arising in the normal course of its business. The Company accrues for a loss contingency when it determines that it is probable, after consultation with counsel, that a liability has been incurred and the amount of such loss can be reasonably estimated. At this time, the Company believes that the results of any such contingencies, either individually or in the aggregate, will not have a material adverse effect on the Company's financial position, results of operations or cash flows.

Since 2014, the Company has been defending a lawsuit against certain of its subsidiaries in the U.S. District Court in Oregon alleging breach of contract and trade secret misappropriation. According to the suit, the Company improperly utilized information received in connection with its electronic payment processing solution, which is one of several components of its mobile financial services offerings. During fiscal year 2016, the District Court denied the Company's motions to dismiss and to compel arbitration with respect to certain of the

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claims, and the proceedings continued. The District Court scheduled a tentative jury trial date for late October 2018. The Company filed a motion for summary judgment with the District Court during fiscal year 2018 and the District Court partially granted the motion with respect to two trade secrets. In October 2018, while continuing to deny the plaintiff's allegations, the Company entered into a settlement agreement with the plaintiff, which included a \$50,000 settlement payment by the Company, in consideration for a mutual release of each party and its respective customers with no admission of liability or fault. As a result of the settlement, the lawsuit was dismissed with prejudice on November 13, 2018. During fiscal year 2019 the Company paid the settlement amount of \$50,000 and \$5,000 in legal and other fees which were accrued as of September 30, 2018.

Certain of the Company's subsidiaries are currently in a dispute with a state-owned telecom enterprise in Ecuador, which appears to have political aspects. The Company's counterparty has claimed monetary damages. The dispute is over contracts, under which the Company was providing certain services, which have been terminated by the counterparty in connection with such dispute and which are under scrutiny by certain local governmental authorities. The Company believes it has solid arguments and is vigorously defending its rights. To date, however, such defense efforts, including motions alleging constitutional defects, have encountered a dismissive approach by the Ecuadorian Courts, with reasoning that the Company believes is inconsistent with applicable law. The Company is unable to reasonably estimate the ultimate outcome of the above dispute.

Guarantor's Accounting and Disclosure Requirements for Guarantees

In the ordinary course of its business, the Company provides certain customers with financial performance guarantees which, in certain cases, are backed by lines of credit. The Company is only liable for the amounts of those guarantees in the event of the Company's nonperformance, which would permit the customer to exercise the guarantee.

The Company generally offers its products with a limited warranty. The Company's policy is to accrue for warranty costs, if needed, based on historical trends in product failure. Based on the Company's experience, only minimal warranty charges have been incurred after revenue was fully recognized and, as a result, the Company did not accrue any amounts for product warranty liability during fiscal years 2019, 2018 and 2017.

The Company generally indemnifies its customers against claims made by third parties arising from the use of the Company's software and certain other matters. To date, the Company has incurred and recorded immaterial costs as a result of such obligations in its consolidated financial statements.

Note 17 — Employee Benefits

The Company accrues severance pay mainly for the employees of its Israeli operations in accordance with Israeli law and certain employment procedures on the basis of the latest monthly salary paid to these employees and the length of time that they have worked for the Israeli operations. The severance pay liability amounted to \$266,209 and \$258,262 as of September 30, 2019 and 2018, respectively, and is included as accrued employee costs in other noncurrent liabilities. This liability is partially funded by amounts on deposit with insurance companies that totaled \$206,752 and \$202,230 as of September 30, 2019 and 2018, respectively, and are included in other noncurrent assets. The accrued severance expenses were \$33,355, \$28,472 and \$32,908 for fiscal years 2019, 2018 and 2017, respectively.

The Company sponsors defined contribution plans covering certain of its employees around the world. The plans primarily provide for Company matching contributions based upon a percentage of the employees' contributions. The Company's contributions in fiscal years 2019, 2018 and 2017 under such plans were not material compared to total operating expenses.

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The Company maintains non-contributory defined benefit plans that provide for pension, other retirement and post-employment benefits for certain employees of a Canadian subsidiary based on length of service and rate of pay. The Company accrues its obligations to these employees under employee benefit plans and the related costs net of returns on plan assets. Pension expense and other retirement benefits earned by employees are actuarially determined using the projected benefit method pro-rated on service and based on management's best estimates of expected plan investments performance, salary escalation, retirement ages of employees, discount rate, inflation and expected health care costs. The fair value of the employee benefit plans' assets is based on market values. The plan assets are valued at market value for the purpose of calculating the expected return on plan assets and the amortization of experienced gains and losses. The Company recognized the funded status of such plans in the balance sheet. The pension and other benefits costs related to the non-contributory defined benefit plans were immaterial in fiscal years 2019, 2018 and 2017.

Note 18 — Stock Option and Incentive Plan

In January 1998, the Company adopted the 1998 Stock Option and Incentive Plan, or Equity Incentive Plan, which provides for the grant of restricted stock awards, stock options and other equity-based awards to employees, officers, directors, and consultants. Since its adoption, the Equity Incentive Plan has been amended on several occasions to, among other things, increase the number of ordinary shares issuable under the Equity Incentive Plan. In January 2017, the maximum number of ordinary shares authorized by the Company's Board of Directors to be granted under the Equity Incentive Plan was increased from 62,300 to 67,550. The issuance of such additional shares was registered with the SEC in February 2018. Awards granted under the Equity Incentive Plan generally vest over a period of three to four years and stock options have a term of ten years. Also, in accordance with the Equity Incentive Plan, options are issued at or above the market price at the time of the grant.

The following table summarizes information about options to purchase the Company's ordinary shares, as well as changes during the fiscal year ended September 30, 2019:

	Number of Share Options	Weighted Average Exercise Price
Outstanding as of October 1, 2018	6,418	\$ 54.76
Granted	1,975	60.04
Exercised	(874)	47.41
Forfeited	(682)	60.52
Outstanding as of September 30, 2019(1)	6,837	\$ 56.65
Exercisable as of September 30, 2019(1)	2,899	\$ 50.60

- (1) As of September 30, 2019, the weighted average remaining contractual life of outstanding and exercisable options was 7.24 and 5.63 years, respectively.

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The following table summarizes information relating to awards of restricted shares, as well as changes during the fiscal year ended September 30, 2019:

	Number of Shares	Weighted Average Grant Date Fair Value
Outstanding as of October 1, 2018	1,022	\$ 60.68
Granted	521	61.65
Vested	(459)	59.32
Forfeited	(147)	61.86
Outstanding as of September 30, 2019	937	\$ 61.70

The total intrinsic value of options exercised during fiscal years 2019, 2018 and 2017 was \$13,081, \$38,025 and \$47,321, respectively.

The value of restricted shares vested during fiscal years 2019, 2018 and 2017 was \$28,430, \$35,801 and \$36,922, respectively.

The aggregate intrinsic value of outstanding and exercisable stock options as of September 30, 2019 was \$56,997 and \$40,532, respectively.

Employee equity-based compensation pre-tax expense for the years ended September 30, 2019, 2018 and 2017 was as follows:

	Year Ended September 30,		
	2019	2018	2017
Cost of revenue	\$19,879	\$18,253	\$19,215
Research and development	2,714	3,476	3,536
Selling, general and administrative	15,957	25,747	21,788
Total	\$38,550	\$47,476	\$44,539

The fair value of options granted was estimated on the date of grant using the Black-Scholes pricing model with the assumptions noted in the following table (all in weighted averages for options granted during the year):

	Year Ended September 30,		
	2019	2018	2017
Risk-free interest rate(1)	2.64%	2.30%	1.63%
Expected life of stock options(2)	4.50	4.50	4.50
Expected volatility(3)	17.8%	15.0%	16.2%
Expected dividend yield(4)	1.82%	1.51%	1.47%
Fair value per option	\$9.13	\$8.70	\$7.62

- (1) Risk-free interest rate is based upon U.S. Treasury yield curve appropriate for the term of the Company's employee stock options.
- (2) Expected life of stock options is based upon historical experience.
- (3) Expected volatility is based on blended volatility.
- (4) Expected dividend yield is based on the Company's history and future expectation of dividend payouts.

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Note 19 — Dividends

The Company's Board of Directors declared the following dividends during the fiscal years ended September 30, 2019, 2018 and 2017:

Declaration Date	Dividends Per Ordinary Share	Record Date	Total Amount	Payment Date
August 7, 2019	\$ 0.285	September 30, 2019	\$ 38,413	October 25, 2019
May 14, 2019	\$ 0.285	June 28, 2019	\$ 38,730	July 19, 2019
February 5, 2019	\$ 0.285	March 29, 2019	\$ 39,084	April 19, 2019
November 8, 2018	\$ 0.250	December 31, 2018	\$ 34,755	January 18, 2019
July 31, 2018	\$ 0.250	September 28, 2018	\$ 35,046	October 19, 2018
May 10, 2018	\$ 0.250	June 29, 2018	\$ 35,363	July 20, 2018
January 30, 2018	\$ 0.250	March 30, 2018	\$ 35,637	April 20, 2018
November 8, 2017	\$ 0.220	December 29, 2017	\$ 31,556	January 19, 2018
August 2, 2017	\$ 0.220	September 29, 2017	\$ 31,736	October 23, 2017
May 9, 2017	\$ 0.220	June 30, 2017	\$ 31,981	July 14, 2017
February 1, 2017	\$ 0.220	March 31, 2017	\$ 32,223	April 14, 2017
November 8, 2016	\$ 0.195	December 30, 2016	\$ 28,606	January 13, 2017

The amounts payable as a result of the August 7, 2019, July 31, 2018 and August 2, 2017 declarations were included in accrued expenses and other current liabilities as of September 30, 2019, 2018 and 2017, respectively.

On November 12, 2019, the Company's Board of Directors approved quarterly dividend payment of \$0.285 per share, and set December 31, 2019 as the record date for determining the shareholders entitled to receive the dividend, which is payable on January 24, 2020.

On November 12, 2019, the Company's Board of Directors also approved, subject to shareholder approval at the January 2020 annual general meeting of shareholders, an increase in the quarterly cash dividend to \$0.3275 per share, anticipated to be paid in April 2020.

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Note 20 — Earnings Per Share

The following table sets forth the computation of basic and diluted earnings per share:

	Year Ended September 30,		
	2019	2018	2017
Numerator:			
Net income	\$479,446	\$354,396	\$436,826
Net income and dividends attributable to participating restricted shares	(3,295)	(2,650)	(3,517)
Numerator for basic earnings per common share	<u>\$476,151</u>	<u>\$351,746</u>	<u>\$433,309</u>
Undistributed income allocated to participating restricted shares	2,252	1,617	2,512
Undistributed income reallocated to participating restricted shares	(2,240)	(1,603)	(2,488)
Numerator for diluted earnings per common share	<u>\$476,163</u>	<u>\$351,760</u>	<u>\$433,333</u>
Denominator:			
Weighted average number of shares outstanding — basic	137,418	142,422	146,017
Weighted average number of participating restricted shares	(944)	(1,065)	(1,176)
Weighted average number of common shares — basic	<u>136,474</u>	<u>141,357</u>	<u>144,841</u>
Effect of dilutive stock options granted	691	1,282	1,414
Weighted average number of common shares — diluted	<u>137,165</u>	<u>142,639</u>	<u>146,255</u>
Basic earnings per common share	<u>\$ 3.49</u>	<u>\$ 2.49</u>	<u>\$ 2.99</u>
Diluted earnings per common share	<u>\$ 3.47</u>	<u>\$ 2.47</u>	<u>\$ 2.96</u>

For the fiscal years ended September 30, 2019, 2018 and 2017, 3,547, 1,357 and 1,281 shares, respectively, on a weighted average basis, were attributable to antidilutive outstanding stock options and therefore were not included in the calculation of diluted earnings per share.

Note 21 — Segment Information and Sales to Significant Customers

The Company and its subsidiaries operate in one operating segment, providing software products and services for the communications, entertainment and media industry service providers.

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Geographic Information

The following is a summary of revenue and long-lived assets by geographic area. Revenue is attributed to geographic region based on the location of the customers.

	Year Ended September 30,		
	2019	2018	2017
Revenue			
North America (mainly United States)	\$ 2,582,719	\$ 2,550,234	\$ 2,546,290
Europe	598,731	572,196	488,932
Rest of the world	905,219	852,407	831,933
Total	\$ 4,086,669	\$ 3,974,837	\$ 3,867,155

	As of September 30,	
	2019	2018
Long-lived Assets(1)		
Europe	\$ 206,086	\$ 187,884
North America	95,876	88,251
Rest of the world:		
Israel	168,493	161,726
India	36,546	37,239
Others	18,313	21,485
Total	\$ 525,314	\$ 496,585

(1) Property and equipment, net.

Revenue by nature of activities

	Year Ended September 30,		
	2019	2018	2017
Managed services arrangements	\$ 2,246,279	\$ 2,051,589	\$ 2,005,382
Others	1,840,390	1,923,248	1,861,773
Total	\$ 4,086,669	\$ 3,974,837	\$ 3,867,155

Sales to Significant Customers

The Company had one customer, AT&T, which accounted for at least ten percent of its total revenue in each of fiscal years 2019, 2018 and 2017. The percentage of revenue from this customer out of total revenue during fiscal years 2019, 2018 and 2017 was 23%, 27% and 33%, respectively.

AMDOCS LIMITED**NOTES TO THE CONSOLIDATED FINANCIAL STATEMENTS**
(dollar and share amounts in thousands, except per share data)**Note 22 — Selected Quarterly Results of Operations (Unaudited)**

The following are details of the unaudited quarterly results of operations for the three months ended:

	<u>September 30,</u>	<u>June 30,</u>	<u>March 31,</u>	<u>December 31,</u>
2019				
Revenue	\$ 1,030,253	\$ 1,024,704	\$ 1,019,657	\$ 1,012,055
Operating income	144,154	142,320	150,175	133,097
Net income	122,027	131,448	124,279	101,692
Basic earnings per share	0.90	0.96	0.90	0.73
Diluted earnings per share	0.90	0.96	0.90	0.72
2018				
Revenue	\$ 1,002,588	\$ 1,002,198	\$ 992,340	\$ 977,711
Operating income	68,819	105,518	131,827	122,143
Net income	44,266	91,530	101,727	116,873
Basic earnings per share	0.31	0.64	0.71	0.81
Diluted earnings per share	0.31	0.64	0.70	0.80

AMDOCS LIMITED

NOTES TO THE CONSOLIDATED FINANCIAL STATEMENTS (dollar and share amounts in thousands, except per share data)

VALUATION AND QUALIFYING ACCOUNTS (In thousands)

	Accounts Receivable Allowances	Valuation Allowances on Net Deferred Tax Assets
Balance as of September 30, 2016	\$ 39,512	\$ 96,870
Charged to costs and expenses	17,282	16,425
Charged to other accounts	1,985	5,000(1)
Deductions	(30,053)(3)	(23,722)(2)
Balance as of September 30, 2017	28,726	94,573
Charged to costs and expenses	6,134	18,173
Charged to other accounts	1,226	6,121(1)
Deductions	(14,875)(4)	(6,140)
Balance as of September 30, 2018	21,211	112,727
Charged to costs and expenses	22,260	1,009
Charged to other accounts	2,406	6,008(1)
Deductions	(9,756)(6)	(34,211)(5)
Balance as of September 30, 2019	<u>\$ 36,121</u>	<u>\$ 85,533</u>

- (1) Includes valuation allowances on deferred tax assets incurred in connection with an acquisition.
- (2) \$2,416 of valuation allowances on deferred tax assets were written off against the related deferred tax assets, and the remaining deductions in the valuation allowances on net deferred tax assets were released to earnings.
- (3) \$3,008 of accounts receivable allowances were written off against the related accounts receivables, \$5,291 of accounts receivable allowances were netted against deferred revenue, and the remaining deductions in the accounts receivable allowances were released to earnings.
- (4) \$6,659 of accounts receivable allowances were written off against the related accounts receivables, and the remaining deductions in the accounts receivable allowances were released to earnings.
- (5) \$7,588 of valuation allowances on deferred tax assets were written off against the related deferred tax assets, and the remaining deductions in the valuation allowances on net deferred tax assets were released to earnings.
- (6) \$3,539 of accounts receivable allowances were written off against the related accounts receivables, and the remaining deductions in the accounts receivable allowances were released to earnings.

Description of rights of each applicable class of securities registered under Section 12 of the Securities Exchange Act of 1934

The following is a summary of the rights of ordinary shares of Amdocs Limited. All references to all references to “Amdocs,” “we,” “our,” “us” and the “Company” refer to Amdocs Limited. Our Ordinary shares have a nominal value of £0.01. As of September 30, 2019, our ordinary shares are the only class of securities of the company that are registered under Section 12 of the Securities Exchange Act of 1934 (the “Exchange Act”), as amended. Our ordinary shares are listed on the NASDAQ Global Select Market under the symbol “DPX.” We are incorporated as a public company with limited liability under the laws of the Island of Guernsey.

Type and Class of Securities (Item 9.A.5 of Form 20-F)

See “Item 10. Additional information – Memorandum and Articles of Incorporation.” of the Form 20-F.

Preemptive Rights (Item 9.A.3 of Form 20-F)

Not applicable.

Limitations or Qualifications (Item 9.A.6 of Form 20-F)

Not applicable.

Other Rights (Item 9.A.7 of Form 20-F)

Not applicable.

Rights of the Shares (Item 10.B.3 of Form 20-F)

See “Item 10. Additional information – Memorandum and Articles of Incorporation – Ordinary Shares and Non-Voting Ordinary Shares” of the Form 20-F.

Requirements for Amendments (Item 10.B.4 of Form 20-F)

See “Item 10. Additional information – Memorandum and Articles of Incorporation – Ordinary Shares and Non-Voting Ordinary Shares” of the Form 20-F.

Limitations on the Rights to Own Shares (Item 10.B.6 of Form 20-F)

Not applicable.

Provisions Affecting Any Change of Control (Item 10.B.7 of Form 20-F)

Not applicable

Ownership Threshold (Item 10.B.8 of Form 20-F)

There are no provisions in the Memorandum or Articles governing the ownership threshold above which our shareholder ownership must be disclosed. U.S. federal law, however, requires that all directors, executive officers and holders of 10% or more of the stock of a company that has a class of stock registered under the Exchange Act, as amended (other than a foreign private issuer, such as Amdocs Limited), disclose such ownership. In addition, holders of more than 5% of a registered equity security of a company (including a foreign private issuer) must disclose such ownership.

Differences Between the Law of Different Jurisdictions (Item 10.B.9 of Form 20-F)

See “Item 10. Additional information – Memorandum and Articles of Incorporation” of the Form 20-F.

Changes in Capital (Item 10.B.10 of Form 20-F)

See “Item 10. Additional information – Memorandum and Articles of Incorporation” of the Form 20-F.

Debt Securities (Item 12.A of Form 20-F)

Not applicable.

Warrants and Rights (Item 12.B of Form 20-F)

Not applicable.

Other Securities (Item 12.C of Form 20-F)

Not applicable.

American Depositary Shares (Items 12.D.1 and 12.D.2 of Form 20-F)

Not applicable.

THE SYMBOL “[*]” INDICATES MATERIAL WHERE CERTAIN IDENTIFIED INFORMATION HAS BEEN EXCLUDED FROM THE EXHIBIT BECAUSE IT IS BOTH (i) NOT MATERIAL AND (ii) WOULD LIKELY CAUSE COMPETITIVE HARM TO THE COMPANY IF PUBLICLY DISCLOSED.

Amendment 1

To

No. 53258.C

between

AT&T Services, Inc.

and

Amdocs Development Limited

**AMENDMENT NO.1
TO
AGREEMENT NO. 53258.C**

After all Parties have signed, this Amendment is made effective as of the last date signed by a Party ("Effective Date") and is between Amdocs Development Limited, a Cyprus corporation ("Supplier" or "Amdocs"), as successor-in-interest to Amdocs, Inc., (hereinafter referred to as "Supplier"), and AT&T Services, Inc., a Delaware corporation (hereinafter referred to as "AT&T"), each of which may be referred to in the singular as a "Party" or in the plural as the "Parties."

WITNESSETH

WHEREAS, Supplier and AT&T entered into Agreement No.53258.C on February 28, 2017 (the "Agreement"); and

WHEREAS, Supplier and AT&T desire to amend the Agreement as hereinafter set forth.

NOW, THEREFORE, in consideration of the premises and the covenants hereinafter contained, the Parties hereto agree as follows:

1. Section 3.5 Compliance with Laws is modified by renumbering subsection e. as subsection f. and by adding the following as subsection e:

e. General Data Protection Regulation (GDPR)

Supplier shall comply with the requirements set forth in Appendix K – EU Data Privacy and GDPR Data Processing Obligations attached hereto.

2. A new Appendix K – EU Data Privacy and GDPR Data Processing Obligations, a copy of which is attached hereto, is made a part of the Agreement by this reference.

The terms and conditions of the Agreement in all other respects remain unmodified and in full force and effect.

Proprietary and Confidential

This Amendment and information contained therein is not for use or disclosure outside of AT&T Services, Inc., its Affiliates, and third-party representatives, and Amdocs, Inc. except under written agreement by the contracting parties.

Original signatures transmitted and received via facsimile or other electronic transmission of a scanned document, (e.g., .pdf or similar format) are true and valid signatures for all purposes hereunder and shall bind the Parties to the same extent as that of an original signature. This Amendment may be executed in multiple counterparts, each of which shall be deemed to constitute an original but all of which together shall constitute only one document.

IN WITNESS WHEREOF, the Parties have caused this Amendment to the Agreement to be executed, as of the Effective Date.

Amdocs Development Limited

By: _____

Printed Name: _____

Title: _____

Date: _____

AT&T Services, Inc.

By: _____

Printed Name: Donna McCluskey

Title: Sr. Sourcing Manager

Date: _____

Proprietary and Confidential

This Amendment and information contained therein is not for use or disclosure outside of AT&T Services, Inc., its Affiliates, and third-party representatives, and Amdocs, Inc. except under written agreement by the contracting parties.

APPENDIX K

EU DATA PRIVACY AND GDPR DATA PROCESSING OBLIGATIONS

The provisions in this Appendix shall be applicable to the Processing of Personal Data that is subject to Data Privacy Laws. To the extent that there is a conflict between the terms and conditions elsewhere in this Agreement and those in this Appendix, the latter shall control to the extent of such conflict.

1. Definitions

The following definitions shall apply to this Appendix:

Data Controller: a natural or legal person who is considered to be a “controller” in relation to the Personal Data under the GDPR.

Data Processor: a natural or legal person who is considered to be a “processor” of the Data Controller under the GDPR.

Data Privacy Laws: applicable laws or regulations of the European Union (including those applicable in the European Economic Area) and member states of the European Economic Area in relation to Personal Data.

Data Subject: has the meaning ascribed to “data subject” under the GDPR.

GDPR: Regulation (EU) 2016/679 of the European Parliament and of the Council of 27 April 2016 on the protection of natural persons with regard to the processing of personal data and on the free movement of such data, and repealing Directive 95/46/EC (General Data Protection Regulation).

Personal Data: any information that is considered under the GDPR to be “personal data” that Supplier Processes under this Agreement.

Personal Data Breach: has the meaning ascribed to “personal data breach” under the GDPR, to the extent that such breach occurs with respect to Personal Data.

Process and Processing: have the meaning ascribed to “process” or “processing” under the GDPR.

Restricted Jurisdiction: a country outside the European Union or, if applicable, a specific territory or sector within such a country, or an international organization, in each case, which the European Commission has not decided ensures an adequate level of data protection.

Sub-Data Processor: a natural or legal person who is engaged (directly or indirectly) by the Data Processor to carry out specific Processing activities on behalf of the Data Controller.

Supervisory Authority: any governmental authority, agency or regulator in relation to Personal Data, including “supervisory authorities” as understood under Data Privacy Laws.

2. Supplier as Data Processor or Sub-Data Processor

This Section 2 applies to the extent that in relation to particular Personal Data:

- AT&T is a Data Controller and Supplier is its Data Processor; or
- AT&T is a Data Processor and Supplier is its Sub-Data Processor.

Proprietary and Confidential

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2.1 Supplier Obligations

Without limiting its obligations under Section 2, Supplier shall:

- (a) Process such Personal Data only in accordance with the instructions that are set forth in this Agreement and Exhibit 1 to this Appendix or are otherwise agreed to by the Parties in writing including as to the subject-matter and duration of the Processing, the nature and purpose of the Processing, the type of Personal Data and categories of Data Subjects;
- (b) ensure that Supplier's employees, agents and contractors who Process such Personal Data are subject to written obligations of confidentiality;
- (c) implement the technical and organizational security measures that are set forth in this Agreement and Exhibit 1 to this Appendix to ensure a level of security appropriate to the risk, taking into account: (i) the state of the art, costs of implementation, nature, scope, context and purposes of the Processing; and (ii) the risks of accidental or unlawful destruction, loss, alteration, unauthorized disclosure of, or access to such Personal Data that is Processed with respect to all Processing of Personal Data;
- (d) not have such Personal Data Processed by another natural or legal person except to the extent that Supplier has:
 - received the prior specific or general written authorization of AT&T for such Processing;
 - imposed on such other natural or legal person data protection obligations that are the same in all material respects as those set forth in this Appendix, to the extent required pursuant to Data Privacy Laws;
 - with respect to Sub-Data Processors for which Supplier has received general written authorization, informed AT&T in writing of any changes concerning the addition or replacement of such Sub-Data Processors and obtained AT&T's written consent prior to allowing Processing by such Sub-Data Processor;
- (e) notify AT&T in writing through its business contact of any communications or requests in relation to Personal Data received from Data Subjects, Supervisory Authorities or other third parties without undue delay following receipt of such communications or requests. Supplier shall provide such notices via e-mail to its business contact with a copy to privacypolicy@att.com with the subject line stating "URGENT—Personal Data Related."
- (f) taking into account the nature of Supplier's Processing activities, assist AT&T at AT&T's reasonable request to enable the (i) Data Controller to fulfill its obligations to respond to requests by Data Subjects in relation to their rights under Data Privacy Laws, and (ii) Data Controller (and if different, AT&T) to fulfill its obligations to respond to requests by Supervisory Authorities and other third parties;

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- (g) taking into account the nature of Supplier's Processing of such Personal Data and information available to Supplier:
- notify AT&T by calling AT&T Asset Protection (at 800-807-4205 within the U.S. or +1 908-658-0380 outside the U.S.) of any Personal Data Breach without undue delay after becoming aware of such breach; and
 - without undue delay provide reasonable assistance to AT&T in relation to any obligations of the Data Controller (including under Data Privacy Laws) in relation to:
 - a Personal Data Breach; and
 - the performance of data protection impact assessments by the Data Controller.
- To the extent that the assistance required of Supplier under subsections (f) and (g) above may require Supplier to incur substantial costs, Supplier will notify AT&T in advance of incurring such costs and the Parties will negotiate in good faith the fees, if any, to be paid to Supplier for such assistance.
- (h) securely delete all such Personal Data, including all existing copies (or, to the extent AT&T reasonably requests, securely return the Personal Data and copies to AT&T in a commonly used data format (to be agreed by the Parties acting reasonably), when no longer needed for the purposes for which it was collected, which shall be within 30 days of the end of the term of this Agreement at the latest unless otherwise reasonably requested by AT&T, provided, however, that no such deletion will be required to the extent that **(a)** applicable law requires storage of such data beyond such period; or **(b)** AT&T instructs Supplier in writing to retain such data beyond such period; and
- (i) at AT&T's request, make available to AT&T all information necessary to demonstrate compliance with Supplier's obligations under this Appendix concerning the Supplier's data security and privacy procedures relating to the processing of Personal Data for the purpose of demonstrating compliance with the obligations laid down in Article 28 of the GDPR and allow for and contribute to audits, including inspections, conducted by the Data Controller or another auditor mandated by the Data Controller in accordance with Section 3.31 of this Agreement, provided that Supplier shall notify AT&T in writing if it believes in good faith that the exercise of rights under this Section 3.1(i) would infringe Data Privacy Laws. Supplier agrees that AT&T has the right under the GDPR to disclose some or all of the information contained in, or obtained in connection with, this Appendix to:
- Data Controllers, Supervisory Authorities, Data Subjects; and
 - other third parties to the extent required under Data Privacy Laws; and

Proprietary and Confidential

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- (j) provide and keep current its processing-related information, Data Protection Officer information, and point of contact information in a medium and form acceptable to AT&T.

2.2 Cross-Border Transfers to Restricted Jurisdictions. With respect to Personal Data originating in a country identified in Table 1, below, and processed by Supplier in a Restricted Jurisdiction, Supplier shall process (including making any transfers of) such data in accordance with (i) the terms and conditions set out in this Appendix, (ii) Appendix L, Standard Contractual Clauses and (iii) Data Privacy Laws.

TABLE 1

AUSTRIA	FINLAND	LATVIA	PORTUGAL
BELGIUM	FRANCE	LIECHTENSTEIN	ROMANIA
BULGARIA	GERMANY	LITHUANIA	SLOVAKIA
CROATIA	GREECE	LUXEMBOURG	SLOVENIA
CYPRUS	HUNGARY	MALTA	SPAIN
CZECH REPUBLIC	ICELAND	NETHERLANDS	SWEDEN
DENMARK	IRELAND	NORWAY	SWITZERLAND
ESTONIA	ITALY	POLAND	UNITED KINGDOM

2.3 Permitted Sub-Data Processors

AT&T acknowledges that it has authorized Supplier to engage the natural or legal persons identified by Supplier as of the date of this Appendix in Exhibit 2 to this Appendix to process Personal Data on behalf of the Data Controller. In respect of any permitted Sub-Data Processors, AT&T hereby authorizes Supplier to enter into the Standard Contractual Clauses for and on behalf of AT&T to the extent necessary to secure compliance with the Data Privacy Laws.

Proprietary and Confidential

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EXHIBIT 1**DESCRIPTION OF PROCESSING OF PERSONAL DATA**

The below describes the Processing of Personal Data under this Agreement.

Additional details with breakdown of applications currently identified as impacted by European data is provided in **Attachment 1 – Impact By Application**. The Parties will maintain the details of **Attachment 1 – Impact By Application** and the list of Subcontractors for Exhibit 2 without the need to amend this Agreement to include the updates.

Subject Matter

Supplier Processes Personal Data in relation to provision of the Services under this Agreement.

Nature of Processing

Personal Data will be subject to the following Processing operations: **[Note: Insert “Y” to indicate those that apply and “N” to indicate those that don’t]**

- [Y] Provisioning, testing, delivering, monitoring, maintaining, managing and de-provisioning/winding down the Services
- [Y] Managing network devices
- [N] Monitoring and analyzing network utilization/network management information
- [Y] Identifying and resolving service performance issues
- [Y] Creating, storing, utilizing, and delivering reports and related data
- [Y] Enabling access to AT&T facilities and systems
- [Y] Transmitting and storing electronic communications
- [Y] Creating, storing and delivering bills; and receiving, storing, investigating and responding to billing inquiries
- [N] Storing, utilizing, and maintaining contract documents and related materials
- [Y] Storing, utilizing, and maintaining other documents and records containing Personal Data

Proprietary and Confidential

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- [Y] Communicating with AT&T employees/representatives, AT&T's customer's employees/representatives, other suppliers' (other than Supplier's) employees/representatives and/or the employees/representatives of such suppliers' subcontractors of any tier regarding the Services
- [Y] Performing other functions in support of the Services (please specify): Please see Exhibit Attachment 1 – Impact by Application.
- [Y] Transferring Personal Data to Restricted Jurisdictions in connection with any processing operation

Purpose of Processing

Supplier Processes Personal Data to provide the Services, perform its obligations and exercise its rights under this Agreement, and comply with its legal obligations

Categories of Personal Data

The Personal Data processed for AT&T concerns the following categories of Personal Data: [**Note: Insert “Y” to indicate those that apply and “N” to indicate those that don’t**]

- [Y] Business contact data
- [Y] Electronic communications metadata
- [Y] Device identification data
- [Y] Geolocation data
- [Y] Authentication credentials
- [Y] Recorded content of electronic communications
- [Y] Application content (e.g., managing content in a database)
- [Y] Payment card and similar payment data/other financial data
- [Y] Government issued identification numbers
- [Y] Personal (e.g., date of birth, family-related, education-related, personal history-related)
- [Y] Other (please specify): AT&T Webphone data stored in Datalake

Proprietary and Confidential

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Categories of Sensitive Personal Data (if applicable)

The Personal Data processed for AT&T concerns the following special categories of Personal Data **[Note: Insert “Y” to indicate those that apply and “N” to indicate those that don’t]**

- [N] Racial or ethnic origin
- [N] Political affiliation
- [N] Religious beliefs
- [N] Sexual orientation
- [N] Trade union membership
- [N] Genetic data
- [Y] Biometric data
- [N] Health Data

Categories of Data Subjects

The Personal Data processed by Supplier concern the following categories of Data Subjects: **[Note: Insert “Y” to indicate those that apply and “N” to indicate those that don’t]**

- [Y] Employees/representatives of AT&T and/or its affiliates (i.e., the AT&T group of companies)
- [Y] Employees/representatives of AT&T’s customers and/or their affiliates
- [N] Employees/representatives of AT&T’s suppliers (other than Supplier) and/or their subcontractors of any tier
- [Y] Other (please specify): AT&T Webphone data stored in Datalake

Duration of Processing

Until the Personal Data is no longer needed for the purposes for which it was collected, which shall be at the end of the term of this Agreement at the latest unless otherwise requested by AT&T.

Location of Processing

Approved locations under Appendix C – Offshore Locations of the Agreement and/or locations listed in an Order for Services with respect to which the GDPR would be applicable.

Proprietary and Confidential

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Details of Supplier Data Protection Officer(s) and point(s) of contact for all notices (if different than Supplier Data Protection Officer(s))*

NAME	Yaron Moore
TITLE	Commercial Contract Partner
LOCATION	Timberlake, MO
EMAIL	Yaron.moore@amdocs.com
TELEPHONE 1	314-212-7225
TELEPHONE 2	303-210-7354

- * Supplier shall keep current its contact information for its Data Protection Officer(s) and other point(s) of contact listed above, without the need to amend this Agreement, by informing Supplier's AT&T business contact of all changes in a medium and form acceptable to AT&T.

Proprietary and Confidential

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EXHIBIT 2**SUBCONTRACTORS AUTHORIZED BY AT&T TO PROCESS PERSONAL DATA***

COMPANY NAME & REGISTERED ADDRESS	POINT OF CONTACT NAME & TITLE	POINT OF CONTACT PHONE & EMAIL
[*]	[*][*]	[*][*]
[*]	[*]	[*][*]
	[*]	

- * Supplier shall keep current its subcontractor contact information listed above, without the need to amend this Agreement, by informing Supplier's AT&T business contact of all changes in a medium and form acceptable to AT&T.

Proprietary and Confidential

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Appendix L**Standard Contractual Clauses (processors)**

For the purposes of Article 26(2) of Directive 95/46/EC for the transfer of personal data to processors established in third countries which do not ensure an adequate level of data protection

Name of the data exporting organisation: _____

Address: _____

Tel.: _____; fax: _____; e-mail: _____

Other information needed to identify the organisation

.....
(the data **exporter**)

And

Name of the data importing organisation: _____

Address: _____

Tel.: _____; fax: _____; e-mail: _____

Other information needed to identify the organisation:

(the data **importer**)

each a “party”; together “the parties”,

HAVE AGREED on the following Contractual Clauses (the Clauses) in order to adduce adequate safeguards with respect to the protection of privacy and fundamental rights and freedoms of individuals for the transfer by the data exporter to the data importer of the personal data specified in Appendix 1.

Proprietary and Confidential

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*Clause 1***Definitions**

For the purposes of the Clauses:

- (a) *'personal data'*, *'special categories of data'*, *'process/processing'*, *'controller'*, *'processor'*, *'data subject'* and *'supervisory authority'* shall have the same meaning as in Directive 95/46/EC of the European Parliament and of the Council of 24 October 1995 on the protection of individuals with regard to the processing of personal data and on the free movement of such data¹;
- (b) *'the data exporter'* means the controller who transfers the personal data;
- (c) *'the data importer'* means the processor who agrees to receive from the data exporter personal data intended for processing on his behalf after the transfer in accordance with his instructions and the terms of the Clauses and who is not subject to a third country's system ensuring adequate protection within the meaning of Article 25(1) of Directive 95/46/EC;
- (d) *'the subprocessor'* means any processor engaged by the data importer or by any other subprocessor of the data importer who agrees to receive from the data importer or from any other subprocessor of the data importer personal data exclusively intended for processing activities to be carried out on behalf of the data exporter after the transfer in accordance with his instructions, the terms of the Clauses and the terms of the written subcontract;
- (e) *'the applicable data protection law'* means the legislation protecting the fundamental rights and freedoms of individuals and, in particular, their right to privacy with respect to the processing of personal data applicable to a data controller in the Member State in which the data exporter is established;
- (f) *'technical and organisational security measures'* means those measures aimed at protecting personal data against accidental or unlawful destruction or accidental loss, alteration, unauthorised disclosure or access, in particular where the processing involves the transmission of data over a network, and against all other unlawful forms of processing.

*Clause 2***Details of the transfer**

The details of the transfer and in particular the special categories of personal data where applicable are specified in Appendix 1 which forms an integral part of the Clauses.

¹ Parties may reproduce definitions and meanings contained in Directive 95/46/EC within this Clause if they considered it better for the contract to stand alone.

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*Clause 3****Third-party beneficiary clause***

1. The data subject can enforce against the data exporter this Clause, Clause 4(b) to (i), Clause 5(a) to (e), and (g) to (j), Clause 6(1) and (2), Clause 7, Clause 8(2), and Clauses 9 to 12 as third-party beneficiary.
2. The data subject can enforce against the data importer this Clause, Clause 5(a) to (e) and (g), Clause 6, Clause 7, Clause 8(2), and Clauses 9 to 12, in cases where the data exporter has factually disappeared or has ceased to exist in law unless any successor entity has assumed the entire legal obligations of the data exporter by contract or by operation of law, as a result of which it takes on the rights and obligations of the data exporter, in which case the data subject can enforce them against such entity.
3. The data subject can enforce against the subprocessor this Clause, Clause 5(a) to (e) and (g), Clause 6, Clause 7, Clause 8(2), and Clauses 9 to 12, in cases where both the data exporter and the data importer have factually disappeared or ceased to exist in law or have become insolvent, unless any successor entity has assumed the entire legal obligations of the data exporter by contract or by operation of law as a result of which it takes on the rights and obligations of the data exporter, in which case the data subject can enforce them against such entity. Such third-party liability of the subprocessor shall be limited to its own processing operations under the Clauses.
4. The parties do not object to a data subject being represented by an association or other body if the data subject so expressly wishes and if permitted by national law.

*Clause 4****Obligations of the data exporter***

The data exporter agrees and warrants:

- (a) that the processing, including the transfer itself, of the personal data has been and will continue to be carried out in accordance with the relevant provisions of the applicable data protection law (and, where applicable, has been notified to the relevant authorities of the Member State where the data exporter is established) and does not violate the relevant provisions of that State;
- (b) that it has instructed and throughout the duration of the personal data processing services will instruct the data importer to process the personal data transferred only on the data exporter's behalf and in accordance with the applicable data protection law and the Clauses;
- (c) that the data importer will provide sufficient guarantees in respect of the technical and organisational security measures specified in Appendix 2 to this contract;

Proprietary and Confidential

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- (d) that after assessment of the requirements of the applicable data protection law, the security measures are appropriate to protect personal data against accidental or unlawful destruction or accidental loss, alteration, unauthorised disclosure or access, in particular where the processing involves the transmission of data over a network, and against all other unlawful forms of processing, and that these measures ensure a level of security appropriate to the risks presented by the processing and the nature of the data to be protected having regard to the state of the art and the cost of their implementation;
- (e) that it will ensure compliance with the security measures;
- (f) that, if the transfer involves special categories of data, the data subject has been informed or will be informed before, or as soon as possible after, the transfer that its data could be transmitted to a third country not providing adequate protection within the meaning of Directive 95/46/EC;
- (g) to forward any notification received from the data importer or any subprocessor pursuant to Clause 5(b) and Clause 8(3) to the data protection supervisory authority if the data exporter decides to continue the transfer or to lift the suspension;
- (h) to make available to the data subjects upon request a copy of the Clauses, with the exception of Appendix 2, and a summary description of the security measures, as well as a copy of any contract for subprocessing services which has to be made in accordance with the Clauses, unless the Clauses or the contract contain commercial information, in which case it may remove such commercial information;
- (i) that, in the event of subprocessing, the processing activity is carried out in accordance with Clause 11 by a subprocessor providing at least the same level of protection for the personal data and the rights of data subject as the data importer under the Clauses; and
- (j) that it will ensure compliance with Clause 4(a) to (i).

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Clause 5

Obligations of the data importer²

The data importer agrees and warrants:

- (a) to process the personal data only on behalf of the data exporter and in compliance with its instructions and the Clauses; if it cannot provide such compliance for whatever reasons, it agrees to inform promptly the data exporter of its inability to comply, in which case the data exporter is entitled to suspend the transfer of data and/or terminate the contract;
- (b) that it has no reason to believe that the legislation applicable to it prevents it from fulfilling the instructions received from the data exporter and its obligations under the contract and that in the event of a change in this legislation which is likely to have a substantial adverse effect on the warranties and obligations provided by the Clauses, it will promptly notify the change to the data exporter as soon as it is aware, in which case the data exporter is entitled to suspend the transfer of data and/or terminate the contract;
- (c) that it has implemented the technical and organisational security measures specified in Appendix 2 before processing the personal data transferred;
- (d) that it will promptly notify the data exporter about:
 - (i) any legally binding request for disclosure of the personal data by a law enforcement authority unless otherwise prohibited, such as a prohibition under criminal law to preserve the confidentiality of a law enforcement investigation,
 - (ii) any accidental or unauthorised access, and
 - (iii) any request received directly from the data subjects without responding to that request, unless it has been otherwise authorised to do so;
- (e) to deal promptly and properly with all inquiries from the data exporter relating to its processing of the personal data subject to the transfer and to abide by the advice of the supervisory authority with regard to the processing of the data transferred;
- (f) at the request of the data exporter to submit its data processing facilities for audit of the processing activities covered by the Clauses which shall be carried out by the data exporter or an inspection body composed of independent members and in possession of the required professional qualifications bound by a duty of confidentiality, selected by the data exporter, where applicable, in agreement with the supervisory authority;
- (g) to make available to the data subject upon request a copy of the Clauses, or any existing contract for subprocessing, unless the Clauses or contract contain commercial information, in which case it may remove such commercial information, with the exception of Appendix 2 which shall be replaced by a summary description of the security measures in those cases where the data subject is unable to obtain a copy from the data exporter;
- (h) that, in the event of subprocessing, it has previously informed the data exporter and obtained its prior written consent;
- (i) that the processing services by the subprocessor will be carried out in accordance with Clause 11;
- (j) to send promptly a copy of any subprocessor agreement it concludes under the Clauses to the data exporter.

² Mandatory requirements of the national legislation applicable to the data importer which do not go beyond what is necessary in a democratic society on the basis of one of the interests listed in Article 13(1) of Directive 95/46/EC, that is, if they constitute a necessary measure to safeguard national security, defence, public security, the prevention, investigation, detection and prosecution of criminal offences or of breaches of ethics for the regulated professions, an important economic or financial interest of the State or the protection of the data subject or the rights and freedoms of others, are not in contradiction with the standard contractual clauses. Some examples of such mandatory requirements which do not go beyond what is necessary in a democratic society are, *inter alia*, internationally recognised sanctions, tax-reporting requirements or anti-money-laundering reporting requirements.

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*Clause 6****Liability***

1. The parties agree that any data subject, who has suffered damage as a result of any breach of the obligations referred to in Clause 3 or in Clause 11 by any party or subprocessor is entitled to receive compensation from the data exporter for the damage suffered.
2. If a data subject is not able to bring a claim for compensation in accordance with paragraph 1 against the data exporter, arising out of a breach by the data importer or his subprocessor of any of their obligations referred to in Clause 3 or in Clause 11, because the data exporter has factually disappeared or ceased to exist in law or has become insolvent, the data importer agrees that the data subject may issue a claim against the data importer as if it were the data exporter, unless any successor entity has assumed the entire legal obligations of the data exporter by contract or by operation of law, in which case the data subject can enforce its rights against such entity.

The data importer may not rely on a breach by a subprocessor of its obligations in order to avoid its own liabilities.

3. If a data subject is not able to bring a claim against the data exporter or the data importer referred to in paragraphs 1 and 2, arising out of a breach by the subprocessor of any of their obligations referred to in Clause 3 or in Clause 11 because both the data exporter and the data importer have factually disappeared or ceased to exist in law or have become insolvent, the subprocessor agrees that the data subject may issue a claim against the data subprocessor with regard to its own processing operations under the Clauses as if it were the data exporter or the data importer, unless any successor entity has assumed the entire legal obligations of the data exporter or data importer by contract or by operation of law, in which case the data subject can enforce its rights against such entity. The liability of the subprocessor shall be limited to its own processing operations under the Clauses.

*Clause 7****Mediation and jurisdiction***

1. The data importer agrees that if the data subject invokes against it third-party beneficiary rights and/or claims compensation for damages under the Clauses, the data importer will accept the decision of the data subject:
 - (a) to refer the dispute to mediation, by an independent person or, where applicable, by the supervisory authority;
 - (b) to refer the dispute to the courts in the Member State in which the data exporter is established.

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2. The parties agree that the choice made by the data subject will not prejudice its substantive or procedural rights to seek remedies in accordance with other provisions of national or international law.

Clause 8

Cooperation with supervisory authorities

1. The data exporter agrees to deposit a copy of this contract with the supervisory authority if it so requests or if such deposit is required under the applicable data protection law.
2. The parties agree that the supervisory authority has the right to conduct an audit of the data importer, and of any subprocessor, which has the same scope and is subject to the same conditions as would apply to an audit of the data exporter under the applicable data protection law.
3. The data importer shall promptly inform the data exporter about the existence of legislation applicable to it or any subprocessor preventing the conduct of an audit of the data importer, or any subprocessor, pursuant to paragraph 2. In such a case the data exporter shall be entitled to take the measures foreseen in Clause 5 (b).

Clause 9

Governing Law

The Clauses shall be governed by the law of the Member State in which the data exporter is established, namely _____

Clause 10

Variation of the contract

The parties undertake not to vary or modify the Clauses. This does not preclude the parties from adding clauses on business related issues where required as long as they do not contradict the Clause.

Proprietary and Confidential

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*Clause 11****Subprocessing***

1. The data importer shall not subcontract any of its processing operations performed on behalf of the data exporter under the Clauses without the prior written consent of the data exporter. Where the data importer subcontracts its obligations under the Clauses, with the consent of the data exporter, it shall do so only by way of a written agreement with the subprocessor which imposes the same obligations on the subprocessor as are imposed on the data importer under the Clauses³. Where the subprocessor fails to fulfil its data protection obligations under such written agreement the data importer shall remain fully liable to the data exporter for the performance of the subprocessor's obligations under such agreement.
2. The prior written contract between the data importer and the subprocessor shall also provide for a third-party beneficiary clause as laid down in Clause 3 for cases where the data subject is not able to bring the claim for compensation referred to in paragraph 1 of Clause 6 against the data exporter or the data importer because they have factually disappeared or have ceased to exist in law or have become insolvent and no successor entity has assumed the entire legal obligations of the data exporter or data importer by contract or by operation of law. Such third-party liability of the subprocessor shall be limited to its own processing operations under the Clauses.
3. The provisions relating to data protection aspects for subprocessing of the contract referred to in paragraph 1 shall be governed by the law of the Member State in which the data exporter is established, namely _____

4. The data exporter shall keep a list of subprocessing agreements concluded under the Clauses and notified by the data importer pursuant to Clause 5 (j), which shall be updated at least once a year. The list shall be available to the data exporter's data protection supervisory authority.

*Clause 12****Obligation after the termination of personal data processing services***

1. The parties agree that on the termination of the provision of data processing services, the data importer and the subprocessor shall, at the choice of the data exporter, return all the personal data transferred and the copies thereof to the data exporter or shall destroy all the personal data and certify to the data exporter that it has done so, unless legislation imposed upon the data importer prevents it from returning or destroying all or part of the personal data transferred. In that case, the data importer warrants that it will guarantee the confidentiality of the personal data transferred and will not actively process the personal data transferred anymore.
-
3. This requirement may be satisfied by the subprocessor co-signing the contract entered into between the data exporter and the data importer under this Decision.

Proprietary and Confidential

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2. The data importer and the subprocessor warrant that upon request of the data exporter and/or of the supervisory authority, it will submit its data processing facilities for an audit of the measures referred to in paragraph 1.

On behalf of the data exporter:

Name (written out in full):

Position:

Address:

Other information necessary in order for the contract to be binding (if any):

Signature _____

(stamp of organisation)

On behalf of the data importer:

Name (written out in full):

Position:

Address:

Other information necessary in order for the contract to be binding (if any):

Signature _____

(stamp of organisation)

Proprietary and Confidential

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APPENDIX 1 TO THE STANDARD CONTRACTUAL CLAUSES

This Appendix forms part of the Clauses and must be completed and signed by the parties. The Member States may complete or specify, according to their national procedures, any additional necessary information to be contained in this Appendix.

Data exporter

The data exporter is (please specify briefly your activities relevant to the transfer):

Data importer

The data importer is (please specify briefly activities relevant to the transfer):

Data subjects

The personal data transferred concern the following categories of data subjects (please specify):

Categories of data

The personal data transferred concern the following categories of data (please specify):

Special categories of data (if appropriate)

The personal data transferred concern the following special categories of data (please specify):

Processing operations

The personal data transferred will be subject to the following basic processing activities (please specify):

DATA EXPORTER

Name: _____
 Authorised Signature _____

DATA IMPORTER

Name: _____
 Authorised Signature _____

Proprietary and Confidential

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APPENDIX 2 TO THE STANDARD CONTRACTUAL CLAUSES

This Appendix forms part of the Clauses and must be completed and signed by the parties **Description of the technical and organisational security measures implemented by the data importer in accordance with Clauses 4(d) and 5(c) (or document/legislation attached):**

ILLUSTRATIVE INDEMNIFICATION CLAUSE (OPTIONAL)***Liability***

The parties agree that if one party is held liable for a violation of the clauses committed by the other party, the latter will, to the extent to which it is liable, indemnify the first party for any cost, charge, damages, expenses or loss it has incurred.

Indemnification is contingent upon:

- (a) the data exporter promptly notifying the data importer of a claim; and
- (b) the data importer being given the possibility to cooperate with the data exporter in the defence and settlement of the claim⁴.

⁴ Paragraph on liabilities is optional.

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THE SYMBOL “[*]” INDICATES MATERIAL WHERE CERTAIN IDENTIFIED INFORMATION HAS BEEN EXCLUDED FROM THE EXHIBIT BECAUSE IT IS BOTH (i) NOT MATERIAL AND (ii) WOULD LIKELY CAUSE COMPETITIVE HARM TO THE COMPANY IF PUBLICLY DISCLOSED.

Amendment 2

To

Agreement No. 53258.C

between

AT&T Services, Inc.

and

Amdocs Development Limited

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This Amendment is not for use or disclosure outside of AT&T, its Affiliates, and its and their third-party representatives, and Supplier except under written agreement by the contracting Parties.

AMENDMENT NO.2**TO****AGREEMENT NO. 53258.C**

This Amendment No. 2, effective as of the last date signed by a Party ("Effective Date") and amending Agreement No. 53258.C, is by and between Amdocs Development Limited, a Cyprus corporation (hereinafter referred to as "Supplier" or "Amdocs"), and AT&T Services, Inc., a Delaware corporation (hereinafter referred to as "AT&T"), each of which may be referred to in the singular as a "Party" or in the plural as the "Parties."

WITNESSETH

WHEREAS, Supplier and AT&T are parties to the Master Services Agreement No.53258.C entered into on/with the effective date of on February 28, 2017 (as previously amended, the "Agreement"); and

WHEREAS, Supplier and AT&T now desire to amend the Agreement as hereinafter set forth.

NOW, THEREFORE, in consideration of the premises and the covenants hereinafter contained, the Parties hereto agree as follows:

- 1. As of the Effective Date of this Amendment No. 2, Section 3.10 "Technology Standards" is hereby amended to add the following as subsection g:**
 - g. FOSS Terms
 1. For purposes of this Section, "FOSS" means any and all freeware Open Source Software or shareware used or included in, or combined by or on behalf of Supplier with, the deliverables or otherwise provided by or on behalf of Supplier under this Agreement; and a "FOSS Disclosure" means a complete, current, and accurate listing of all FOSS, which identifies for each FOSS component: (i) the component name; (ii) its version or release number; (iii) its web site URL of origin; (iv) the applicable software license and its version number; (v) the URL where Supplier identifies or sets forth the applicable software license and (vi) a brief (e.g., one-line) description of the purpose of the component; (vii) how the component is linked within the Deliverables or as otherwise provided. A FOSS Disclosure may be provided in the form of a web site made accessible to AT&T where Supplier posts the foregoing information.

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This Amendment is not for use or disclosure outside of AT&T, its Affiliates, and its and their third-party representatives, and Supplier except under written agreement by the contracting Parties.

2. Upon AT&T's request, but not more than once a year, Supplier shall promptly, but in any event within sixty (60) days of such request, furnish to AT&T a FOSS Disclosure that is complete, current and accurate when furnished. For the avoidance of doubt, such FOSS Disclosure will govern deliverables provided under an Order issued after the Effective Date of this Amendment. Neither response nor non-response by AT&T concerning the receipt or non-receipt of any FOSS Disclosure or any reference to FOSS in the Agreement shall be deemed as acceptance, approval or acquiescence by AT&T that Supplier's use of the FOSS complies with the legal requirements of applicable FOSS license(s), or is suitable for the intent and purposes furnished hereunder. After receiving any FOSS Disclosure, [*].
3. If the term "Viral Open Source Software" is defined elsewhere in this Agreement, then in the event of any conflict between the provisions of this Section and any representations or warranties concerning Viral Open Source Software that may appear elsewhere in this Agreement, this Section shall take precedence.

2. As of the Effective Date of this Amendment No. 2, Section 3.43.c "Additional Supplier Warranties" is hereby amended to add the following as subsection vii:

- vii. Supplier has (i) satisfied all its obligations to any third parties with respect to all FOSS and the applicable FOSS licenses (including, for example, any obligation to make publicly available the FOSS source code for modifications to such FOSS); (ii) that use of the FOSS in such form for such intent and purposes in no manner creates any added obligation on the part of AT&T (including, for example, the payment of any additional monies), or diminishes, conditions or eliminates any of the rights, title, or interest that Supplier grants AT&T in or to any Deliverables or that Supplier may otherwise provide AT&T under this Agreement; and (iii) that use of the FOSS in such form for such intent and purposes, including, but not limited to, AT&T's use or combination of the FOSS, in the form provided to AT&T, with any proprietary software of AT&T or AT&T's third-party suppliers, does not subject AT&T to any obligation of disclosure or distribution to any third party or to the public of any such proprietary software, or otherwise make such proprietary software subject to the terms of any FOSS license or impair AT&T's or its third-party suppliers' rights, title, or interest in or to such proprietary software.

3. As of the Effective Date of this Amendment No. 2, Section 3.15 "Indemnity" is hereby amended to add the following as subsection h:

- h. In the event that AT&T notifies Supplier or Supplier becomes aware of Supplier's noncompliance with any FOSS license term, then in either case, Supplier shall use all reasonable efforts promptly to cure such noncompliance so as to eliminate risks of public disclosure of proprietary software and prevent

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disruption of any AT&T business activity. Supplier shall promptly notify AT&T of all actions taken by Supplier to cure such noncompliance. Should AT&T receive notice from any third party alleging acts or omissions which, notwithstanding AT&T's use of the FOSS for the intent and purposes furnished hereunder, constitute noncompliance with any FOSS license term, then promptly upon AT&T's notice to Supplier of such allegation, Supplier shall indemnify, defend and hold harmless AT&T against such allegation in accordance with Supplier's obligations to do so as set forth elsewhere in this Agreement, in a manner that preserves any proprietary software of AT&T or its third-party suppliers from any public disclosure obligation or any other FOSS license noncompliance allegations.

4. **Section 3.21 Limitation of Damages is hereby amended by adding the words "or Access" at the end of subparagraphs a.(ii) and b.(ii).**
5. **Section 4.1 Access is hereby deleted and replaced in its entirety with Section 4.1 Access to AT&T Premises and Non-Public Information Systems as follows:**

4.1 Access to AT&T Premises and Non-Public Information Systems

- a. When appropriate, Supplier Representatives shall have reasonable access to AT&T's premises during normal business hours, and at such other times as may be agreed upon by the Parties, to enable Supplier to perform its obligations under this Agreement. Supplier shall coordinate such access with AT&T. Where required by governmental regulations, Supplier shall submit satisfactory clearance from the U.S. Department of Defense and/or other federal, state or local authorities.
- b. Supplier shall ensure that Supplier Representatives, while on or off AT&T's premises, (i) protect AT&T's materials, buildings and structures, (ii) perform Services which do not unreasonably interfere with AT&T's business operations, and (iii) perform such Services with care and due regard for the safety, convenience and protection of AT&T, its employees, and property.
- c. AT&T may require Supplier Representatives to exhibit AT&T-issued identification credentials, to gain unescorted access to AT&T's premises for the performance of Services. In addition, if any Supplier Representatives requires access to AT&T's Nonpublic Information Resources (as defined in the AT&T Supplier Information Security Requirements) Supplier must obtain from AT&T an ATT UID for each such Supplier Representative. ATT UIDs are provisioned upon successful opening of a worker record within the vendor management system (VMS). Supplier Representatives

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shall also exhibit their company's photo identification, if any. If, for any reason, any Supplier Representative is no longer performing Services or no longer has a need to have access to AT&T's Nonpublic Information Resources, then Supplier shall immediately close the Supplier Representatives record in the VMS and promptly return any AT&T-issued identification credentials. In cases where a Supplier Representative is being removed due to misconduct involving work at AT&T, Supplier will immediately inform the AT&T sponsoring manager of the nature of the misconduct.

- d. AT&T currently uses a third-party VMS vendor and reserves the right to change the VMS vendor at any time and from time to time. Supplier shall enter into an agreement with AT&T's designated VMS vendor, at no cost to AT&T, and supply any information about its Supplier Representatives reasonably required by the VMS vendor to create a worker record and enable provisioning of identification credentials and ATT UIDs. If Supplier fails to enter into an agreement with AT&T's VMS vendor to use the VMS, Supplier's Supplier Representatives will not be allowed access to AT&T's premises (other than on an escorted basis) or to AT&T's Nonpublic Information Resources. AT&T reserves the right to restrict Supplier or Supplier Representatives' access to AT&T's facilities and/or Nonpublic Information Resources, without liability to AT&T, until AT&T is satisfied that Supplier is compliant with its obligations under this Section.
- e. Supplier shall ensure that information provided to AT&T or the VMS vendor for its Supplier Representatives is 1) input accurately into the VMS (including the SSN/Security ID for the Supplier Representatives, the Agreement number in the "Contract or PO #" field as it may be changed, the start and end dates (end date must not be after the expiration date of the Agreement), and the worker classification obtained from the AT&T sponsoring manager), 2) maintained properly throughout the term of the engagement, and 3) closed on a timely basis upon the termination or expiration of the engagement or the need for the Supplier Representatives to have access to AT&T's premises or Nonpublic Information Resources. Supplier shall not enable or allow any Supplier Representatives to let anyone else use the AT&T identification credentials or an ATT UID issued to that Supplier Representative to gain access to AT&T premises or Nonpublic Information Resources.

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6. **Appendix B, Exhibit 1 – For Orders requiring signature is hereby deleted in its entirety and the attached Appendix B, Exhibit 1 – For Orders requiring signature is inserted in lieu thereof.**
7. **Appendix B, Exhibit 2 – For use when issuing a Purchase Order is hereby deleted in its entirety and the attached Appendix B, Exhibit 1 – For use when issuing a Purchase Order is inserted in lieu thereof.**
8. **Appendix C – Offshore Locations is hereby deleted in its entirety and the attached Appendix C – Offshore Locations is inserted in lieu thereof.**
9. **Appendix D – Security and Offshore Requirements: is hereby deleted in its entirety and the attached Appendix D – Security and Offshore Requirements: is inserted in lieu thereof.**
10. **The terms and conditions of the Agreement in all other respects remain unmodified and in full force and effect.**

Original signatures transmitted and received via facsimile or other electronic transmission of a scanned document, (e.g., .pdf or similar format) are true and valid signatures for all purposes hereunder and shall bind the Parties to the same extent as that of an original signature. This Amendment may be executed in multiple counterparts, each of which shall be deemed to constitute an original but all of which together shall constitute only one document.

IN WITNESS WHEREOF, the Parties have caused this Amendment to Agreement No. 53258.C to be executed, as of the date the last Party signs.

Amdocs Development Limited

AT&T Services, Inc.

By: _____

By: _____

Name: _____

Name: Donna McCluskey

Title: _____

Title: Sr. Sourcing Manager

Date: _____

Date: _____

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Appendix B, Exhibit 1 – For Orders requiring signature

Order

No. 53258.W.<XXX>

Between

Amdocs Development Limited

And

AT&T Services, Inc.

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This Amendment is not for use or disclosure outside of AT&T, its Affiliates, and its and their third-party representatives, and Supplier except under written agreement by the contracting Parties.

Order

This Order is by and between Amdocs Development Limited, a Cyprus corporation (“Supplier” or “Amdocs”), and AT&T Services, Inc., a Delaware corporation (“AT&T”), and shall be governed pursuant to the terms and conditions of Master Services Agreement Number 53258.C (as amended, the “Master Services Agreement”), which by this reference are incorporated as if fully set forth herein. Any terms and conditions in this Order that vary from or are inconsistent with the terms and conditions of the Master Services Agreement shall apply to this Order only, and shall survive the termination or expiration of the Master Services Agreement.

1. **AT&T Agreement Number:** 53258.W.<XXX> must appear on all invoices
Amdocs Order Number: <Enter No.>
2. **Term of Services:** Effective dates are <Month, DD, YYYY>, through <Month, DD, YYYY>.
3. **Project Name and Description:** <Enter Details>
4. **The Custom Software and Program Material and/or Scope of Other Services Ordered:**
This Order is to <Enter specific details>
5. **Third Party Software:** <Enter here if any; “None” is acceptable>
6. **Additional Items Ordered:** <Enter here if any; “None” is acceptable>
7. **Milestones/Resources:**

a. **Milestones:**

Planned milestones as of the Effective Date of this Order are as follows:

<Table below is an example and may be modified as required>

Milestone No.	Description	Date
1		

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b. Offshore Resources:

Amdocs Offshore resources working on this Order may be located at AT&T-approved locations found in the Master Services Agreement, and at the following address(es):

<Address Number Street and Room>
<City, State/Province Zip>
<Country>

Amdocs Offshore resources can only access AT&T Systems/data in accordance with the Master Services Agreement, Appendix D, “Security and Offshore Requirements”.

c. USA-Based Resources:

Amdocs USA-based resources shall work pursuant to the general directions provided by AT&T to Amdocs towards the assigned milestones but shall not in any way be deemed to be employees of AT&T.

d. Staffing Details:

Planned roles and full time equivalent (“FTE”) resources needed:

<Table below is an example and may be modified as required>

Role	USA-Based FTEs	Offshore FTEs	Total
------	----------------	---------------	-------

8. Deliverables/Release Items:

Amdocs will provide the deliverables and/or release items for the Project as defined in this Section and the table below.

<Table below is an example and may be modified as required>

Milestone No.	Deliverable	Description	Estimated Delivery Date
---------------	-------------	-------------	-------------------------

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9. **Application Components:** <Enter details below, “None” is acceptable and delete table>

The following applications are included in the scope of this Order.

<u>MOTS ID</u>	<u>Application Name</u>	<u>% of time spent on Application</u>
Total		100%

10. **Amdocs Responsibilities:** <Enter details below, “None” is acceptable>

In addition to providing the deliverables herein, Amdocs will be responsible for the following:

- <List additional Amdocs Responsibilities>

11. **AT&T Responsibilities:** <Enter details below, “None” is acceptable>

In addition to AT&T Responsibilities defined in Section 3.43f of the Master Services Agreement, AT&T will be responsible for the following:

- <List additional AT&T Responsibilities>

12. **Compensation:**

This is a <fixed price or Time and Materials (“T&M”)> Order for the total amount of <Enter amount> for the Work effort. The total price is based on <Enter basis for pricing, e.g. rate, monthly or hourly, any proration, and/or assumed hours>.

<Enter Travel and living expenses language in accordance with the Master Services Agreement, if applicable>

The following table represents the payment schedule for this Order:

Payment Schedule:

<Table below is an example and may be modified as required>

<u>Activity During</u>	<u>FTEs</u>	<u>Rate</u>	<u>Total Invoice</u>	<u>Invoice Date</u>
Total				

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13. Project Managers:**AT&T:**

<AT&T Contact Name>
 <Title>
 <Street and Room>
 <City, State Zip>
 <email@att.com>

Amdocs:

<Amdocs PM Contact Name>
 <Title>
 <Street and Room>
 <City, State Zip>
 <email@amdocs.com>

14. Special Terms and Conditions:**a. Invoice/Billing**

Invoices and billing information are to be sent electronically to:

<Enter applicable AT&T Business Unit/Finance Name>: <email@att.com>

Copies of all invoices are to be sent to:

<AT&T Contact Name>
 <Title>
 <Street and Room>
 <City, State Zip>
 <email@att.com>

AT&T will notify Amdocs of any changes regarding invoices and billing information at <Enter Phone Number (xxx)xxx-xxxx> or email: <NAME@amdocs.com>.

15. Liquidated Damages for Delay in Delivery:

Delayed Delivery Dates under this Custom Software Order shall be handled in accordance with Section 4.9, "Liquidated Damages for Delay in Delivery," of the Master Services Agreement.

16. Error Severity Level Description And Resolution Plan:

Errors found in the Custom Software or Ongoing Support provided under this Order shall be handled in accordance with Section 4.8, "Error Severity Level Description And Resolution Plan," of the Master Services Agreement.

Proprietary and Confidential

This Amendment is not for use or disclosure outside of AT&T, its Affiliates, and its and their third-party representatives, and Supplier except under written agreement by the contracting Parties.

17. Payment Terms:

Payment terms for invoices issued under this Order shall be in accordance with Section 3.19, "Invoicing and Payment," of the Master Services Agreement, which is, as of the Effective Date of this Order, net days from the date of receipt of the invoice.

18. Ownership of Paid-For Development:

For the avoidance of doubt, and for purposes of interpreting AT&T's right to Program Material and Documentation created hereunder, title to all Work output hereunder shall be determined in accordance with the Master Services Agreement, Section 3.27, "Ownership of Paid-For Development, Use and Reservation of Rights".

19. Information:

In addition to all other rights provided by Section 3.16, "Information", pursuant to the Master Services Agreement, any Information received by Amdocs from AT&T or other parties engaged in this Work shall be considered and treated as confidential Information under the Order, regardless of any requirement to put it in writing under the Master Services Agreement or separate Non-Disclosure Agreement (NDA).

20. Termination:

The Termination and Partial Termination provisions applicable to this Order are contained in Section 3.36, "Termination", of the Master Services Agreement.

IN WITNESS WHEREOF, the Parties have caused this Order to be executed as of the Effective Date.

Amdocs Development Limited

AT&T Services, Inc.

By: _____

By: _____

Name: <Supplier Signatory Name>

Name: <AT&T Signatory Name>

Title: <Supplier Signatory Title>

Title: <AT&T Signatory Title>

Date: _____

Date: _____

Proprietary and Confidential

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Appendix B, Exhibit 2 – For use when issuing a Purchase Order

Statement of Work

No. 53258.Z.<XXX>

Between

Amdocs Development Limited.

And

AT&T Services, Inc.

Proprietary and Confidential

This Amendment is not for use or disclosure outside of AT&T, its Affiliates, and its and their third-party representatives, and Supplier except under written agreement by the contracting Parties.

Statement of Work

This Statement of Work (“SOW”) is by and between Amdocs Development Limited, a Cyprus corporation (“Supplier” or “Amdocs”), and AT&T Services, Inc., a Delaware corporation (“AT&T”), and shall become a part of a Purchase Order which is governed pursuant to the terms and conditions of Master Services Agreement Number 53258.C (as amended, the “Master Services Agreement”), which by this reference are incorporated as if fully set forth herein. Any terms and conditions in this SOW that vary from or are inconsistent with the terms and conditions of the Master Services Agreement shall apply to this SOW only, and shall survive the Termination or expiration of the Master Services Agreement.

For the avoidance of doubt, terms and conditions preprinted on any Purchase Order, Purchase Order acceptance or acknowledgement (if any) shall not be given any effect as they are superseded by the terms and conditions herein.

1. **AT&T Agreement Number: 53258. Z.<XXX>** must appear on all invoices
Amdocs Order Number: <Enter No.>
2. **Term of Services:** Effective dates are <Month, DD, YYYY>, through <Month, DD, YYYY>.
3. **Project Name and Description:** <Enter Details>
4. **The Custom Software and Program Material and/or Scope of Other Services Ordered:**
This SOW is to <Enter specific details>
5. **Third Party Software:** <Enter here if any; “None” is acceptable>
6. **Additional Items Ordered:** <Enter here if any; “None” is acceptable>
7. **Milestones/Resources:**
 - a. **Milestones:**
Planned milestones as of the Effective Date of this SOW are as follows:
<Table below is an example and may be modified as required>

Milestone No.	Description	Date
1		

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b. Offshore Resources:

Amdocs Offshore resources working on this SOW may be located at AT&T-approved locations found in the Master Services Agreement, and at the following address(es):

<Address Number Street and Room>
<City, State/Province Zip>
<Country>

Amdocs Offshore resources can only access AT&T Systems/data in accordance with the Master Services Agreement, Appendix D, “Security and Offshore Requirements”.

c. USA-Based Resources:

Amdocs USA-based resources shall work pursuant to the general directions provided by AT&T to Amdocs towards the assigned milestones but shall not in any way be deemed to be employees of AT&T.

d. Staffing Details:

Planned roles and full time equivalent (“FTE”) resources needed:

<Table below is an example and may be modified as required>

Role	USA-Based FTEs	Offshore FTEs	Total
------	----------------	---------------	-------

8. Deliverables/Release Items:

Amdocs will provide the deliverables and/or release items for the Project as defined in this Section and the table below.

<Table below is an example and may be modified as required>

Milestone No.	Deliverable	Description	Estimated Delivery Date
---------------	-------------	-------------	-------------------------

9. Application Components: <Enter details below, “None” is acceptable and delete table>

The following applications are included in the scope of this SOW.

MOTS ID	Application Name	% of time spent on Application
Total		100%

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Amdocs:

<Amdocs PM Contact Name>
 <Title>
 <Street and Room>
 <City, State Zip>
 <email@amdocs.com>

14. Special Terms and Conditions:**a. Invoice/Billing**

Invoices and billing information are to be sent electronically to:

<Enter applicable AT&T Business Unit/Finance Name>: <email@att.com>

Copies of all invoices are to be sent to:

<AT&T Contact Name>
 <Title>
 <Street and Room>
 <City, State Zip>
 <email@att.com>

AT&T will notify Amdocs of any changes regarding invoices and billing information at <Enter Phone Number (xxx)xxx-xxxx> or email: <NAME@amdocs.com>.

15. Liquidated Damages for Delay in Delivery:

Delayed Delivery Dates under this Custom Software SOW shall be handled in accordance with Section 4.9, "Liquidated Damages for Delay in Delivery," of the Master Services Agreement.

16. Error Severity Level Description And Resolution Plan:

Errors found in the Custom Software or Ongoing Support provided under this SOW shall be handled in accordance with Section 4.8, "Error Severity Level Description And Resolution Plan," of the Master Services Agreement.

17. Payment Terms:

Payment terms for invoices issued under this SOW shall be in accordance with Section 3.19, "Invoicing and Payment" of the Master Services Agreement, which is, as of the Effective Date of this SOW, net days from the date of receipt of the invoice.

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18. Ownership of Paid-For Development:

For the avoidance of doubt, and for purposes of interpreting AT&T's right to Program Material and Documentation created hereunder, title to all Work output hereunder shall be determined in accordance with the Master Services Agreement, Section 3.27, "Ownership of Paid-For Development, Use and Reservation of Rights".

19. Information:

In addition to all other rights provided by Section 3.16, "Information", pursuant to the Master Services Agreement, any Information received by Amdocs from AT&T or other parties engaged in this Work shall be considered and treated as confidential Information under the SOW, regardless of any requirement to put it in writing under the Master Services Agreement or separate Non-Disclosure Agreement (NDA).

20. Termination:

The Termination and Partial Termination provisions applicable to this SOW are contained in Section 3.36, "Termination", of the Master Services Agreement.

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Appendix C – Offshore Locations

The Parties agree that the following are AT&T-approved locations as of the Effective Date of this Agreement and any modifications to this list shall be managed in accordance with Section 3.24.

Country(ies) where services are authorized by AT&T to be performed (physical location address is also required if the Services involve Information Technology-related work or if a “virtual” or “work-from-home” address is authorized)	City(ies) where services will be performed for AT&T	Services to be performed at approved Physical Location	Name of Supplier / Supplier Affiliate, and/ or Subcontractor performing the services
Brazil	[*]	[*]	[*]
Brazil	[*]	[*]	[*]
Brazil	[*]	[*]	[*]
Brazil	[*]	[*]	[*]
Brazil	[*]	[*]	[*]

Proprietary and Confidential

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Country(ies) where services are authorized by AT&T to be performed (physical location address is also required if the Services involve Information Technology-related work or if a “virtual” or “work-from-home” address is authorized)	City(ies) where services will be performed for AT&T	Services to be performed at approved Physical Location	Name of Supplier / Supplier Affiliate, and/ or Subcontractor performing the services
Brazil	[*]	[*]	[*]
Brazil	[*]	[*]	[*]
Brazil	[*]	[*]	[*]
Brazil	[*]	[*]	[*]
Canada	[*]	[*]	[*]
Canada	[*]	[*]	[*]
Cyprus	[*]	[*]	[*]
Cyprus	[*]	[*]	[*]
India	[*]	[*]	[*]

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Country(ies) where services are authorized by AT&T to be performed (physical location address is also required if the Services involve Information Technology-related work or if a “virtual” or “work-from-home” address is authorized)	City(ies) where services will be performed for AT&T	Services to be performed at approved Physical Location	Name of Supplier / Supplier Affiliate, and/ or Subcontractor performing the services
India [*]	[*]	[*]	[*]
India [*]	[*]	[*]	[*]
India [*]	[*]	[*]	[*]
India [*]	[*]	[*]	[*]
India [*]	[*]	[*]	[*]
India [*]	[*]	[*]	[*]
India [*]	[*]	[*]	[*]
India [*]	[*]	[*]	[*]
India [*]	[*]	[*]	[*]
India [*]	[*]	[*]	[*]

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Country(ies) where services are authorized by AT&T to be performed (physical location address is also required if the Services involve Information Technology-related work or if a “virtual” or “work-from-home” address is authorized)	City(ies) where services will be performed for AT&T	Services to be performed at approved Physical Location	Name of Supplier / Supplier Affiliate, and/ or Subcontractor performing the services
India	[*]	[*]	[*]
India	[*]	[*]	[*]
India	[*]	[*]	[*]
India	[*]	[*]	[*]
India	[*]	[*]	[*]
India	[*]	[*]	[*]
India	[*]	[*]	[*]
India	[*]	[*]	[*]
India	[*]	[*]	[*]
India	[*]	[*]	[*]
India	[*]	[*]	[*]
India	[*]	[*]	[*]

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Country(ies) where services are authorized by AT&T to be performed (physical location address is also required if the Services involve Information Technology-related work or if a “virtual” or “work-from-home” address is authorized)	City(ies) where services will be performed for AT&T	Services to be performed at approved Physical Location	Name of Supplier / Supplier Affiliate, and/ or Subcontractor performing the services
India	[*]	[*]	[*]
India	[*]	[*]	[*]
India	[*]	[*]	[*]
India	[*]	[*]	[*]
India	[*]	[*]	[*]
India	[*]	[*]	[*]
India	[*]	[*]	[*]
India	[*]	[*]	[*]
India	[*]	[*]	[*]
India	[*]	[*]	[*]
India	[*]	[*]	[*]
India	[*]	[*]	[*]
India	[*]	[*]	[*]
India	[*]	[*]	[*]
India	[*]	[*]	[*]
India	[*]	[*]	[*]
Israel	[*]	[*]	[*]

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Country(ies) where services are authorized by AT&T to be performed (physical location address is also required if the Services involve Information Technology-related work or if a “virtual” or “work-from-home” address is authorized)	City(ies) where services will be performed for AT&T	Services to be performed at approved Physical Location	Name of Supplier / Supplier Affiliate, and/ or Subcontractor performing the services
Israel	[*]	[*]	[*]
Israel	[*]	[*]	[*]
Israel	[*]	[*]	[*]
Israel	[*]	[*]	[*]
Israel	[*]	[*]	[*]
Israel	[*]	[*]	[*]
Israel	[*]	[*]	[*]
Israel	[*]	[*]	[*]
Mexico	[*]	[*]	[*]
Mexico	[*]	[*]	[*]
Mexico	[*]	[*]	[*]
Mexico	[*]	[*]	[*]
Mexico	[*]	[*]	[*]

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Country(ies) where services are authorized by AT&T to be performed (physical location address is also required if the Services involve Information Technology-related work or if a “virtual” or “work-from-home” address is authorized)	City(ies) where services will be performed for AT&T	Services to be performed at approved Physical Location	Name of Supplier / Supplier Affiliate, and/or Subcontractor performing the services
Mexico	[*]	[*]	[*]
Mexico	[*]	[*]	[*]
Mexico	[*]	[*]	[*]
Mexico	[*]	[*]	[*]
Mexico	[*]	[*]	[*]
Mexico	[*]	[*]	[*]

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Country(ies) where services are authorized by AT&T to be performed (physical location address is also required if the Services involve Information Technology-related work or if a “virtual” or “work-from-home” address is authorized)		City(ies) where services will be performed for AT&T	Services to be performed at approved Physical Location	Name of Supplier / Supplier Affiliate, and/or Subcontractor performing the services
UK	[*]	[*]	[*]	[*]
UK	[*]	[*]	[*]	[*]

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Appendix D – Security and Offshore Requirements:

Supplier Information Security Requirements (“SISR”); Offshore Information Technology Services Requirements; Requirements for Offshore Information Technology Services Requiring Elevated Rights; and Limited Offshore Remote Access (“LORA”)

1.0 AT&T Supplier Information Security Requirements (SISR) – v6.3, January 2018

The following AT&T Supplier Information Security Requirements (“Security Requirements”) apply to Supplier Entities (as defined below) when performing any action, activity or work under the Agreement where any of the following occur (**hereinafter referred to as “In-Scope Work”**):

1. The collection, storage, handling, backup, disposal, and/or access to In-Scope Information (as defined below);
2. Providing or supporting AT&T branded applications and/or services using non-AT&T Information Resources (as defined below);
3. Connectivity to AT&T’s Nonpublic Information Resources (as defined below);
4. The development or customization of any software for AT&T; or
5. Website hosting and development for AT&T and/or AT&T’s customers.

These Security Requirements (i) are not intended to apply to products or applications acquired from the Supplier by AT&T for use by AT&T, and (ii) shall not limit more stringent security or other obligations set forth elsewhere in the Agreement.

Definitions:

Unless otherwise set forth in these Security Requirements, defined terms shall have the same meaning as set forth in the Agreement.

“Cloud Service” is a service delivered via an “as a Service” cloud service model, e.g., Software as a Service (SaaS), Storage as a Service (STaaS), Database as a Service (DBaaS), Platform as a Service (PaaS), and Infrastructure as a Service (IaaS).

“Demilitarized Zone” or “DMZ” is a network or sub-network that sits between a trusted internal network, such as a corporate private Local Area Network (LAN), and an untrusted external network, such as the Internet. A DMZ helps prevent outside users from gaining direct access to internal Information Resources. Inbound packets from the untrusted external network terminate within the DMZ and are not allowed to flow directly through to the trusted internal network. All inbound packets which flow to the trusted internal network originate within the DMZ.

Proprietary and Confidential

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“Information Resource(s)” means systems, applications, websites, networks, network elements, and other computing and information storage devices, along with the underlying technologies and delivery methods (e.g., social networks, mobile technologies, cloud services, call and voice recording, Application Program Interfaces (APIs)), used in connection with In-Scope Work.

“In-Scope Information” means confidential data, including, Sensitive Personal Information (SPI), Sensitive Customer Data (SCD), intellectual property, proprietary data and/or trade secret data of AT&T, data of others that AT&T is obligated to protect, general AT&T internal operational information, network architecture and/or engineering information, Customer Proprietary Network Information (CPNI), software source code for software developed or customized for AT&T, information security incident reports, nonpublic marketing and financial information, and AT&T end user customer contact lists.

“Mobile and Portable Devices” means mobile and/or portable computers, devices, media and systems capable of being easily carried, moved, transported or conveyed that are used in connection with In-Scope Work. Examples of such devices include laptop computers, tablets, USB hard drives, USB memory sticks, Personal Digital Assistants (PDAs), and mobile phones, such as smartphones.

“Multi-Factor Authentication” (also known as Two-Factor Authentication and Strong Authentication) means the use of at least two of the following three types of authentication factors:

- A physical or logical credential the user has, such as an electronically readable badge, a token card or a digital certificate;
- A knowledge-based credential, such as a password or PIN; and
- A biometric credential, such as a fingerprint or retina image.

“Nonpublic Information Resources” means Information Resources used in connection with In-Scope Work that are not directly reachable from the public Internet.

“Privileged User” means a user with enhanced administrative permissions and/or expanded or super user access greater than that of a general user. Examples of such access include: system administration; the management of accounts, log reviews, encryption, databases, Security Gateways, Intrusion Detection Systems/Intrusion Prevention Systems (IDS/IPS), virtual machines (VM), networks, image instances, and APIs; Cloud Service Provider (CSP) management and security portals; and development and operations (DevOps) privileged activities. Privileged access by privileged users is applicable regardless of the types of devices and environments managed, including environments that are production, development, and test, within Supplier’s facilities and/or within CSP cloud environments.

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“Sensitive Customer Data” or “SCD” means the data elements listed in the “Table 2—AT&T SCD Data Elements” located at the end of these Security Requirements. All data elements in Table 2 are considered In-Scope Information.

“Sensitive Personal Information” or “SPI” means the data elements listed in the “Table of AT&T SPI Data Elements” located at the end of these Security Requirements. All SPI Data Elements are considered In-Scope Information.

“Security Gateway” means a set of control mechanisms between two or more networks having different trust levels which filter and log traffic passing, or attempting to pass, between networks, and the associated administrative and management servers. Examples include firewalls, firewall management servers, hop boxes, session border controllers, proxy servers, and intrusion prevention devices.

“Strong Encryption” means the use of encryption technologies with minimum key lengths of 128-bits for symmetric encryption and 2048-bits for asymmetric encryption whose strength provides reasonable assurance that it will protect the encrypted information from unauthorized access and is adequate to protect the confidentiality and privacy of the encrypted information, and which incorporates a documented policy for the management of the encryption keys, including the expiration of encryption keys at least once every two years, and associated processes adequate to protect the confidentiality and privacy of the keys and credentials used as inputs to the encryption algorithm. Supplier must ensure that the rule of least privilege and separation of duties are properly implemented and maintained.

“Supplier Entity” or “Supplier Entities” means Supplier, its affiliates and subcontractors.

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In accordance with the foregoing, Supplier shall, and shall cause Supplier Entities to:

System Security

1. Actively monitor industry resources (e.g., www.cert.org, pertinent software vendor mailing lists and websites, and information from subscriptions to automated notifications) for timely notification of all applicable security alerts that pertain to Information Resources.
2. At least quarterly scan Information Resources with industry-standard security vulnerability scanning software to detect security vulnerabilities, and remediate all critical, high, and medium risk security vulnerabilities identified. Scan must cover all Information Resources utilized to perform In-Scope Work.
3. Install and use Intrusion Detection Systems (IDS) and/or Intrusion Prevention Systems (IPS) that monitor all traffic entering and leaving Information Resources in connection with In-Scope Work.
4. Maintain and adhere to a documented process to remediate security vulnerabilities that may impact Information Resources, including those discovered through industry publications, vulnerability scanning, virus scanning, IDS/IPS alerts, and the review of security logs, and promptly apply appropriate security patches.
5. Assign security administration responsibilities for configuring the security parameters of host operating systems to authorized users only.
6. Harden Information Resources by utilizing a minimum security baseline configuration based upon industry best practices to reduce available ways of attack. This typically includes changing default passwords, the removal of unnecessary software, unnecessary UserIDs, usernames or logins, and the disabling or removal of unnecessary services. Such hardening of the system's security configurations, operating system software, firmware and applications are to prevent exploits that attack flaws in the underlying code.
7.
 - a. Enforce the rule of least privilege by requiring application, database, network and system administrators to restrict access of all users to only the commands, In-Scope Information and Information Resources necessary for them to perform authorized functions. Log all successful and unsuccessful login attempts along with logoffs. Supplier shall ensure that the use of AT&T's Information Resources by Supplier Entities shall only be for the performance of In-Scope Work.
 - b. Ensure that controls are in-place to limit, protect, monitor, detect and respond to all Privileged User activities.

Examples of such controls include enforcing:

1. The rule of least privilege;
2. Separation of duties;
3. Individual accountability;
4. Change management;

Proprietary and Confidential

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5. Auditability of Privileged User accounts and their activities in production environments since we do not store end customer's data in non-production environments; and
6. Audit log retention for a minimum of (6) six months.

Proprietary and Confidential

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Physical Security

8. a. Ensure all Information Resources intended for use by multiple users are located in secure physical facilities with access limited and restricted to authorized individuals only.
 - b. Monitor and record, for audit purposes, access to the physical facilities containing Information Resources intended for use by multiple users in connection with Supplier's performance of In-Scope Work.
9. Physically secure any area where In-Scope Information is accessible to prevent access by unauthorized persons. In addition, Supplier shall monitor and record the physical access to any facilities where In-Scope Information is accessible to prevent access by unauthorized persons.

Network Security

10. When providing Internet accessible services to AT&T, have Denial of Service (DoS/DDoS) and gateway security protections in place. Web servers must reside in a DMZ and Information Resources storing In-Scope Information (such as application and database servers) must reside in a trusted internal network.
11. For the purpose of demonstrating compliance with certain Security Requirements applicable to network architecture and network topology, if requested by AT&T, provide AT&T with a high-level copy of their logical network diagram. The network diagram needs to provide information regarding placement of Information Resources and security devices (such as Security Gateways, servers, DMZs, IDS/IPS, DoS/DDoS protections, databases, application servers, virtual private clouds (VPCs), and instances, etc.) used by Supplier Entities to perform or support AT&T In-Scope Work.
12. Use Strong Encryption for the transmission of In-Scope Information outside of AT&T-controlled or Supplier-controlled networks or when transmitting In-Scope Information over any untrusted network. This applies to all technologies used for the transmission of In-Scope Information.
13. Require Multi-Factor Authentication for any remote access use of Nonpublic Information Resources.

Information Security

14. Segregate AT&T's applications and In-Scope Information from any other customer's or Supplier's own applications and information, either by using logical access controls and/or physical access controls to provide protection from unauthorized access.
15. Maintain and adhere to documented processes for:
 - a. the backup and recovery of In-Scope Information and Information Resources in accordance with any disaster recovery requirements; and
 - b. the timely destruction and/or return of In-Scope Information in accordance with any retention, return, and/or destruction requirements under this Agreement.

Proprietary and Confidential

This Amendment is not for use or disclosure outside of AT&T, its Affiliates, and its and their third-party representatives, and Supplier except under written agreement by the contracting Parties.

16. Limit access to In-Scope Information only to authorized users or systems on a need to know basis.
17. Maintain documented processes and controls to detect and terminate unauthorized attempts to access, collect, modify, store, handle and/or dispose of In-Scope Information; and monitor, and remediate unauthorized access and/or changes to system and application configuration files in production environments. Supplier does not store end customer data in non-production environments. Supplier is managing the access in all environments and access with wrong credentials/passwords will be blocked to address unauthorized access.

Proprietary and Confidential

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Identification and Authentication

18. Assign unique UserIDs to authorized individual users, assign individual ownership to system service accounts, and ensure that system service accounts are not-shared.
19. Maintain a documented UserID lifecycle management process that includes manual and/or automated processes for approved account creation, account removal within one (1) business day, and account modification for all Information Resources and across all environments. Such process shall include review of access privileges and account validity to be performed at least each calendar year.
20. Limit failed login attempts by no more than six (6) consecutive failed login attempts by locking the user account. Access to the user account can be reactivated through the use of a manual process requiring verification of the user's identity or, where such capability exists, can be automatically reactivated after at least three (3) minutes from the last failed login attempt.
21. Terminate interactive sessions on a user's workstation, or activate a secure, locking screensaver requiring authentication, after a period of inactivity not to exceed fifteen (15) minutes. On all other Information Resources terminate inactive interactive sessions not to exceed thirty (30) minutes, excluding inactive scenarios where processing is needed to be ran in the background.
22.
 - a. Use an authentication method based on the sensitivity of In-Scope Information. Whenever authentication credentials are stored, Supplier shall use Strong Encryption and/or one-way hashing based upon strong cryptography.
 - b. Passwords must be complex and meet the following password construction requirements:
 - Be a minimum of eight (8) characters in length.
 - Include characters from at least two (2) of these groupings: alpha, numeric, and special characters.
 - Not be the same as the UserID with which they are associated.
 - c. PINs must meet the following:
 - Be a minimum of four (4) numbers; and
 - Effective June 30, 2019, PINs shall not contain repeating or sequential numbers.
 - d. Require expiration of password and, effective June 30, 2019 also expiration of PIN, at regular intervals not to exceed ninety (90) calendar days.
23. When providing users with a new or reset password, or other authentication credentials, use a secure method to provide this information, and require reset at first login whenever a temporary credential is used.

Proprietary and Confidential

This Amendment is not for use or disclosure outside of AT&T, its Affiliates, and its and their third-party representatives, and Supplier except under written agreement by the contracting Parties.

Warning Notice

24. In jurisdictions where unauthorized access to Information Resources and In-Scope Information is a violation of the law, add the following statement to the warning notice: "Unauthorized access is a violation of law" or similar warning language.

Software, Software Code, and Data Integrity

25. Have and use documented procedures to:
- a. Install and run current antivirus software to scan for and promptly remove or quarantine viruses and other malware.
 - b. Configure end user devices to ensure users are restricted from the ability to install unauthorized software, or to disable required software.
26. Separate non-production Information Resources from production Information Resources, and separate In-Scope Information from non-production Information Resources.
27. Maintain a documented change control process including back-out procedures for all production environments.
28. For applications which utilize a database that allows modifications to In-Scope Information, logs for forensic analysis purposes shall be created, retained and available to AT&T for a minimum of six (6) months either on-line or on backup media as follows:
- a. where transaction logging is supported have database transaction logging features enabled; or
 - b. where transaction logging is not supported have some other mechanism that logs all modifications to In-Scope Information stored within the database including timestamp, UserID and information modified.
29. a. For all software developed or customized for AT&T under the Agreement, review and scan such software to find and remediate malicious code and/or security vulnerabilities prior to initial deployment, upon code changes and/or at least annually, based on potential risk that a given vulnerability is or can be exploited as follows:
- i. Source code vulnerability scanning must be performed where such tools are commercially available. Where such tools are not commercially available, automated and/or manual processes and procedures must be documented and used.
 - ii. Scan results and remediation plans must be made available to AT&T upon request.
- b. Where technically feasible, for all software used, furnished and/or supported under the Agreement, review and scan such software to find and remediate security vulnerabilities prior to initial deployment, upon code changes and/or at least annually based on potential risk that a given vulnerability is or can be exploited.
30. Perform quality assurance testing for the security components (e.g., testing of identification, authentication and authorization functions), as well as any other activity designed to validate the security architecture, during initial implementation and upon any modifications and updates.

Proprietary and Confidential

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Monitoring and Auditing Controls

31. Restrict access to security logs to authorized individuals, and protect security logs from unauthorized modification.
32. Review, on no less than a weekly basis, all anomalies from security and security-related audit logs and document and resolve logged security problems in a timely manner.
 - a. Such reviews may initially be performed by automated processes that promptly issue alarms and/or alerts when such processes detect significant anomalies so that the issuance of such alarms and/or alerts causes prompt investigation and review by responsible individuals; and
 - b. If automated processes successfully resolve a logged security problem, no further action by responsible individuals is required.
33. a. When presented with evidence by AT&T of a threat to AT&T or AT&T's customers' Nonpublic Information Resources originating from the Supplier's network (e.g., worm, virus or other malware, bot infection, Advanced Persistent Threat (APT), DoS/DDoS attack, etc.), Supplier shall promptly cooperate with AT&T and take all reasonable and necessary steps to isolate, mitigate, and/or terminate all known or suspected threats.

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- b. When Supplier learns of or discovers a known or suspected threat/vulnerability impacting AT&T (including but not limited to notifications received from security researchers or industry resources, bug bounty program, etc.), Supplier must promptly notify and cooperate with AT&T, and take all reasonable and necessary steps to isolate, mitigate, and/or remediate such known or suspected threat/vulnerability.
- c. In the event Supplier discovers that it is non-compliant with, or AT&T finds Supplier to be non-compliant with these Security Requirements, then Supplier shall implement corrective action promptly, but in no less than the earlier of [*] days of Supplier's initial discovery of, or AT&T's initial notification to Supplier of such non-compliance.

Reporting Violations

- 34. Maintain a documented procedure to be followed in the event of a suspected attack upon, intrusion upon, unauthorized access to, loss of, or other security breach involving In-Scope Information in which Supplier shall:
 - a. Promptly investigate and determine if such an attack has occurred; and
 - b. If a successful attack has occurred involving In-Scope Information or it is impossible to determine whether the attack was successful then Supplier shall promptly notify AT&T by contacting:
 - i. Asset Protection by telephone at 1-800-807-4205 from within the US and at 1-908-658-0380 from elsewhere; and
 - ii. Supplier's contact within AT&T for service-related issues.
- 35. After notifying AT&T whenever there is a successful attack upon, intrusion upon, unauthorized access to, loss of, or other breach of In-Scope Information, provide AT&T with regular status updates, including, actions taken to resolve such incident, at mutually agreed intervals or times for the duration of the incident and, within seven (7) calendar days of the closure of the incident, provide AT&T with a written report describing the incident, actions taken by the Supplier during its response and Supplier's plans for future actions to prevent a similar incident from occurring.

Mobile and Portable Devices

- 36. Use Strong Encryption to protect all In-Scope Information stored on Mobile and Portable Devices.
- 37. Use Strong Encryption to protect all In-Scope Information transmitted using or remotely accessed by network-aware Mobile and Portable Devices.

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38. Maintain documented policies, standards and procedures for Mobile and Portable Devices used to access and/or store In-Scope Information that include the following requirements:
 - a. All users must be authorized for such access and their identity authenticated;
 - b. Mobile and Portable devices must be physically secured and/or in the physical possession of authorized individuals;
 - c. Where technically feasible, use a remote wipe capability on such devices to promptly and securely delete In-Scope Information, when such devices are not in the physical possession of authorized individuals nor otherwise physically secured; and
 - d. Jailbroken or rooted smartphones cannot be used to perform In-Scope Work.
39. Implement and maintain a documented policy that prohibits the use of any:
 - a. Supplier-issued Mobile and Portable Devices to access and/or store In-Scope Information unless the device is administered and/or managed by Supplier; and
 - b. Non-Supplier issued Mobile and Portable Devices to access and/or store In-Scope Information unless adequately segregated and protected by utilizing a Supplier administered and/or managed secure container-based and/or sandbox solution.

Security Gateways

40. Require Multi-Factor Authentication for administrative and/or management access to Security Gateways, including any access for the purpose of reviewing log files.
41. Maintain documented controls, policies, processes and procedures to ensure that unauthorized users do not have administrative and/or management access to Security Gateways, and that user authorization levels to administer and manage Security Gateways are appropriate.
42. At least annually, ensure that each Security Gateway rule was properly authorized and is traceable to a specific business request, and that all rule sets either explicitly or implicitly end with a “DENY ALL” statement.
43. Use monitoring tools to ensure that all aspects of Security Gateways (e.g., hardware, firmware, and software) are operational at all times. Ensure that all non-operational Security Gateways are configured to deny all access.

Wireless Networking

44. When using radio frequency (RF) based wireless networking technologies (e.g., Bluetooth and Wi-Fi) to perform or support In-Scope Work for AT&T, ensure that all In-Scope Information transmitted must use appropriate encryption technologies sufficient to protect the confidentiality of In-Scope Information; provided, however, in any event such encryption shall use no less than key lengths of 256-bits for symmetric encryption and 2048-bits for asymmetric encryption. The use of RF-based wireless headsets, keyboards, microphones, and pointing devices, such as mice, touch pads, and digital drawing tablets, is excluded from this requirement.

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Connectivity Requirements

45. In the event that Supplier has, or will be provided, connectivity to AT&T's or AT&T's customers' Nonpublic Information Resources in connection with In-Scope Work, then Supplier shall not establish additional interconnections to AT&T's and AT&T's customers' Nonpublic Information Resources without the prior consent of AT&T and shall:
- a. Use only the mutually agreed upon facilities and connection methodologies to interconnect AT&T's and AT&T's customers' Nonpublic Information Resources with Supplier's Information Resources.
 - b. If the agreed upon connectivity methodology requires that Supplier implement a Security Gateway, maintain logs of all sessions using such Security Gateway. Such session logs must include sufficiently detailed information to assist with a security incident or a forensic investigation (e.g., identification of the end user or application accessing AT&T). Such session logs must include origination IP address, destination IP address, ports/service protocols used and duration of access. Such session logs must be retained for a minimum of six (6) months.

Supplier Entity Compliance

46. Supplier shall:
- a. Ensure all Supplier Entities performing In-Scope Work are aware of, and in compliance with, these Security Requirements.
 - b. Ensure all Supplier Entities performing any In-Scope Work are contractually obligated to comply with these Security Requirements, or in any event, requirements that are no less stringent.
 - c. Ensure the use of AT&T's Information Resources and In-Scope Information by Supplier Entities will only be for the performance of In-Scope Work.
 - d. Upon AT&T's request, Supplier will provide documentation and/or evidence to adequately substantiate such compliance.

Protection of AT&T's SPI & SCD

47. Use Strong Encryption to protect AT&T's SPI and/or AT&T's SCD (see Table 1 and 2 below) when transmitted over all networks. This applies to all technologies used for the transmission of SPI and/or AT&T's SCD.
48. Use Strong Encryption to protect AT&T's SPI and/or AT&T's SCD (see Table 1 and 2 below) when stored.

Cloud Services

49. When storing In-Scope Information in a Cloud Service, ensure all In-Scope Work performed by Supplier Entities is in compliance with these Security Requirements, or in any event, requirements that are no less stringent.

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50. When utilizing a Cloud Service enforce.
 - a. Multi-Factor Authentication for all Privileged Users.
 - b. In addition to Strong Encryption of SPI and SCD use Strong Encryption to protect all In-Scope Information when:
 - i. Transmitted over all networks to, from, and within a Cloud Service.
 - ii. Stored within a Cloud Service.

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Table 1—AT&T SPI Data Elements

Data elements in the following tables must be treated as SPI when used in their entirety, unless explicitly stated in the following table. This applies to all data formats including scanned images, PDFs, JPGs and any other unified communication, and collaboration tools/content.

Individual Identification

Data Element	Description
Driver's License Number	
Taxpayer Identification Number	
U.S. Social Security Number (SSN)	
Nationally-Issued Identification Number	Includes visa and/or passport values. Excludes any such numbers that are issued on the understanding that they must be a matter of public record, e.g. U.S. FCC Radio License.
State or Province-Issued Identification Number	

Financial Data

Data Element	Description
Payment Card Number	Primary Account Number (PAN) for all types of payment card (corporate, personal, etc.)
Payment Card Security Data	The security data used in association with a payment card (corporate, personal, etc.) in order to confirm legitimate use. Includes for example Card Security Codes and Personal Identification Numbers (PINs) used with payment cards but excludes PINs used to authenticate access to AT&T systems.
Bank Account Number	Includes all types of bank accounts (savings, checking, etc.) both personal and business in an individual's name. Excludes bank routing number.

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Computer Identification and Authentication

Data Element	Description
Customer Authentication Credentials	Values used by customers to authenticate and permit access to:
Applies to Customers only	<ul style="list-style-type: none"> The customers' personal information, including CPNI and AT&T Proprietary (Sensitive Personal Information) — or — An application enabling the customer to subscribe to, or unsubscribe from, AT&T services — or — An AT&T service the customer is subscribed to <p>Includes: Personal Identification Numbers (PINs), passwords or passcodes. Excludes Card Security Codes and PINs used in association with payment cards.</p>
Customer Authentication Credential Hints	Answers to questions used to retrieve customer authentication credentials, for example mother's maiden name.
Applies to Customers only	
Location-Based Information (LBI)	<p>Information that identifies the current or past location of a specific individuals' mobile device. This element contains two factors both of which must be present and able to be associated with each other:</p> <ol style="list-style-type: none"> A mobile device's location (e.g. a map address, or latitude and longitude together with altitude where known) derived from the mobile device through activities such as GPS or network connectivity rather than as a result of user action (e.g. revealing location in the content of an email, or SMS) -and - An individual's identity derived from a unique identifier assigned to that mobile device such as customer name, MSISDN, IMSI, IMEI or ICCID, or similar persistent identifier, e.g. VIN.

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Other Data

Data Element	Description
Date of Birth (DOB)	<p>An individual's full and complete DOB, i.e. including Month, Day and Year. Excludes partial DOB where only Month and Day are used without Year. This element contains two factors both of which must be present and able to be associated with each other:</p> <ol style="list-style-type: none"> 1. A full and complete DOB - and - 2. The individual's identity, either explicitly or via a unique identifier that can be linked to that individual.
Biometric Data	<p>Measures of human physical and behavioral characteristics used for authentication purposes, for example fingerprint, voiceprint, retina or iris image. Excludes templates that contain discrete data points derived from biometric data that do not hold the complete biometric image, where the template cannot be reverse engineered back to the original biometric image.</p>
Criminal History	<p>Information about an individual's criminal history, e.g. criminal check portion of a background check.</p>
Subject to non-U.S. jurisdiction ¹	

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Background Checks	Includes credit history, employment history, driving records. Excludes Criminal History (see above).
Racial or Ethnic Origin	Data specifying and/or confirming an individual's racial or ethnic origin.
Subject to non-U.S. jurisdiction ¹	
Trade Union Membership	Data specifying and/or confirming an individual is a member of a trade union outside of the U.S.
Subject to non-U.S. jurisdiction ¹	
Information Related to an Individual's Political Affiliation, Religious Belief, or Sexual Orientation	Data specifying and/or confirming an individual's political affiliation, religious or similar beliefs, or sexual life or orientation.
Subject to non-U.S. jurisdiction ¹	

Proprietary and Confidential

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The following “Human Resources” data elements have been classified as AT&T Proprietary (Sensitive Personal Information) when they apply to an employee, contractor, customer or supplier:

Health Data

Data Element	Description
U.S. Protected Health Information (PHI)	<p>Includes any U.S. health information used in AT&T’s Group Health Care plans or belonging to AT&T’s customers that identifies the individual or for which there is a reasonable basis to believe it can be used to identify the individuals that include information about:</p> <ul style="list-style-type: none"> • The individual’s past, present or future physical or mental health or condition, • The provision of health care to the individual — or — • The past, present, or future payment for the provision of health care to the individual. <p>Health information of retirees, employees, or employee beneficiaries used by AT&T for purposes other than a group health plan is not PHI.</p>
Medical and Health Information Subject to non-U.S. jurisdiction ¹	<p>Any information concerning physical or mental health or condition. Includes disability information.</p>
Genetic Information	<p>Includes information about an individual’s genetic tests.</p>

Proprietary and Confidential

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Customer Privacy Data

Data Element	Description
Customer Web Browsing History	Information about what websites our customers visit and <i>applications</i> they use on our <i>network</i> (wireline and wireless including Wi-Fi); this does not include browsing and activities associated with customers’ use of official AT&T corporate websites or history captured at the network level prior to “processing” (e.g. raw data streams not associated with a customer).

Proprietary and Confidential

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Customer Privacy Data (continued)

<u>Data Element</u>	<u>Description</u>
Customer Viewing History	Information about programs watched or recorded, games and applications used, etc. (e.g. <i>DIRECTV</i> ® (DTV) Set Top Box viewing, <i>DIRECTV NOW</i> ® viewing)
Customer Web communications payload	Limited to communication payload captured as part of service analysis, e.g. <i>Deep Packet Inspection (DPI)</i> data. (AT&T use)

Footnotes:

Where data elements have the term “Subject to non-U.S. jurisdiction” associated with them, that data element is to be classified as AT&T Proprietary (Sensitive Personal Information) when applied to data elements subject to non-U.S. jurisdiction, irrespective of whether the data is created, handled, processed, destroyed or sanitized inside or outside the United States.

Table 2—AT&T SCD Data Elements

Data elements in the following table must be treated as SCD when used in their entirety, unless explicitly stated in the following table. This applies to all data formats including scanned images, PDFs, JPGs and any other unified communication, and collaboration tools/content.

Sensitive Customer Data (Customer Privacy)

<u>Data Element</u>	<u>Description</u>
Customer “messaging” content	<p>Including:</p> <p><i>Email</i>, text messages, conference call recording, and voice mail call recording.</p> <p>Excluding:</p> <ol style="list-style-type: none"> 1. “Messaging” between customers and AT&T in conducting official AT&T corporate business. 2. Any other data.
Customer Telemetry Data	Automated communications for monitoring by the customer (rather than AT&T). Including all data that is generated by our customers’ use of the <i>Digital Life</i> ® service or any other <i>IoT</i> service that is used by the customer to monitor or control the service. For example, video files. (Customer use)

Proprietary and Confidential

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2.0 Offshore Information Technology Services Requirements

In the event Supplier currently provides or will be providing Offshore Information Technology Services in conjunction with this Agreement, then, in addition to the foregoing, the following requirements shall apply to Supplier:

- 1 Strong authentication controls must be established for firewalls, firewall management servers, and firewall hop boxes. Options for strong authentication may include two-factor authentication methods such as tokens, smart-cards and/or one-time passwords.
- 2 Supplier must ensure that firewall configurations are hardened by selecting a sample of firewalls and verifying that the default rule set ensures the following:
 - a. IP source routing is disabled.
 - b. Loopback address is prohibited from entering the internal network,
 - c. Anti-spoofing filters are implemented.
 - d. Broadcast packets are disallowed from entering the network,
 - e. ICMP redirects are disabled.
 - f. Fragmented packets are dropped.
 - g. Ruleset ends with a DENY ALL statement
- 3 Screen savers or connection timeouts are required to prevent unauthorized access to unattended workstations.
- 4 Perform monthly revalidations on the user account list on firewalls, firewall management servers, and firewall hop boxes to ensure that only those users authorized for access to manage these devices have an account. This includes the need to revalidate the authorization level of each user account to ensure appropriate permission levels are maintained.
- 5 Production support personnel and development personnel must have enough separation and auditable controls to ensure that standard change management procedures are always consistently followed.

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- 6 Developers cannot access production platforms “at will”. For some trouble-shooting situations, developers may be provided access to production platforms but only on an “as needed basis” and for a limited duration. All temporary access should be documented (who, what, when, where and why).
- 7 Track and approve changes to firewall rules is required and must be validated annually. Inappropriate firewall rules must be removed immediately.
- 8 Require a clean desk policy at the end of the day.
- 9A Supplier resources shall be notified of the restriction that AT&T Data may not be downloaded and taken offsite.
- 9B Wireless networking technologies must not be used for communicating unless the following steps are taken by Amdocs to maintain the confidentiality and integrity of the communication and to prevent unauthorized access to the transmitting device and/or receiving device. When wireless networking technologies are used:
 - (i) All communications over wireless networks must be transmitted via Virtual Private Network (VPN) session(s) using Strong Encryption.
 - (ii) Strong authentication (e.g., two factor token or digital certificates) must be used for authenticating VPN access.
 - (iii) Wireless hardware (with the exception of wireless network cards and access points) must be located in a physically secure area (e.g., in a locked wiring closet or locked machine room).
 - (iv) All services not being used on the access point, router, and VPN concentrator must be disabled.
 - (v) Enable Media Access Control (MAC)-based filtering so that only specified wireless cards can communicate to the access point.
- 10 Supplier must implement procedures to ensure that AT&T Data is not downloaded and removed by Supplier. To the extent Supplier suspects that AT&T Data may have been removed, Supplier agrees to conduct searches of suspected persons and their belongings when exiting AT&T restricted areas and Supplier’s premises to the extent such searches are permissible by local law.
- 11 Notify individuals that removal of AT&T Data from the work area or Supplier’s premises is not allowed, to include signage that communicates this policy and that people and personal property including, without limitation, packages, briefcases, and purses are subject to inspection prior to exiting AT&T restricted areas and Supplier’s premises.

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- 12 Verify that all printed media containing AT&T Data (any information obtained from or provided by AT&T, including information about AT&T Systems, its employees and its customers) is securely stored, and that a mechanism is in place to protect the security and privacy of AT&T Data. Procedures are required to restrict access to AT&T Data to authorized Supplier personnel only, and to ensure that all media containing AT&T Data is accounted for and reconciled on a weekly basis to ensure that the information is not removed from Supplier's premises.
- 13 All access to electronic documentation of AT&T Data retained locally must be password protected and restricted to the very minimum number of Supplier personnel. Supplier must implement procedures to ensure that AT&T Data is not downloaded and removed by Supplier personnel, including, at a minimum, searches. To the extent Supplier suspects that AT&T Data may have been removed, Supplier agrees to conduct searches of persons and their belongings when exiting AT&T restricted areas and Supplier's premises to the extent searches are permissible under local law.
- 14 All electronically stored or printed AT&T Data no longer needed must be shredded onsite or destroyed onsite by authorized Supplier personnel assigned to AT&T projects. Shred bins must be located in AT&T restricted areas and locked until the shredding takes place.
- 15 A monthly Metric Report of Perimeter Security on the Supplier's system should be reported to AT&T that consists of:
 - Location
 - Date
 - # of Intrusions
 - Type of Intrusions
 - Source
 - Destination
 - Detail
 - Actions

Security IDS audit logs must be retained online for thirty (30) days and offline for a period of at least one year.

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- 16 Remote access to AT&T Networks or AT&T Data is prohibited. All work on AT&T projects must be performed within the AT&T restricted area on Supplier's premises and any exceptions must be in accordance with the Limited Offshore Remote Access in this Appendix D. Prior written exception to this prohibition must be obtained from the AT&T Offshore Compliance & Enablement team (m58897@att.com). Supplier's use of laptops offsite must have written approval from the AT&T Offshore Compliance & Enablement team (m58897@att.com).
- 17 Randomly check Supplier-based email and internet-based email so that AT&T Data is not sent to an unauthorized recipient. Effective January 1, 2011, Amdocs must check for the AT&T Proprietary – Restricted and AT&T Proprietary – Sensitive Personal Information markings in emails and attachments sent from Amdocs to non-AT&T personnel outside. Any unauthorized transmissions must be reported by Amdocs in an email to the AT&T Offshore Compliance and Enablement team (m58897@att.com) promptly but in any case within twenty four (24) hours.
- 18 B2B VPN connections to AT&T are required to be secured from other remote connections.
- 19 Device-specific monitoring tools must be used to assure that firewall hardware is operational.
- 20 To minimize the risk exposure to visiting AT&T employees in locations that are of medium-high risk of terrorist attacks, Supplier shall take necessary security measures customary for the location.
- 21 All access points into the Supplier's building(s) where AT&T work is being performed must be locked by either physical keys or a card key system, or controlled by a guard service to restrict access only to authorized individuals. These mechanisms must be in working order and utilized at all times. Proper identification must be worn by all persons inside the Supplier's building and a procedure in place to challenge those not wearing appropriate identification in the Supplier's building. The cable vault, electrical and telephone areas should be secured to give access only to those authorized.
- 22 Card key access lists and event logs must be reviewed by Supplier at a minimum of weekly to validate that building card key access is limited to only those individuals with a need to be in the Supplier's building and restricted area where AT&T work is being performed. Ensure that all keys are accounted for and limited to those individuals with a need to be in the Supplier's building and restricted areas and all locks are changed on a regular interval (at a minimum annually). Ensure that Supplier personnel surrender company identification, keys and access cards before leaving the premises when access to an area is no longer required or upon voluntarily or involuntarily ceasing to work for Supplier and that the access cards are deactivated. Weekly reviews should include employee, contractor and supplier termination records and any associated unauthorized access attempts in the event logs.

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- 23 Alarmed doors and monitored electronic systems are required to detect unauthorized access or access attempts with a plan to respond to and document incidents. 24/7 recorded video surveillance is required of the area where work on AT&T projects is performed, including entry and exit points.
- 24 Prior to permitting any person access to an AT&T project source or origin code (for example, software development), and at annual intervals thereafter, Supplier must ensure that such person (employee, contractor, subcontractor) is not on the Denied Persons List or the Specially Designated Nationals List of the US Department of Commerce – Bureau of Industry and Security. – Those lists are located at <http://www.bis.doc.gov/ComplianceAndEnforcement/ListsToCheck.htm>.
- Prior to permitting any person direct or indirect access, whether physical, virtual, or otherwise, to any of AT&T's company, employee, or customer information, or any of AT&T's or AT&T's customers' premises, systems, software, or networks, Supplier must have a reputable security company perform a criminal background check and verification of the identity of such person (employee, contractor, or subcontractor including onsite security guards responsible for physical security of Supplier's premises and AT&T restricted areas, and unescorted cleaning/maintenance personnel).
- 25 A security plan must be in place to include training of Supplier personnel to report suspicious activity/security incidents and complaints that did or could affect AT&T, to include documentation, follow-up and reporting to the **AT&T IT:OFFSHORE** organization and, as necessary, law enforcement.
- Information to be reported to the Executive Director of the IT:OFFSHORE organization would consist of at least:
- Date of Incident
 - Who - Identify those involved and be descriptive (suspects, vehicles, property, license plate numbers, ...)
 - What - What happened and how?
 - When - When did the incident occur?

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- Where - Where did the incident take place?
- Action Taken – What action was taken? Was law enforcement notified?

- 26 An exercise of Supplier's recovery strategy must be conducted annually. Within thirty (30) days from the completion of a disaster recovery exercise by Amdocs, Amdocs will produce a documented conclusion with a corrective action plan and proposed committed timeframes for corrective action upon which the Parties will agree within thirty (30) days from receipt of the action plan.
- 27 Failover processes and procedures are required to support AT&T applications and these failover processes and procedures are exercised annually (at a minimum).
- 28 Business continuity communication documents, processes, and procedures must be readily available and current.
- 29 As soon as reasonably possible after the execution of this Agreement and on an annual basis thereafter, Supplier will, at no charge to AT&T, perform a security audit utilizing a reputable independent auditor, as agreed by the Parties. Such security audit shall ensure that Supplier will strictly follow these AT&T Supplier Information Security Requirements.

3.0 Requirements for Offshore Information Technology Services Requiring Elevated Rights

In the event Supplier currently provides or will be providing system, database, and or network administrator/root (or privileged, super user, or the like) access to host operating systems located on AT&T non-public networks in conjunction with this Agreement from an Offshore Location, then, in addition to the foregoing, the following requirements shall apply to Supplier:

- 1 Access for privileged offshore users will be via a front-end Citrix farm that requires SecurID authentication, with front end Citrix servers located in a DMZ segment. An alternative to this is an AT&T-provided Client VPN with a SecurID token used over a **secure connection** (NOT the public Internet) as reviewed and approved by AT&T's Chief Security Office (CSO).

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- 2 Auditing options must be enabled on any Supplier perimeter equipment which controls access to the Supplier equipment used to do AT&T work. To ensure integrity of audit log entries, all Supplier system clocks must be synchronized to the same time source. Synchronization to AT&T clocks is not required. At a minimum, security audit log(s) must be automatically updated for the following system events:
- a. Successful and unsuccessful login attempts.
 - b. Successful and unsuccessful attempts to switch to another user's account (where applicable).
 - c. Logoffs.
 - d. User attempts to access files or resources outside their privilege level.
 - e. User access to all privileged files and/or processes.
 - f. Operating system configuration changes.
 - g. Operating system program changes.
 - h. All changes that can feasibly be captured, to system hardware and software.
 - i. All security-related changes, including adding users.
 - j. Failures for computer, program, communications, and operations.
 - k. Starting and stopping of audit logging.

Security audit logs must be maintained online for thirty (30) days and offline for a period of at least one (1) year.

- 3 AT&T reserves the right to perform vulnerability scans and review the scanning results of Supplier systems in a pre-announced, scheduled manner on Supplier's equipment on an AT&T isolated LAN segment and Supplier Network equipment used to access AT&T Networks, systems, and data or Supplier agrees to reveal to the AT&T IT Offshore Compliance and Enablement Team (IT OCE) at (m58897@att.com) the detailed scanning findings and closure activities related to vulnerabilities found once a year.

Information to be reported to the AT&T-IT OCE would consist of at least:

- Date of discovery of vulnerability
- How it was remediated
- What was remediated
- What are the plans to remediate
- Estimated Date of closure

- 4 An Intrusion Prevention System (IPS) is required on Supplier's data network to prevent unauthorized access.

Proprietary and Confidential

This Amendment is not for use or disclosure outside of AT&T, its Affiliates, and its and their third-party representatives, and Supplier except under written agreement by the contracting Parties.

4.0 Limited Offshore Remote Access (“LORA”) to AT&T Systems

The following outlines the AT&T requirements and procedures to which the Supplier must adhere for allowance of select pre-authorized offshore Supplier personnel to have remote access to AT&T systems, for which the Supplier is already under contract with AT&T to perform IT support services.

This remote access program (the “Limited Offshore Remote Access”) set forth herein defines the program requirements and how the Supplier shall work with the AT&T Offshore Compliance and Enablement organization to determine if Supplier can utilize the LORA for an existing or new information technology Services engagement. Examples of engagements where AT&T will consider Supplier’s request for LORA would be a Work Order where offshore Supplier personnel are required to perform after-hours work monitoring support services and access AT&T data.

I. Definitions

AT&T IT Offshore Compliance & Enablement (IT OCE) – AT&T Information Technology organization that manages oversight of the Limited Offshore Remote Access program. The IT OCE will serve as the front door and provide authorization to Supplier. IT OCE point of contact is identified below.

Proprietary and Confidential

This Amendment is not for use or disclosure outside of AT&T, its Affiliates, and its and their third-party representatives, and Supplier except under written agreement by the contracting Parties.

“AT&T Proprietary – Restricted Information” or **“Restricted Information”** means: any Information that has a higher level of sensitivity and therefore must be shared only among persons with a clear business need to know; or any Information that requires a high degree of protection by law and loss or unauthorized disclosure could require notification by AT&T to government agencies, individuals or law enforcement; or any Information that if revealed widely could present an increased risk of compromising computer systems, fraud, or increased likelihood of disrupting business operations. Examples of Restricted Information include, but are not limited to, unpublished financial information, designs and development plans for new or improved products, services, or processes, Customer Proprietary Network Information (CPNI), marketing information including customer contact lists, software source code for business critical applications, other companies’ confidential information that is shared with AT&T under contract or an NDA, internal AT&T authentication credentials (e.g., passwords, PINs and password hint answers), and security and/or network information including: logs, engineering or architecture diagrams, configuration files, firewall rules, security incident reports, and vulnerability information.

Limited Offshore Remote Access (“LORA”)—the ability, with prior AT&T IT OCE approval, for an Offshore Supplier resource to connect to AT&T systems via AT&T client VPN from their Resource Home Location for the purposes of completing contracted work for AT&T.

“Remote Access Laptop”- limited in use by Amdocs Offshore resources that require a laptop to perform their day-to-day duties, who support the AT&T account, from the Amdocs facility, Resource Home Location or travel. There will be no transfer of or storage of SPI and **AT&T Proprietary – Restricted Information** or **Restricted Information** on this device. For clarity the only access to SPI and **AT&T Proprietary – Restricted Information** or **Restricted Information** will be as defined in Article II #3 below, **“Remote Access Laptop with AT&T Data other than SPI”**.

Resource Home Location – The home residence of a Supplier resource. Each approved Supplier resource can have LORA from only one Resource Home Location.

Controlled and Audited Supplier Facility – The designated offshore Supplier work location, which is governed by controls specified by AT&T. This is the Supplier resource’s primary work location.

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Remote Access Solution – From the Resource Home Location, an approved Supplier resource will use a Remote Access Laptop/Desktop to connect to the AT&T Secure VPN Gateway.

Permanent Workstation/Virtual Workstation—A laptop or desktop located in a controlled and audited Supplier facility that is used to access the AT&T network for contracted services.

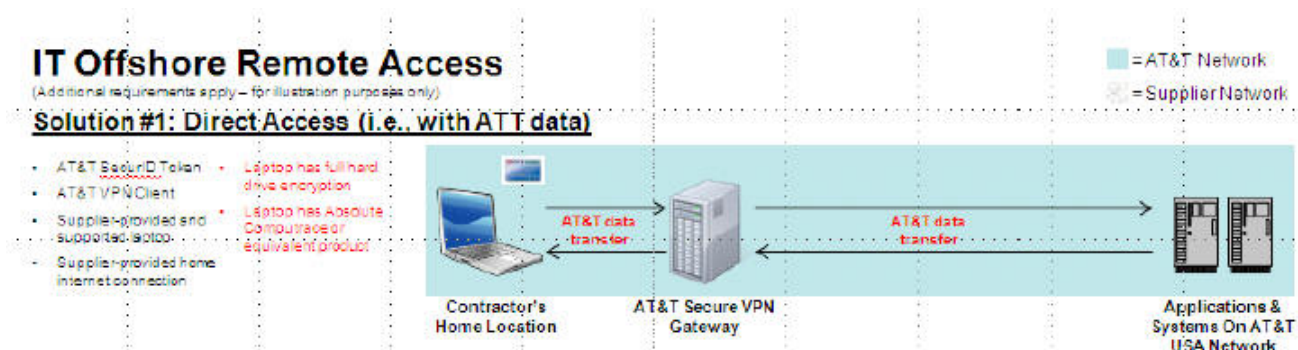
II. LORA requirements:

1. **General requirements:** Supplier shall adhere to the following:
 - a. Each individual LORA user shall be reviewed and either approved or denied within two (2) weeks from receipt of written request to the AT&T IT Offshore Compliance & Enablement (IT OCE).
 - b. Each individual LORA request must be linked with a specific statement of work covered under an existing or pending Work Order issued under a current Master Agreement between AT&T and the Supplier.
 - c. Supplier is to maintain a history log of all requests for LORA.
 - d. Supplier is to submit all new LORA requests to IT OCE, in a format specified by AT&T.
 - e. The IT OCE Sr. Technical Director or equivalent will approve or deny each request.
 - f. Greg Maddock (gm1945) is the AT&T IT OCE interface at the time of this document being implemented. This is subject to change by AT&T.
 - g. Supplier may also request AT&T IT OCE approval for temporary remote access from a location other than the Resource Home Location.
 - h. Resource Home Location shall be subject to voluntary inspection /verification, as agreed upon by the Parties, by Supplier or AT&T representative if AT&T information/resource is present. The Supplier resource must notify AT&T/Supplier of any changes in Resource Home Location.
 - i. Amdocs will notify AT&T immediately upon an Amdocs resource's change in status that would no longer require them to have LORA.
2. Once a year and immediately upon approval, all offshore Supplier personnel approved for LORA must complete Supplier-provided compliance training, which shall include but not be limited to:
 - a. A review of all of the requirements outlined in this Agreement that pertain to the end-users of the Remote Access Solution. The review shall include but not be limited to: the use of the Remote Access Solution from only a single Resource Home Location; the Remote Access Laptop theft/loss reporting requirements; and the prohibition of the use of the Remote Access Solution for anything other than responding to on-call situations.

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- b. Review of the following guidelines: <https://spsf05.web.att.com/sites/AssetProtection/APO/Investigations/LaptopThefts.aspx>.
 - c. Upon AT&T request, Supplier shall provide to the AT&T IT Offshore Compliance & Enablement (IT OCE) team confirmation that the above training has been completed annually and upon LORA approvals.
3. **Remote Access Laptop with AT&T Data other than SPI or AT&T Proprietary – Restricted Information (“APRI”) or Restricted Information (“RI”) requirements:**



Supplier shall adhere to the following:

- a. Supplier shall designate, provide and support the Remote Access Laptop to be used from the Resource Home Location, Amdocs Facility and travel.
- b. Each Remote Access Laptop shall have anti-virus and firewall software installed and operating.
- c. The configuration file that controls these settings required for LORA shall be read only for the user and editable only by authorized domain administrators (e.g., settings that control full hard drive encryption, antivirus and Absolute Computrace, for application installations) or resources approved for LORA shall not have administrator rights on the Remote Access Laptop.
- d. Each Remote Access Laptop shall have a full hard drive encryption solution, such as PointSec, installed and operating, with all data encrypted as long as the laptop is “locked” (screensaver has turned on) or the Remote Access Laptop is shut down. The configuration file that controls the above settings shall be read only for the user and editable only by authorized domain administrators.

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- e. Remote Access Laptops with no Absolute Computrace software or equivalent product installed must require both a password and biometric (i.e., thumb print scan) authentication for both logging into the device and “unlocking” the device (gaining control of the device after the screensaver has turned on). The configuration file that controls the above settings shall be read only for the user and editable only by authorized domain administrators.
- f. Password and/or biometric-protected screensavers must be set with the inactivity timeout set to fifteen (15) minutes or less. The configuration file that controls the above settings shall be read only for the user and editable only by authorized domain administrators.
- g. Each Remote Access Laptop shall have the Absolute Computrace or equivalent product installed and operating, with the configuration file that controls the above settings set to be read only for the user and editable only by authorized domain administrators. Supplier shall initiate the Absolute Computrace or equivalent data wipe process for all lost or stolen laptops within four (4) hours of the reported theft or loss of a Remote Access Laptop. Supplier is to notify AT&T at 908-658-0380 of a lost or stolen Remote Access Laptop within four (4) hours, including in such notification a description of AT&T information that was on the Remote Access Laptop. Supplier shall provide full and proactive cooperation with any investigation related to AT&T. In addition to Amdocs’ obligation to indemnify, in the event of such a loss of equipment, if it is determined that the lost equipment included personnel Information (personal data such as HR information, SSN, address, etc.) and the Supplier has failed to comply with the provisions of subsections b, c, d, e, and f, above the Supplier shall provide a minimum of twelve months credit monitoring services for each impacted individual, whose information may have been compromised, at no additional cost to AT&T or the Supplier shall reimburse AT&T for the cost of providing the credit monitoring services.
- h. Each Remote Access Laptop shall only be able to connect to a single network at any one time.
- i. Remote Access Laptops shall use either (i) a VPN connection to AT&T through AT&T’s approved Client VPN or (ii) another VPN connection to connect to the Supplier’s corporate network. The Remote Access Laptop may not use both (i) and (ii) at the same time or any other connection method(s).
- j. The data and voice connection in the Resource Home Location and all associated costs shall be provided by the Supplier per the Supplier’s policy and will be either a wired or wireless connection. AT&T will not be required to cover the charges for data and voice connections in the Resource Home Locations. Wired data connections are preferred. However, if the connection is wireless (e.g., WIFI or cellular wireless connection), the connection must be encrypted and adequately secured.
- k. Supplier resources shall be notified of the restriction that AT&T Data may not be downloaded and taken offsite.
- l. Except where expressly stated, all aforementioned software and hardware shall be provided by the Supplier.

Proprietary and Confidential

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- m. Security audit logs shall be maintained by the Supplier to track system events, including login attempts, user sessions, logoffs, configuration changes, and other pertinent events and data. Logs shall be retained online for at least thirty (30) days and offline for at least one (1) year.
- n. At all times, the Remote Access Laptop shall be kept in the possession of either the AT&T-approved offshore Supplier resource to whom Supplier has assigned the device or Supplier personnel that are responsible for administering the LORA.

4. Changes in Program:

- a. The Limited Remote Offshore Access program is subject to change as directed by AT&T.
- b. AT&T reserves the right to cancel any approved Limited Remote Offshore Access requests upon written notice to the Supplier

Proprietary and Confidential

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Significant Subsidiaries of Amdocs Limited

<u>List of the Subsidiaries*</u>	<u>Jurisdiction of Incorporation or Organization</u>	<u>Business Name</u>
Amdocs Development Centre India LLP	India	Amdocs Development Centre India LLP
Amdocs Development Limited	Republic of Cyprus	Amdocs Development Limited
Amdocs, Inc.	State of Delaware, USA	Amdocs, Inc.
Amdocs International GmbH	Switzerland	Amdocs International GmbH
Amdocs (Israel) Limited	Israel	Amdocs (Israel) Limited
Amdocs Management Limited	United Kingdom	Amdocs Management Limited
Amdocs Software Systems Ltd.	Ireland	Amdocs Software Systems Ltd.
Amdocs (UK) Limited	United Kingdom	Amdocs (UK) Limited
Amdocs Canadian Managed Services, Inc.	Canada	Amdocs Canadian Managed Services, Inc.
Sypress, Inc.	State of Delaware, USA	Sypress, Inc.
European Software Marketing Ltd.	Island of Guernsey, Channel Islands	European Software Marketing Ltd.

* Each subsidiary listed is directly or indirectly wholly-owned by Amdocs Limited.

CERTIFICATIONS

I, Shuky Sheffer, certify that:

1. I have reviewed this annual report on Form 20-F of Amdocs Limited;
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 company as of, and for, the periods presented in this report;
4. The company's other certifying officer(s) and I are responsible for establishing and maintaining disclosure controls and procedures (as defined in Exchange Act Rules 13a-15(e) and 15d-15(e)) and internal control over financial reporting (as defined in Exchange Act Rules 13a-15(f) and 15d-15(f)) for the company 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 company, 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 company'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 company's internal control over financial reporting that occurred during the period covered by the annual report that has materially affected, or is reasonably likely to materially affect, the company's internal control over financial reporting; and
5. The company's other certifying officer(s) and I have disclosed, based on our most recent evaluation of internal control over financial reporting, to the company's auditors and the audit committee of the company'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 company'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 company's internal control over financial reporting.

/s/ Shuky Sheffer

President and Chief Executive Officer
Amdocs Management Limited

Date: December 16, 2019

CERTIFICATIONS

I, Tamar Rapaport-Dagim, certify that:

1. I have reviewed this annual report on Form 20-F of Amdocs Limited;
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 company as of, and for, the periods presented in this report;
4. The company's other certifying officer(s) and I are responsible for establishing and maintaining disclosure controls and procedures (as defined in Exchange Act Rules 13a-15(e) and 15d-15(e)) and internal control over financial reporting (as defined in Exchange Act Rules 13a-15(f) and 15d-15(f)) for the company 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 company, 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 company'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 company's internal control over financial reporting that occurred during the period covered by the annual report that has materially affected, or is reasonably likely to materially affect, the company's internal control over financial reporting; and
5. The company's other certifying officer(s) and I have disclosed, based on our most recent evaluation of internal control over financial reporting, to the company's auditors and the audit committee of the company'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 company'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 company's internal control over financial reporting.

/s/ Tamar Rapaport-Dagim

Chief Financial Officer and Chief Operating Officer
Amdocs Management Limited

Date: December 16, 2019

**CERTIFICATION PURSUANT TO 18 U.S.C. SECTION 1350, AS ADOPTED PURSUANT TO
SECTION 906 OF THE SARBANES-OXLEY ACT OF 2002**

In connection with the annual report on Form 20-F of Amdocs Limited (the “Company”) for the period ended September 30, 2019 as filed with the Securities and Exchange Commission on the date hereof (the “Report”), the undersigned, Shuky Sheffer, President and Chief Executive Officer of the Company, hereby certifies, pursuant to 18 U.S.C. Section 1350, that to the best of his knowledge and belief:

- (1) the Report fully complies with the requirements of Section 13(a) or 15(d) of the Securities Exchange Act of 1934; and
- (2) the information contained in the Report fairly presents, in all material respects, the financial condition and results of operations of the Company.

/s/ Shuky Sheffer

Shuky Sheffer
President and Chief Executive Officer
Amdocs Management Limited

Dated: December 16, 2019

**CERTIFICATION PURSUANT TO 18 U.S.C. SECTION 1350, AS ADOPTED PURSUANT TO
SECTION 906 OF THE SARBANES-OXLEY ACT OF 2002**

In connection with the annual report on Form 20-F of Amdocs Limited (the “Company”) for the period ended September 30, 2019 as filed with the Securities and Exchange Commission on the date hereof (the “Report”), the undersigned, Tamar Rapaport-Dagim, Chief Financial Officer and Chief Operating Officer of the Company, hereby certifies, pursuant to 18 U.S.C. Section 1350, that to the best of her knowledge and belief:

(1) the Report fully complies with the requirements of Section 13(a) or 15(d) of the Securities Exchange Act of 1934; and

(2) the information contained in the Report fairly presents, in all material respects, the financial condition and results of operations of the Company.

/s/ Tamar Rapaport-Dagim

Tamar Rapaport-Dagim

Chief Financial Officer and Chief Operating Officer

Amdocs Management Limited

Dated: December 16, 2019

CONSENT OF INDEPENDENT REGISTERED PUBLIC ACCOUNTING FIRM

We consent to the reference to our firm in the head note to Item 3. Key Information — Selected Financial Data included in this Annual Report (Form 20-F) of Amdocs Limited and to the incorporation by reference in the following Registration Statements:

Form S-8, No. 333-91847
Form S-8, No. 333-92705
Form S-8, No. 333-31506
Form S-8, No. 333-34104
Form S-8, No. 333-58454
Form S-8, No. 333-114077
Form S-8, No. 333-132968
Form S-8, No. 333-135320
Form S-8, No. 333-137617
Form S-8, No. 333-139310
Form S-8, No. 333-140728
Form S-8, No. 333-159163
Form S-8, No. 333-193659
Form S-8, No. 333-222992

of our reports dated December 16, 2019, with respect to the consolidated financial statements and schedule of Amdocs Limited and the effectiveness of internal control over financial reporting of Amdocs Limited, included in this Annual Report (Form 20-F) of Amdocs Limited for the year ended September 30, 2019.

/s/ Ernst & Young LLP

New York, New York
December 16, 2019