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

FORM 10-K

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

For the fiscal year ended: December 28, 2019

or

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

For the transition period from ___________ to ___________

Commission file number: 0-15386

CERNER CORPORATION
(Exact name of registrant as specified in its charter)

Delaware (State or other jurisdiction of incorporation or organization)	**43-1196944** (I.R.S. Employer Identification No.)
2800 Rockcreek Parkway **North Kansas City, MO** (Address of principal executive offices)	**64117** (Zip Code)

(816) 221-1024
(Registrant's telephone number, including area code)

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

Title of each class	Trading Symbol(s)	Name of each exchange on which registered
Common Stock, $0.01 par value per share	CERN	The Nasdaq Stock Market LLC

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

Indicate by check mark if the registrant is a well-known seasoned issuer, as defined in Rule 405 of the Securities Act.

Yes No

Indicate by check mark if the registrant is not required to file reports pursuant to Section 13 or Section 15(d) of the Act.

Yes No

Indicate by check mark whether the registrant (1) has filed all reports required to be filed by Section 13 or 15(d) of the Securities Exchange Act of 1934 during the preceding 12 months (or for such shorter period that the registrant was required to file such reports), and (2) has been subject to such filing requirements for the past 90 days.

Yes No

Indicate by check mark whether the registrant has submitted electronically every Interactive Data File required to be submitted pursuant to Rule 405 of Regulation S-T (§232.405 of this chapter) during the preceding 12 months (or for such shorter period that the registrant was required to submit such files).

Yes No

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

Large accelerated filer Accelerated filer

Non-accelerated filer Smaller reporting company Emerging growth company

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

Indicate by check mark whether the registrant is a shell company (as defined in Rule 12b-2 of the Exchange Act).

Yes No

As of June 28, 2019, the aggregate market value of the registrant's common stock held by non-affiliates of the registrant was $20.8 billion based on the closing sale price as reported on the Nasdaq Global Select Market. Shares of common stock held by each executive officer, director and holder of 10% or more of the outstanding common stock have been excluded in that such persons may be deemed to be affiliates. This determination of affiliate status for purposes of this calculation is not intended as a conclusive determination of affiliate status for other purposes.

Indicate the number of shares outstanding of each of the registrant's classes of common stock, as of the latest practicable date.

Class	Outstanding at January 28, 2020
Common Stock, $0.01 par value per share	311,937,692 shares

DOCUMENTS INCORPORATED BY REFERENCE

Document	Parts into Which Incorporated
Portions of the registrant's Proxy Statement for the 2020 Annual Shareholders' Meeting	Part III

CERNER CORPORATION

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PART I.

Item 1. Business.

Overview

Cerner Corporation started doing business as a Missouri corporation in 1980 and was merged into a Delaware corporation in 1986. Unless the context otherwise requires, references in this report to "Cerner," the "Company," "we," "us" or "our" mean Cerner Corporation and its subsidiaries.

Our corporate world headquarters is located in a Company-owned office park in North Kansas City, Missouri, with our principal place of business located at 2800 Rockcreek Parkway, North Kansas City, Missouri 64117. Our telephone number is 816.221.1024. Our Web site, which we use to communicate important business information, can be accessed at: www.cerner.com. We make our annual report on Form 10-K, quarterly reports on Form 10-Q, current reports on Form 8-K and all amendments to those reports available free of charge on or through this Web site as soon as reasonably practicable after such material is electronically filed with or furnished to the Securities and Exchange Commission ("SEC"). We do not intend for information contained in our website to be part of this annual report on Form 10-K.

Cerner is a leading supplier of health care information technology ("HCIT") solutions and tech-enabled services. Our mission is to relentlessly seek breakthrough innovation that will shape health care of tomorrow. We offer a wide range of intelligent solutions and tech-enabled services that support the clinical, financial and operational needs of organizations of all sizes. *Cerner®* solutions and services help clinicians make care decisions and assist organizations in managing the health of their populations. The Company also offers integrated clinical and financial systems to help manage day-to-day revenue functions, as well as a wide range of services to support clinical, financial and operational needs.

Cerner solutions are offered on the unified *Cerner Millennium®* architecture and on the *HealtheIntent®* cloud-based platform. *Cerner Millennium* is a person-centric computing framework, which includes integrated clinical, financial and management information systems. This architecture allows providers to securely access an individual's electronic health record ("EHR") at the point of care, and it organizes and proactively delivers information to meet the specific needs of physicians, nurses, laboratory technicians, pharmacists, front- and back-office professionals and consumers. Our *HealtheIntent* platform is a cloud-based platform designed to scale at a population level while facilitating health and care at a person and provider level. On the *HealtheIntent* platform, we offer solutions that aggregate, transform and reconcile data across the continuum of care, enabling key stakeholders to manage the health of populations, improve outcomes and lower costs. Cerner also has an EHR agnostic platform, *CareAware®*, that facilitates connectivity of health care devices to EHRs, allowing for more efficient and effective care.

On February 2, 2015, Cerner acquired the Health Services business from Siemens AG, which offered a portfolio of enterprise-level clinical and financial health care information technology solutions, as well as departmental, connectivity, population health, and care coordination solutions globally.

We offer a broad range of tech-enabled services, including implementation and training, remote hosting, operational management services, revenue cycle services, support and maintenance, health care data analysis, clinical process optimization, transaction processing, employer health centers, employee wellness programs and third-party administrator services for employer-based health plans.

In addition to software and services, we offer a wide range of complementary hardware and devices, both directly from Cerner and as a reseller for third parties.

The following table presents consolidated revenues by our business models and by segment, as a percentage of total revenues:

	For the Years Ended		
	2019	2018	2017
Revenues by Business Models			
Licensed software	12%	11%	12%
Technology resale	4%	5%	5%
Subscriptions	6%	6%	9%
Professional services	35%	34%	31%
Managed services	21%	21%	21%
Support and maintenance	20%	21%	20%
Reimbursed travel	2%	2%	2%
	100%	100%	100%
Revenues by Segment			
Domestic	89%	88%	89%
International	11%	12%	11%
	100%	100%	100%

A description of our business models is as follows:

- Licensed software - We develop and license intellectual property ("IP") (our architectures, application software, executable and referential knowledge, data and algorithms) to our clients. Our licensed software business model includes revenues from IP delivered via perpetual license and software as a service, where functionality is delivered via "the cloud".

- Technology resale - We bundle licensed software with other companies' IP in the form of sublicenses to create complete technology solutions for our clients. We also resell bundled computer equipment (hardware) from technology companies to create a completely functional system. Additionally, we resell medical devices for a growing list of medical device companies.

- Subscriptions - Another method by which we provide IP is on a time-based subscription model that has a periodic usage charge. This is the primary way we package and provide medical knowledge, which changes frequently based on research and can be updated independently from the software in which it is embedded. Also included in this category of revenue is our Electronic Data Interchange ("EDI") transaction revenue. EDI is the electronic transfer of data between health care providers and payers.

- Professional services - We provide a wide range of professional services to assist our clients in the implementation of our information systems in their organizations. These services are in the form of project management, technical and application expertise, clinical process optimization, regulatory consulting and education and training of our clients' workforce to assist in the design and implementation of our systems. This business model also includes certain outsourcing services utilized by health care organizations.

- Managed services - Our managed services business model includes revenues from remote hosting, application management services, operational management services, and disaster recovery. Remote hosting is the largest of these offerings, and it involves Cerner buying the necessary equipment, installing it in one of our data centers, and operating the entire system on the client's behalf.

- Support and maintenance - This business model is comprised of the ongoing support and maintenance services we provide our clients. Almost all of our clients contract for these services. Clients with support contracts get 24x7 access to our immediate response center, which serves as our "emergency room," as well as access to our SolutionWorks organization for less urgent issues. In addition, our clients' support payments give them ongoing access to the latest releases of our IP. We also provide support for sublicensed software and maintenance for third party hardware.

- Reimbursed travel - Includes reimbursable out-of-pocket expenses (primarily travel) incurred in connection with our client service activities.

Health Care and Health Care IT Industry
There are several major forces shaping health care worldwide.

- **Rising Health Care Costs** - Health care costs continue to rise above the rate of inflation, with total health care expenditures increasing 4.6% to $3.6 trillion in 2018, representing 18% of the U.S. Gross Domestic Product ("GDP"). Health expenditures are expected to grow at approximately 5% over the next decade, which would bring them to nearly 20% of GDP. Similar growth trends exist in most major non-U.S. markets as well. We believe this trajectory is unsustainable and that health care IT can play an important role in facilitating a shift from a high-cost health care system that incents volume to a proactive system that incents health, quality and efficiency.

- **Industry Consolidation** - The number of health care providers turning to mergers, acquisitions and partnerships has surged. On a 15-year basis the percentage of hospitals functioning under a health system rather than operating independently increased from approximately 50% to approximately 65%. Today, over 70% of hospitals are operating as part of a health system rather than independently. This consolidation trend has also included the outpatient setting as health systems are seeking to build out health networks within defined Metropolitan Statistical Areas ("MSAs").

- **Evolving Reimbursement** - With the full enactment of The Patient Protection and Affordable Care Act ("ACA"), Medicaid expansion in more than three-quarters of all states, and the aging population driving Medicare growth, the government is playing an increasingly material role in U.S. health care economics. The implications for providers include increased regulatory requirements for payment at less favorable terms than commercial payers. This reality has exacerbated an already tough margin profile and is expected to be the new normal for the years to come. Provider organizations are also dealing with an ongoing shift to value-based reimbursement models through programs like the Medicare Access and CHIP Reauthorization Act ("MACRA") and Bundled Payment Care Initiative, which change the way that Medicare rewards clinicians for value over volume. These reforms, over time, could materially change provider economics.

- **Consumer Expectations** - Increased out-of-pocket expense and technology utilization outside health care have contributed to rising consumer expectations on cost, convenience and service. This growing consumerism has increased the political focus on rising drug prices, surprise medical bills, and escalating premiums, highlighting the importance of having comprehensive strategies for engaging consumers.

- **Cognitive Computing** - Today, health care is principally digitized across the core clinical, operational and financial settings. However, while workflows have been digitized, business processes remain largely unautomated and the industry has yet to realize the benefits of digitization achieved in other industries. Cognitive computing represents a meaningful opportunity to leverage the digitization that now exists in health care to improve efficiency and quality, and we believe Cerner is well positioned to play a key role in helping the health care industry achieve this potential.

For the core provider market, many of these forces are contributing to an overall challenging macro environment. Providers are simultaneously seeking to grow key service lines, drive operational efficiencies to make money at Medicare rates, and build out the competencies required to take and effectively manage risk and participate in value-based reimbursement models. Information technology is seen as an enabler of these efforts, which represents an opportunity for Cerner. At the same time, the low-margin nature of provider businesses can make it difficult to fund required investment, making it important for solutions and services to have a clear return on investment.

Cerner Vision and Growth Strategy
Throughout our history, Cerner has focused on creating innovation at the intersection of health care and information technology. Our vision has long been to create a Health Network Architecture ("HNA") for providers of care in every community. HNA has four core pillars: automate the care process; connect the person; structure, store and study the data; and then 'close the loop' by pushing analytic insights back into the care process. The base digitization that now exists in health care is foundational to achieving this vision, and we believe it can be achieved in the decade to come.

Our framework for growth as we work towards achieving our long-term vision includes three core areas.

First, we are focused on delivering in our core market, including executing effectively on our large U.S. federal contracts, continuing to enhance key solution areas, such as revenue cycle, that are important to existing clients and represent revenue growth opportunities, and aligning with our provider clients to help them increase revenue in key service lines, tackle margin compression and optimize their reimbursement dollars. In addition, we are investing in platform modernization, with a focus on delivering a software as a service platform that we expect to lower total cost of ownership, improve clinician experience and patient outcomes, enable clients to accelerate adoption of new functionality, and better leverage third-party innovations. These efforts, in collaboration with Amazon Web Services, can differentiate Cerner and position our installed client base to better manage the forces of change playing out in health care.

Second, we are continuing work towards advancing the HNA vision that has driven Cerner almost since its inception. We believe that through the creation of a cohesive architecture for health care, the walls between care centers will become transparent as information travels seamlessly between care settings. Data collected at one setting will be available to others across the country, ensuring every individual in every part of the care process is connected to the right knowledge, resources and persons at the appropriate time and place. We believe the coming decade is the window when the confluence of technology, data liquidity and business model shifts can make this vision a reality. Health systems are increasingly building network strategies within specific MSAs to enhance contracting power, increase patient stickiness and move closer to the premium dollar. Cerner has an opportunity to become a strategic partner and assist with network design, provide services in areas such as cybersecurity and operational reporting, and improve performance under value-based contracting. Cerner's *HealtheIntent* platform was purpose-built as a cloud-based, EHR-agnostic platform that enables these efforts. *HealtheIntent* is also foundational to our offerings in other areas that represent growth opportunities for Cerner. These include provider market offerings, such long-term care, home care and hospice, rehabilitation, behavioral health, community care, care team communications, and health systems operations, as well as consumer and employer offerings.

Third, Cerner has an opportunity to grow by becoming a trusted source of curated health data. This opportunity is also supported by our *HealtheIntent* platform. While this opportunity is nascent, Cerner has natural points of differentiation, including our proximity to the data given that our technology assets are in place in more than a quarter of U.S. health care facilities, and our proven ability to aggregate and normalize multiple sources of data through our *HealtheIntent* platform, which contains data from more than 249 million longitudinal records.

The early returns have been positive. We have made progress in the pharma and life sciences space with our *HealtheDataLabs*[SM] offering and our collaboration with the Duke Clinical Research Institute, which is focused on creating opportunities for clinical trial participation within Cerner's client base. There also is good traction in our *HealtheHistory*[SM] business, which provides record retrieval for life insurance, legal and other administrative use cases.

Cerner expects to build on this early success and continue creating information-based solutions that reinvent traditional health care businesses, allow our customers to better serve their markets and ultimately change lives. We believe the data space not only represents a material addressable market beyond Cerner's traditional provider base, but that it is also consistent with, and a compelling advancement of, the vision of personalized medicine that animated the original thinking around HNA.

Importantly, Cerner's health data strategy is based on curating data from a willing and engaged network of providers with an emphasis on clear boundaries around the usage of patient data and based on clearly defined use cases with clarity and transparency around data rights.

In summary, we believe Cerner's core value proposition remains strong and there is ample opportunity to grow through the areas discussed above. As Cerner drives these areas of growth, we expect a strong and dynamic competitive landscape, ranging from startups to mega-cap companies that are attracted to the substantial addressable markets across health care. Success will require entrepreneurial scale. We will have to move faster and be nimbler than the mega-caps, while also leveraging our advantages of size and experience that venture-backed startups lack.

Contracting with the Government

As we grow our federal business, revenue attributable to prime contracts or to subcontracts with other contractors engaged in work for the U.S. government is becoming a bigger contributor to our overall revenue. Within the U.S. government, our revenues are diversified across various agencies, including the Department of Defense and the U.S. Department of Veterans Affairs. During 2019, more than 10% of our total revenues were attributable to our relationships (as the prime contractor or a subcontractor) with U.S. government agencies. Contracting with the U.S. government subjects us to substantial regulation and unique risks, including the U.S. government's ability to cancel any contract at any time through a termination for the convenience of the U.S. government. Government cancellation terms typically permit the recovery of all or a portion of our incurred costs and fees for work performed prior to termination when the U.S. government issues a termination for convenience. These regulations and risks are described in more detail below under "Risk Factors" in this annual report on Form 10-K.

Software Development
We commit significant resources to developing new health information system solutions and services. As of the end of 2019, approximately 7,300 associates were engaged in research and development activities. Total expenditures for the development and enhancement of our software solutions were $784 million, $747 million and $706 million during the 2019, 2018 and 2017 fiscal years, respectively. These figures include both capitalized and non-capitalized portions and exclude amounts amortized for financial reporting purposes.

As discussed above, continued investment in R&D remains a core element of our strategy. This will include ongoing enhancement of our core solutions and development of new solutions and services.

Intellectual Property
We have a broad portfolio of intellectual property rights to protect the proprietary interests in our solutions, services, devices and brands. Our solutions constitute works of authorship protected by copyrights in the U.S. and globally. We own valuable trade secrets embodied in, or related to, our solutions, services and devices and protect these rights through a number of technical and legal measures. We have registered or applied to register certain trademarks and service marks in a number of countries with particular emphasis on the Cerner branding elements. We continue to develop our patent portfolio and own more than 500 issued patents with hundreds of patent applications pending. We do not consider any of our businesses to be dependent upon any one patent, copyright, trademark, or trade secret, or any family or families of the same.

Our solutions, devices and services incorporate or rely on intellectual property rights licensed from third parties, including software subject to open source software licenses. Certain technologies licensed to Cerner are also important for internal use in running our business and supporting our clients. Although replacing any existing licenses could be inconvenient, based on our experiences, existing contractual relationships, and the incentives of our technology suppliers, we believe that Cerner will continue to obtain these technologies or suitable alternatives for commercially reasonable prices on commercially reasonable terms or under open source software licenses acceptable to Cerner.

Managing Cybersecurity Risks

Our business operations, including the provision of the solutions and services described above, involve the compilation, hosting and transmission of confidential information, including patient health information. We have included security features in our solutions and services that are intended to protect the privacy and integrity of this information, but our solutions and services may be vulnerable to security breaches, viruses, programming errors and other similar disruptive problems. Cerner maintains documented information privacy, security and risk management programs with clearly defined roles, responsibilities, policies, and procedures which are designed to secure the information maintained on Cerner's platforms.

In addition, all of our associates are required to complete annual cybersecurity education and training, which includes identifying suspicious emails, Internet threats, telecommunication threats and ransomware. Cerner regularly reviews and modifies its security program to reflect changing technology, regulatory environment, laws, risk, industry and security practices and other business needs. We believe our policies and procedures are adequate to ensure that relevant information about cybersecurity risks and incidents is appropriately reported and disclosed.

Sales and Marketing
The markets for Cerner HCIT solutions, health care devices and services include integrated delivery networks, physician groups and networks, managed care organizations, hospitals, medical centers, free-standing reference laboratories, home health agencies, blood banks, imaging centers, pharmacies, pharmaceutical manufacturers, employers, governments and public health organizations. The majority of our sales are clinical and revenue cycle solutions and services to hospitals and health systems, but our solutions and services are highly scalable and sold to organizations ranging from physician practices, to community hospitals, to complex integrated delivery networks, to local, regional and national government agencies. Sales to large health systems typically take approximately nine to 18 months, while the sales cycle is often shorter when selling to smaller hospitals and physician practices.

Our executive marketing management is located at our world headquarters in Kansas City, Missouri, while our client representatives are deployed across the United States and globally. In addition to the United States, through our subsidiaries, we have sales associates and/or offices giving us a presence in more than 35 countries.

We support our sales force with technical personnel who perform demonstrations of *Cerner* solutions and services and assist clients in determining the proper hardware and software configurations. Our primary direct marketing strategy is to generate sales contacts from our existing client base and through presentations at industry seminars and tradeshows. We market our ambulatory solutions, offered on a subscription basis, directly to the physician practice market using lead generation activities and through existing acute care clients that are looking to extend *Cerner* solutions to affiliated physicians. We attend a number of major tradeshows each year and sponsor executive user conferences, which feature industry experts who address the HCIT needs of large health care organizations.

Backlog
Backlog, which reflects contracted revenue that has not yet been recognized as revenue, was $13.71 billion as of December 28, 2019, of which we expect to recognize approximately 30% as revenue over the next 12 months.

We believe that backlog may not necessarily be a comprehensive indicator of future revenue as certain of our arrangements may be canceled (or conversely renewed) at our clients' option; thus contract consideration related to such cancellable periods has been excluded from our calculation of backlog. However, historically our experience has been that such cancellation provisions are rarely exercised. We expect to recognize $760 million of revenue over the next 12 months under currently executed contracts related to such cancellable periods, which is not included in our calculation of backlog.

Competition
The market for HCIT solutions, devices and services is intensely competitive, rapidly evolving and subject to rapid technological change. We offer a suite of intelligent solutions and services that support the clinical, financial and operational needs of organizations of all sizes. The principle markets in which we compete include, without limitation, health care software solutions, HCIT services, ambulatory, health care device and technology resale, health care revenue cycle and transaction services, value-based care technologies, analytics systems, care management solutions, population health management, and post-acute care. Our principal existing competitors, including their affiliates, in these markets include, but are not limited to:

- Allscripts Healthcare Solutions, Inc.
- athenahealth, Inc.
- Capsule Technologies, Inc.
- Computer Programs and Systems, Inc.
- eClinicalWorks, LLC
- Epic Systems Corporation
- Evolent Health, LLC
- Health Catalyst, Inc.
- InterSystems Corporation
- MEDHOST, Inc.
- Medical Information Technology, Inc. (MEDITECH)
- Optum, Inc.

In addition, we expect that major software information systems companies, large information technology consulting service providers and system integrators, start-up companies, managed care companies, healthcare insurance companies, accountable care organizations and others specializing in the health care industry may offer competitive software solutions, devices or services. The pace of change in the HCIT market is rapid and there are frequent new software solutions, devices or services introductions, enhancements and evolving industry standards and requirements. We believe that the principal competitive factors in our markets include the breadth and quality of solution and service offerings, the stability of the solution provider, the features and capabilities of the information systems and devices, the ongoing support for the systems and devices and the potential for enhancements and future compatible software solutions and devices. We believe that we compete favorably with our competitors on the basis of these factors and that we are the leader- or among the leaders- in each of our main offerings. Our brand recognition and reputation for innovative technology and service delivery, combined with our breadth of solution and services offerings, global distribution channels and client relationships position us as a strong competitor going forward.

Number of Employees (Associates)
At the end of 2019, we employed approximately 27,400 associates worldwide.

Information about our Executive Officers

The following table sets forth the names, ages, positions and certain other information regarding the Company's executive officers as of January 28, 2020. Officers are elected annually and serve at the discretion of the Board of Directors.

Name	Age	Positions
Brent Shafer	62	Chairman of the Board of Directors and Chief Executive Officer
Marc G. Naughton	64	Executive Vice President and Chief Financial Officer
John Peterzalek	59	Executive Vice President and Chief Client Officer
Tracy L. Platt	46	Executive Vice President and Chief Human Resources Officer
Randy D. Sims	59	Executive Vice President, Chief Legal Officer and Secretary
Donald Trigg	48	Executive Vice President, Strategic Growth

Brent Shafer was appointed Chief Executive Officer and Chairman of the Board of Directors effective February 1, 2018. Prior to joining the Company, Mr. Shafer served as Chief Executive Officer of Philips North America, a health technology company and the North American division of Koninklijke Philips N.V. ("Philips") since February 2014. In that position, Mr. Shafer led an organization of 17,000 employees and oversaw a health technology portfolio that included a broad range of solutions and services covering patient monitoring, imaging, clinical informatics, sleep and respiratory care as well as a group of market-leading consumer-oriented brands. For 12 years, Mr. Shafer played a key role in helping Philips develop and strengthen its health care focus, increase its profitability and grow its market share. Prior to his most recent position, Mr. Shafer served as Chief Executive Officer of the global Philips' Home Healthcare Solutions business, a home healthcare services provider with 6,000 employees, from May 2010 until May 2014, as Chief Executive Officer of the North America region for Royal Philips Electronics from January 2009 until May 2010, and as president and Chief Executive Officer of the Healthcare Sales and Service business for Philips North America from May 2005 until May 2010. Prior to joining Philips, Mr. Shafer served in various senior leadership positions with other companies, including Hill-Rom Company Inc., GE Medical Systems, and Hewlett-Packard.

Marc G. Naughton joined the Company in November 1992 as Manager of Taxes. In November 1995 he was named Chief Financial Officer and in February 1996 he was promoted to Vice President. He was promoted to Senior Vice President in March 2002 and promoted to Executive Vice President in March 2010.

John Peterzalek joined the Company in 2003 as President, Cerner South East and has held a variety of business and client leadership roles since that time, including Senior Vice President, East Region, a title which he held from 2007 to 2014 when he was named Senior Vice President, Client Relationships. He was promoted to Executive Vice President, Client Relationships in April 2017 and Executive Vice President, Worldwide Client Relationships in October 2017. He held the title of Executive Vice President, Worldwide Client Relationships until September 2018 when he was named Executive Vice President and Chief Client Officer. As Chief Client Officer, Mr. Peterzalek focuses on driving value, innovation and results to Cerner's clients globally and leads the corporate direction for revenue generation, solution strategy, business development, and marketing.

Tracy L. Platt joined the Company in July 2019 as Executive Vice President and Chief Human Resources Officer. Prior to joining the Company, Ms. Platt spent nearly 10 years in executive HR roles at Medtronic Plc, a global health care company that develops and distributes medical devices. More specifically, Ms. Platt was Vice President, Human Resources, Medtronic from September 2009 to July 2019. Ms. Platt brings health care experience from Medtronic and other key organizations, including Cardinal Health and GE Healthcare. Her most recent role at Medtronic included HR leadership for its global operations organization and driving an operating model transformation throughout the enterprise.

Randy D. Sims joined the Company in March 1997 as Vice President and Chief Legal Officer, was promoted to Senior Vice President in March 2011, and Executive Vice President in April 2018. Prior to joining the Company, Mr. Sims worked at Farmland Industries, Inc. for three years where he last served as Associate General Counsel. Prior to Farmland, Mr. Sims was in-house legal counsel at The Marley Company for seven years, holding the position of Assistant General Counsel when he left to join Farmland.

Donald Trigg serves as Executive Vice President, Strategic Growth. He originally joined the Company in 2002 as Vice President, Corporate Positioning. He has held multiple roles during his time at the Company, including Chief Marketing Officer from 2003 to 2007, General Manager for the Kansas City region from 2006-2007, Managing Director for the United Kingdom and Ireland from 2008-2010 and Senior Vice President and President, Cerner Health Ventures from 2012-2018. From 2010-2012, Mr. Trigg served as Chief Revenue Officer at CodeRyte, Inc prior to its acquisition by 3M's healthcare division. Mr. Trigg also spent more than a decade serving in the public policy space as a senior advisor for the 2000 Bush for President campaign in Austin, TX, the Director of Policy at the U.S. Department of Commerce and in a series of senior policy roles in the U.S. House and U.S. Senate.

Item 1A. Risk Factors.

Risks Related to our Business

We may incur substantial costs related to product and service-related liabilities. Many of our software, health care devices, technology-enabled services or other services (collectively referred to as "Solutions and Services") are intended for use in collecting, storing and displaying clinical and health care-related information used in the diagnosis and treatment of patients and in related health care settings such as registration, scheduling and billing. We attempt to limit by contract our liability; however, the limitations of liability set forth in the contracts may not be enforceable or otherwise protect us from liability, and we may also be subject to claims that are not covered by contract. Although we maintain liability insurance coverage, there can be no assurance that such coverage will cover any claim, prove to be adequate or continue to remain available on acceptable terms, if at all. A successful material claim or series of claims against us, if uninsured or under-insured, could materially harm our business, results of operations and financial condition. Product and service-related claims, even if not successful, could damage our reputation, result in the loss of existing or potential clients, divert management's attention, result in significant revenue loss, create potential liabilities for our clients and us and increase insurance and other operational costs.

We may be subject to claims for system errors and warranties. Our Solutions and Services are very complex and may contain design, coding or other errors, especially when first introduced. Similarly, errors in the implementation and configuration of our Solutions and Services can occur and have occurred in the past. Errors in our Solutions and Services could affect their ability to properly function, integrate or operate with other offerings, create vulnerabilities and adversely affect market acceptance of our Solutions and Services. This includes third-party software products or services incorporated into our own solutions and services. Our client agreements typically provide warranties concerning material errors and other matters. If Solutions and Services provided to a client fail to meet these warranties, it could allow the client to terminate the agreement and possibly obtain a refund or damages or both, require us to incur additional expense to correct such failure, subject us to claims or litigation or damage our reputation and negatively affect future sales. Our client agreements generally limit our liability arising from such claims but such limits may not be enforceable in certain jurisdictions or circumstances. Although we maintain liability insurance coverage, there can be no assurance that such coverage will cover any claim, prove to be adequate or continue to remain available on acceptable terms, if at all. A successful material claim or series of claims against us, if uninsured or under-insured, could materially harm our business, results of operations and financial condition.

We may experience interruptions at our data centers or client support facilities, which could interrupt clients' access to their data, exposing us to significant costs and reputational harm. We perform data center and hosting services for certain clients, including the collection and storage of critical patient and administrative data and the provision of support services. Our business relies on the secure electronic transmission, data center storage and hosting of sensitive information, including protected health information; personally identifiable information; financial information; and other sensitive information relating to our clients and their patients, providers and certain billing information, our company, our workforce and our third party suppliers. We also use public cloud providers and other third parties in connection with hosting our own data. A power failure; an impairment of telecommunications lines; a successful concerted denial of service attack; a significant system, network or data breach; damage, injury or impairment (environmental, accidental or malicious) to the buildings, the equipment inside the buildings housing data centers, the personnel operating such facilities or the client data contained therein; or errors by the personnel trained to operate such facilities could cause a disruption in operations and negatively impact clients who depend on us for data hosting and system support services. System redundancy and other continuity measures may be ineffective or inadequate, and our business continuity and disaster recovery planning may not be sufficient for all eventualities. If any of our systems or those of third parties on which we rely are interrupted, damaged or breached, it could damage our reputation, cause us to lose existing clients, hurt our ability to obtain new clients, result in significant revenue loss, create potential liabilities for our clients and us, increase insurance and other operating costs and have a material adverse impact on our results of operations.

If our IT security is breached, or if the IT security of third parties on which we rely is breached, we could be subject to increased expenses, exposure to legal claims and regulatory actions, and clients and prospective clients could be deterred from using our Solutions and Services. Our Solutions and Services require us to store, retrieve, process and manage our clients' information and data (and that of their patients), as well as our own data. Third parties may attempt to identify and exploit Solution and Service vulnerabilities, penetrate or bypass our security measures, and gain unauthorized access to our or our clients' and suppliers' software, hardware and cloud offerings, networks and systems, any of which could lead to disruptions in mission-critical systems or the unauthorized release or corruption of protected health information, personally identifiable information, financial information or other sensitive information, or the confidential information or data of Cerner, our clients or their patients, or our suppliers. We may be targeted by computer hackers because we are a prominent health care IT company and have high profile clients, including government clients. These risks may increase as we continue to grow our cloud offerings, collect, store and process increasingly large amounts of our clients' confidential data, including protected health information, and host or manage parts of our clients' businesses in cloud-based/multi-tenant IT environments. We also use third party public cloud providers in connection with certain client facing cloud-based offerings and to host our own data. We believe we have a reputation for secure and reliable Solution and Service offerings, and we have invested significant time and resources in protecting the security, confidentiality, integrity and availability of our Solutions and Services and the internal and external data that we manage. However, there can be no assurance that our policies, procedures and controls or those of third parties on which we rely will detect or prevent all of these threats and we cannot predict the full impact of any such past or future incident.

The costs we would incur to address and remediate these security incidents would increase our expenses. Our efforts to address these problems may not be successful and could result in interruptions, delays, cessation of service and loss of existing or potential clients that may impede our sales, development of solutions, provision of services or other critical functions. If a cyber-attack or other security incident were to allow unauthorized access to or modification of our clients' or suppliers' data, our own data or our IT systems, or if our Solutions or Services are perceived as having security vulnerabilities, we could suffer significant damage to our brand and reputation. This in turn could lead to fewer clients using our Solutions and Services and result in reduced revenue and earnings. These types of security incidents could also lead to lawsuits, regulatory investigations and claims and increased legal liability, including regulatory actions by state and federal government authorities and non-US authorities and, in some cases, contractual costs related to notification and fraud monitoring of impacted persons. Although we maintain cyber risk insurance, there can be no assurance that such coverage will cover all of our losses from any future breaches of our IT systems or those of third parties on which we rely, prove to be adequate or continue to remain available on acceptable terms, if at all.

Our proprietary technology may be subject to claims for infringement or misappropriation of intellectual property rights of others, or our intellectual property rights may be infringed or misappropriated by others or our software may be subject to claims related to open source software licenses. We rely upon a combination of confidentiality practices and policies, license agreements, confidentiality provisions in employment agreements, confidentiality agreements with third parties and technical security measures to maintain the confidentiality and trade secrecy of our proprietary information. We also rely on trademark, copyright and patent laws to protect our intellectual property rights in the U.S. and abroad. Despite these efforts, we may not be able to adequately protect against theft, copying, reverse engineering, misappropriation, infringement or unauthorized use or disclosure of our intellectual property, which could have an adverse effect on our competitive position. In addition, we are occasionally involved in intellectual property infringement or misappropriation claims. These claims, even if unmeritorious, are expensive to defend and are often incapable of prompt resolution. If we become liable to third parties for infringing or misappropriating their intellectual property rights, we could be required to pay a substantial damage award, develop alternative technology, obtain a license or cease using, selling, offering for sale, licensing, implementing or supporting the applicable Solutions and Services. We rely upon open source software in our Solutions and Services. We may encounter claims from third parties alleging unauthorized use of the software purported to be licensed under open source terms, demanding release of derivative works of open source software that could include our proprietary source code, or otherwise seeking to enforce the terms of the applicable open source licenses. These claims could result in litigation and, even if unmeritorious, could be expensive to defend and incapable of prompt resolution. We could also be required to make our software source code available under the applicable open source license, utilize or develop alternative technology, or cease using, selling or supporting the applicable Solutions and Services if we are unsuccessful in defending such claims.

We may be subject to claims or become involved in legal proceedings that could have a material adverse impact on our business, results of operations and financial condition, and our inability or failure to effectively manage publicity related to such claims or legal proceedings could adversely impact our business. From time to time and in the ordinary course of our business, we may become involved in various legal proceedings and claims, including for example, employment disputes such as harassment or discrimination claims, and litigation; disputes and litigation alleging solution and implementation defects, personal injury, intellectual property infringement, violations of law and breaches of contract and warranties; and other disputes and litigation. All such disputes and legal proceedings are inherently unpredictable and, regardless of the merits of the claims, litigation may lead to negative publicity, and may be expensive, time-consuming and disruptive to our operations and distracting to management. If resolved against us, such legal proceedings could result in excessive judgments, injunctive relief or other equitable relief that may affect how we operate our business. Any settlements of such proceedings may also affect how we operate our business. Although we maintain liability insurance coverage, there can be no assurance that such coverage will cover any judgment or settlement, prove to be adequate or continue to remain available on acceptable terms, if at all. If we incur liability that exceeds our insurance coverage or that is not within the scope of the coverage in legal proceedings brought against us, it could have a material adverse effect on our business, results of operations and financial condition. Additionally, with the increased use of social media platforms, including blogs, chat platforms, social media websites, and other forms of Internet-based communications that allow individuals access to a broad audience, there has been an increase in the speed and accessibility of information dissemination. The dissemination of information via social media, including information about alleged harassment, discrimination or other claims, could harm our business, brand, reputation, financial condition, and results of operations, regardless of the information's accuracy.

We are subject to risks associated with our global operations. We market, sell and support our Solutions and Services globally. We have established offices around the world, including in the Americas, Europe, the Middle East and the Asia Pacific region. As part of our ongoing portfolio management, we periodically evaluate entering into new markets and adjusting our focus in certain existing markets. Significant management attention and financial resources could be required to address the risks noted below associated with new market entry into non-U.S. markets and potential disruptions if we chose to adjust our focus in a given market. In some countries, our success will depend in part on our ability to form relationships with local partners. There is a risk that we may sometimes choose the wrong partner. For these and other reasons, we may not be able to maintain or increase non-U.S. market demand for our Solutions and Services.

Non-U.S. operations are subject to inherent risks, and our business, results of operations and financial condition, including our revenue growth and profitability, could be adversely affected by a variety of uncontrollable and changing factors. These include, but are not limited to:

- Greater difficulty in collecting accounts receivable and longer collection periods;
- Difficulties and costs of staffing and managing non-U.S. operations;
- The impact of global economic and political market conditions;
- Effects of sovereign debt conditions, including budgetary constraints;
- Unfavorable or volatile foreign currency exchange rates;
- Legal compliance costs or business risks associated with our global operations where: i) local laws and customs differ from, or are more stringent than those in the U.S., such as those relating to data protection and data security, or ii) risk is heightened with respect to laws prohibiting improper payments and bribery, including without limitation the U.S. Foreign Corrupt Practices Act, the U.K. Anti-Bribery Act and similar laws and regulations in foreign jurisdictions;
- Certification (e.g. CE marking for medical device software), licensing or regulatory requirements and unexpected changes to those requirements;
- Changes to or reduced protection of intellectual property rights in some countries;
- Potentially adverse tax consequences as a result of changes in tax laws or otherwise, and difficulties associated with repatriating cash generated or held abroad in a tax-efficient manner;
- Different or additional functionality requirements or preferences;
- Trade protection measures;
- Export control regulations;
- Health service provider or government spending patterns or government-imposed austerity measures;
- Natural disasters, war or terrorist acts;
- Labor disruptions that may occur in a country;
- Political unrest which may impact sales or threaten the safety of associates or our continued presence in these countries and the related potential impact on global stability; and
- Our reliance on certain partners, which help us to offer our Solutions and Services at scale, whose reputation may not be regarded as highly outside the U.S.

Fluctuations in foreign currency exchange rates could materially affect our financial results. Our consolidated financial statements are presented in U.S. dollars. In general, the functional currency of our subsidiaries is the local currency where the subsidiary operates. For each subsidiary, assets and liabilities denominated in foreign currencies are translated into U.S. dollars at the exchange rates in effect at the balance sheet dates and revenues and expenses are translated at the average exchange rates prevailing during the month of the transaction. Therefore, increases or decreases in the value of the U.S. dollar against other major currencies affect our revenues, net earnings and the value of balance sheet items denominated in foreign currencies. Future fluctuations in foreign currency exchange rates, particularly the strengthening of the U.S. dollar against major currencies, could materially affect our financial results.

We are subject to tax legislation in numerous countries; changes in tax laws or challenges to our tax positions could adversely affect our business, results of operations and financial condition. We are a global corporation with a presence in more than 35 countries. As such, we are subject to tax laws, regulations and policies of the U.S. federal, state and local governments and comparable taxing authorities in other country jurisdictions. Changes in tax laws could cause us to experience fluctuations in our tax obligations and effective tax rates in future periods and otherwise adversely affect our tax positions and our tax liabilities. Our effective tax rates, tax payments, tax credits or incentives could be adversely affected by changes in tax laws.

In addition, U.S. federal, state and local, as well as other countries' tax laws and regulations, are extremely complex and subject to varying interpretations and require significant judgment in determining our worldwide provision for income taxes and other tax liabilities. Longstanding international tax norms that determine each country's jurisdiction to tax cross-border international trade are evolving as a result of the Base Erosion and Profit Shifting reporting requirements ("BEPS") recommended by the G-20 and Organization for Economic Cooperation and Development ("OECD"). During 2018, the European Commission issued proposals and the OECD issued an interim report related to the taxation of the digital economy. During 2019, the OECD released a public consultation paper and a Programme of Work to achieve a consensus-based solution to address tax challenges of the digital economy. The Programme of Work was endorsed by the G-20. As these and other tax laws and related regulations change, our financial results could be materially impacted. Given the unpredictability of these possible changes and their potential interdependency, it is very difficult to assess the overall effect of such potential tax changes, but such changes could adversely impact our financial results.

In the ordinary course of a global business, there are many intercompany transactions and calculations which could be subject to challenge by tax authorities. We are regularly under audit by tax authorities and those authorities often do not agree with positions taken by us on our tax returns. Our intercompany transfer pricing has been reviewed by the U.S. Internal Revenue Service ("IRS") and by foreign tax jurisdictions and will likely be subject to additional audits in the future. There can be no assurance that our tax positions will not be challenged by relevant tax authorities or that we would be successful in any such challenge, which could result in additional taxation, penalties and interest payments.

The departure of the United Kingdom (UK) from the European Union (EU) could adversely affect our financial results. Negotiations surrounding the UK's withdrawal of its membership from the EU, which is commonly referred to as "Brexit," are continuing, and the specifics of any such departure remain uncertain. We have operations in the UK and the EU, and as a result, we face risks associated with the potential uncertainty and disruptions that may follow Brexit, including with respect to volatility in exchange rates and interest rates and potential material changes to the regulatory regime applicable to our operations in the UK. Brexit could adversely affect European or worldwide political, regulatory, economic or market conditions and could contribute to instability in global political institutions, regulatory agencies and financial markets. For example, depending on the terms of Brexit, the UK could also lose access to the single EU market and to the global trade deals negotiated by the EU on behalf of its members. Disruptions and uncertainty caused by Brexit may also cause our clients to closely monitor their costs and reduce their spending budget on our Solutions and Services. Any of these effects of Brexit, and others we cannot anticipate, could adversely affect our business, results of operations and financial condition.

Our success depends upon the recruitment and retention of key personnel. Members of our senior management team have departed the Company during the past few years for a variety of reasons, and we cannot guarantee that there will not be additional departures. To remain competitive, we must attract, motivate and retain highly skilled managerial, sales, marketing, consulting and technical personnel, including executives, consultants, programmers and systems architects skilled in the industries and technical environments in which our Solutions and Services are offered. As we modernize our core platforms to the cloud, it is important that we retain and attract experienced technical talent with cloud expertise to lead this transformation. Competition for such personnel in our industries is intense in both the U.S. and abroad. As other technology companies aggressively recruit for the same talent, and offer more alternative work arrangements, it is increasingly difficult to retain and attract this specialized talent. Our failure to attract additional qualified personnel and to retain and motivate existing personnel to meet our needs could have a material adverse effect on our prospects for long-term growth. In addition, our success is dependent to a significant degree on the continued contributions of key management, sales, marketing, consulting and technical personnel. We may also experience increased compensation costs that are not offset by either improved productivity or higher sales. The unexpected loss of key personnel, or the failure to successfully develop and execute effective succession planning to assure smooth transitions of those key associates and their knowledge, relationships and expertise, could disrupt our business and have a material adverse impact on our results of operations and financial condition, and could potentially inhibit development and delivery of our Solutions and Services and market share advances.

We depend on strategic relationships and third party suppliers and our revenue and operating earnings could suffer if we fail to manage these relationships properly. To be successful, we must continue to maintain our existing strategic relationships and establish additional strategic relationships as necessary with leaders in the markets in which we operate. As we decide to partner rather than directly provide certain Solutions and Services, we will become more dependent on these strategic relationships to meet our clients' needs. We believe that these relationships contribute to our ability to further build our brand, extend the reach of our Solutions and Services, develop and deploy new products and services, and generate additional revenues and cash flows. The loss of a critical strategic relationship or failure to establish additional relationships, or the failure to realize anticipated synergies and benefits of these strategic relationships, could have a material adverse impact on our business, results of operations and financial condition.

We license or purchase certain intellectual property and technology (such as software, services, hardware and content) from third parties, including some competitors, and depend on such intellectual property and technology in the operation and delivery of our Solutions and Services. Additionally, we sell or license third party intellectual property and technology in conjunction with our Solutions and Services. For instance, we currently depend on Amazon Web Services, Microsoft, Cloudera, Oracle, VMWare and IBM technologies for portions of the operational capabilities of, among others, our *Millennium* and *HealtheIntent* solutions. Our remote hosting and cloud services businesses also rely on a limited number of software and services suppliers for certain functions of these businesses, such as Oracle, NetApp, Microsoft, Veritas, CITRIX, GTT and Equinix. Additionally, we rely on Dell/EMC, Hewlett-Packard Enterprise, Cisco, NetApp, IBM and others for our hardware technology platforms.

Most of our third party software license support contracts expire within one to five years, can be renewed only by mutual consent and may be terminated if we breach the terms of the license and fail to cure the breach within a specified period of time. Most of these third party software licenses are non-exclusive; therefore, our competitors may obtain the right to use the technology covered by these licenses to compete directly with us. If our third party suppliers were to change product offerings, cease actively supporting the technologies, fail to update and enhance the technologies to keep pace with changing industry standards, encounter technical difficulties in the continuing development of these technologies, significantly increase prices, change delivery models, terminate our licenses or supply contracts, suffer significant capacity or supply chain constraints or suffer significant disruptions, we may need to seek alternative suppliers and incur additional internal or external development costs to ensure continued performance of our Solutions and Services. Such alternatives may not be available on attractive terms, or may not be as widely accepted or as effective as the intellectual property or technology provided by our existing suppliers. In addition, interruption in functionality of our Solutions and Services as a result of changes in third party suppliers could adversely affect our commitments to clients, future sales of Solutions and Services, and negatively affect our revenue and operating earnings.

We intend to continue strategic business acquisitions and to make strategic investments, which are subject to inherent risks. In order to expand our Solutions and Services offerings and grow our market and client base, we may continue to seek and complete strategic business acquisitions and investments that we believe are complementary to our business. Acquisitions and strategic investments have inherent risks which may have a material adverse effect on our business, results of operations, financial condition or prospects, including, but not limited to: 1) diversion of our management's attention from other business concerns; 2) investment in or entry into markets in which we have little or no direct prior experience; 3) failure to achieve projected synergies; and 4) failure to commercialize "go forward" Solutions and Services; all of which could require us to incur significant expenses and cause management distraction. In addition to the above, the following additional risks are inherent in acquisitions and could have a material adverse effect on our business, results of operations, financial condition or prospects: 1) failure to successfully integrate the business; 2) loss of clients, key personnel, suppliers and other important relationships; 3) incurrence of debt or assumption of known and unknown liabilities; 4) write-off of software development costs, goodwill, client lists and amortization of expenses related to intangible assets; 5) dilutive issuances of equity securities; 6) accounting deficiencies relating to the acquisition of an acquired company, including issues related to internal control over financial reporting and the time and cost associated with remedying such deficiencies; and 7) litigation related to acquisition activity, such as claims from former employees, former stockholders, clients or other third parties, all of which could require us to incur significant expenses and cause management distraction. Further, when we make a strategic investment, we have to rely on third party management teams to drive the portfolio company's success. If we fail to successfully integrate acquired businesses or fail to implement our business strategies with respect to our acquisitions or investments, we may not be able to achieve projected results or support the amount of consideration paid for such acquired businesses or invested into a portfolio company.

Volatility and disruption resulting from global economic or market conditions could negatively affect our business, results of operations and financial condition. Our business, results of operations, financial condition and outlook may be impacted by the health of the global economy. Our business and financial performance, including new business bookings and collection of our accounts receivable, may be adversely affected by current and future economic conditions (including a disruption or reduction in the availability of capital or credit, higher energy costs, rising interest rates, financial market volatility and lower than expected economic growth) that cause a slowdown or decline in client spending. Reduced purchases by our clients or changes in payment terms could adversely affect our revenue growth and cause a decrease in our cash flow from operations. Bankruptcies or similar events affecting clients may cause us to incur bad debt expense at levels higher than historically experienced. Further, volatility and disruption in global financial markets may also limit our ability to access the capital markets at a time when we would like, or need, to raise capital, which could have an impact on our ability to react to changing economic and business conditions. Accordingly, if global financial and economic volatility continues or worsens, our business, results of operations and financial condition could be materially and adversely affected.

We operate in intensely competitive and dynamic industries, and our ability to successfully compete and continue to grow our business depends on our ability to anticipate or respond quickly to market changes, changing technologies and evolving pricing and deployment methods and to bring competitive new Solutions and Services and features to market in a timely fashion. The market for our Solutions and Services is intensely competitive, dynamically evolving and subject to rapid technological advances and innovative enhancements, changing delivery and pricing models, evolving standards in computer hardware and software development and communications infrastructure, and changing and increasingly sophisticated client needs. Development of new proprietary Solutions or Services is complex, entails significant time and expense, may not be successful and often involves a long return on investment cycle. We cannot guarantee that the market for our Solutions and Services will continue to grow or that we will be able to successfully introduce new Solutions or Services. We provide solutions to clients via various deployment models, including client-server-based solutions and cloud-based offerings. As we move more of our offerings to the cloud, we may incur disruption as we transition existing clients and be less competitive during the transition, which could impact revenue and profitability. We believe we must continue to dedicate a significant amount of resources to our research and development efforts to maintain our competitive position; and oftentimes, successful investments require several years before generating significant revenue.

In addition, we expect that major software information systems companies, highly capitalized consumer technology companies, large information technology consulting service providers and system integrators, start-up companies and others operating in the health care industry may offer competitive Solutions and Services. As we continue to develop new Solutions and Services to address areas such as analytics, machine learning ("ML"), artificial intelligence ("AI"), value-based care, consumer solutions, population health management and other health network solutions, we expect to face new competitors, and these competitors may have more experience in these markets, better brand recognition or more established relationships with prospective clients. We face strong competition and often face downward price pressure, which could adversely affect our results of operations or liquidity. For example, some of our competitors may bundle products for promotional purposes or as a long-term pricing strategy, commit to large deployments at prices that are unprofitable, or provide guarantees of prices and product implementations. If we do not adapt our pricing models to reflect changes in use of our Solutions and Services or changes in client demand, our revenues could decrease.

Our success also depends on our ability to maintain and expand our business with our existing clients and effectively transition existing clients to current Solutions and Services, as well as attracting additional clients. Certain clients originally purchased one or a limited number of our Solutions and Services. These clients may choose not to expand their use of or purchase new Solutions and Services. Failure to retain and generate additional business from our current clients could materially and adversely impact our business, financial condition and operating results. In addition, there are a limited number of hospitals and other health care providers in the U.S. market, and the health care industry has been subject to increasing consolidation, which can cause fewer new footprint opportunities or lead to the replacement of our Solutions and Services in existing clients if the acquiror (or the group being acquired) has a relationship with a different HCIT provider. If we are unable to adapt to the impact of industry consolidation, falling costs and technological advancements in a timely manner, our prospects and financial results could be negatively affected.

If we are unable to manage our growth in the new markets in which we offer Solutions and Services, our business, results of operations and financial condition could suffer. Our future financial results will depend on our ability to profitably manage our business in the new markets that we enter. We expect to pursue growth and expansion opportunities in the areas of analytics, ML, AI, value-based care, consumer solutions, population health and other health network solutions. To achieve success in those areas, we will need to, among other things, recruit, train, retain and effectively manage associates, manage changing business conditions and implement and improve our technical, administrative, financial control and reporting systems for offerings in those areas. Difficulties in managing future growth in new markets could have a material adverse impact on our business, results of operations and financial condition.

Long sales cycles for our Solutions and Services could have a material adverse impact on our future results of operations. Some of our Solutions and Services have long sales cycles, ranging from several months to eighteen months or more beginning at initial contact with the client through execution of a contract. Implementing, replacing, or expanding an information system, or modifying, adding or outsourcing business processes, are major decisions for health care organizations. Many of the Solutions and Services we provide require a substantial capital investment and time commitments by the client or prospective client. Any decision by our clients or prospective clients to delay a purchasing decision could have a material adverse impact on our results of operations.

Our work with government clients exposes us to additional risks inherent in the government contracting environment. Our clients include national, provincial, state, local and foreign governmental entities and their agencies. Our government work carries various risks inherent in contracting with such government entities and agencies. These risks include, but are not limited to, the following:

- Government entities, particularly in the U.S., often reserve the right to audit our contracts and conduct reviews, inquiries and investigations of our business practices and performance with respect to government contracts. Negative findings from audits, reviews, inquiries or investigations could affect our future sales and profitability by preventing us, by operation of law or in practice, from receiving new government contracts for some period of time.

- If a government client discovers improper or illegal activities during its audits or investigations, we may become subject to various civil and criminal penalties, including those under the civil U.S. False Claims Act, and administrative sanctions, which may include termination of contracts, suspension of payments, fines and civil money penalties, and suspensions or debarment from doing business with other agencies of that government. The inherent limitations of internal controls may not prevent or detect all improper or illegal activities.

- U.S. government contracting regulations impose strict compliance and disclosure obligations. Disclosure is required if certain company personnel have knowledge of "credible evidence" of a violation of federal criminal or civil laws involving fraud, conflict of interest, bribery or improper gratuity, a violation of the civil U.S. False Claims Act or receipt of an overpayment from the government. Failure to make required disclosures could be a basis for suspension or debarment, or both, from federal government contracting in addition to breach of the specific contract and could also impact contracting beyond the U.S. federal level. Reported matters also could lead to audits or investigations and other civil, criminal or administrative sanctions.

- Government contracts are subject to heightened reputational and contractual risks compared to contracts with commercial clients. Government contracts often involve more extensive scrutiny and publicity. For example, the United States House Veterans' Affairs Subcommittee on Technology Modernization has oversight and investigative jurisdiction of the VA's Electronic Health Record Modernization ("EHRM") program. The Subcommittee has requested Cerner to participate in several oversight hearings. Negative publicity, including allegations of improper or illegal activity, poor contract performance, or information security breaches, regardless of accuracy, may adversely affect our reputation.

- Terms and conditions of government contracts also tend to be more onerous and are often more difficult to negotiate. We must comply with specific procurement regulations and a variety of other socio-economic requirements, as well as various statutes, regulations and requirements related to employment practices, recordkeeping and accounting. These regulations and requirements affect how we transact business with our clients and suppliers, and in some instances, involve additional costs.

- Government entities typically fund projects through appropriated monies. Government entities, however, reserve the right to change the scope of or terminate these projects at their convenience for lack of approved funding or other reasons. Changes in government or political developments, including budget deficits, shortfalls or uncertainties, government spending reductions (e.g., U.S. Congressional sequestration of funds under the Budget Control Act of 2011) or other debt constraints could result in our projects being reduced in price or scope or terminated altogether, which also could limit our recovery of reimbursable expenses. If insufficient funding is appropriated to the government entity to cover termination costs, we also may not be able to fully recover our investments.

- Our failure to comply with a variety of complex procurement rules and regulations could result in our liability for penalties, including termination of our government contracts, disqualification from bidding on future government contracts and suspension or debarment from government contracting. We must comply with laws and regulations relating to the formation, administration and performance of government contracts (e.g., the Federal Acquisition Regulation and supplements, the Truth in Negotiations Act, the Procurement Integrity Act, and the Civil False Claims Act), which affect how we do business with our customers and may impose added costs on our business.

- Government contracts may be protested. These protests could result in administrative procedures and litigation, result in delays in performance and payment, be expensive to defend and be incapable of prompt resolution. Loss of a bid protest may result in loss of the award, contract modification, expense or delay.

- It is common in contracting with governments for there to be a prime contractor with privity of contract to the government client and one or more subcontractors. We serve in both capacities for different government clients. For example, we are a subcontractor to Leidos, Inc. under the MHS Genesis contract with the U.S. Department of Defense, and we are the prime contractor under the EHRM contract with the U.S. Department of Veterans Affairs. There are inherent risks in being a subcontractor, including without limitation, reliance on the performance of the prime contractor for the execution of the contract to the satisfaction of the client and other risks in government contracting as described in the bullets above. If the prime contractor fails to perform under the agreement, fails or delays in issuing an order to us or in paying us for the Solutions and Services rendered, or is debarred or otherwise restricted from contracting with the government client, it could have a material adverse impact on our business, results of operations and financial condition. Additionally, when we serve as the prime contractor, we rely on our subcontractors to fulfill certain contractual obligations under our agreements with government clients. Any failure on the part of the subcontractors to perform under our subcontracts with them could subject us to negative reputational or contractual risk.

The occurrences or conditions described above could affect not only our business with the particular government entities involved, but also our business with other entities of the same or other governmental bodies or with certain commercial clients and could have a material adverse effect on our business, results of operations and financial condition.

There are risks associated with our outstanding and future indebtedness. As of December 28, 2019, we had $1.03 billion of long-term debt outstanding, and we may incur additional indebtedness in the future. We have customary restrictive covenants in our current debt agreements, which may limit our flexibility to operate our business. These covenants include limitations on priority debt, liens, mergers, asset dispositions, and transactions with affiliates, and require us to maintain certain leverage and interest coverage ratios. Failure to comply with these covenants could result in an event of default that, if not cured or waived, could have a material adverse effect on our business, results of operations and financial condition. Additionally, our ability to pay interest and repay the principal for our indebtedness is dependent upon our ability to manage our business operations, generate sufficient cash flows to service such debt and the other factors discussed in this section. There can be no assurance that we will be able to manage any of these risks successfully.

The interest rates under our financing agreements and the interest rate swap related to the outstanding indebtedness under our Credit Agreement may be adversely impacted by the phase-out of London Interbank Offered Rate ("LIBOR") as a benchmark reference for short-term interest rates. LIBOR is scheduled to be phased out by the end of 2021. When LIBOR ceases to exist, we will need to agree upon a replacement index with the lenders under our outstanding indebtedness at the time, and such new rates may not be as favorable to us as those in effect prior to any LIBOR phase-out. With respect to our Third Amended and Restated Credit Agreement (as amended, the "Credit Agreement") and the related interest rate swap, if the swap and the Credit Agreement replacement rates are not identical, our hedge could be less effective. Our failure to manage these risks effectively could adversely affect our financial condition and results of operations.

Goodwill and other intangible assets represent approximately 18% of our total assets and we could suffer losses due to asset impairment charges. We assess our goodwill and other intangible assets for impairment periodically in accordance with applicable authoritative accounting guidance. Declines in business performance or other factors could result in a non-cash impairment charge. This could materially and negatively affect our results of operations and financial condition.

Risks Related to our Industries

The health care industry is subject to changing political, economic and regulatory influences, which could impact the purchasing practices and operations of our clients and increase our costs to deliver Solutions and Services that enable our clients to meet their compliance requirements. Many health care providers are consolidating to create integrated health care delivery systems with greater market power. These providers may try to use their market power to negotiate price reductions for our Solutions and Services. As the health care industry consolidates, our client base could be consolidated with fewer buyers, competition for clients could become more intense and the importance of maintaining and acquiring new client relationships becomes greater.

The last five years have been quite active legislatively with major statutes such as the Protecting Access to Medicare Act (PAMA) of 2014 establishing requirements for "Appropriate Use Criteria" in ordering high dollar diagnostic imaging services, the Medicare and CHIP Reauthorization Act of 2015 which reformed how physicians are paid under Medicare and which established the Merit-based Incentive Payment System (MIPS); the 21st Century Cures Act of 2016 (Cures Act), which laid the groundwork for a nationwide trusted health information exchange, established interoperability requirements for providers, payers and consumers, and set the framework for information blocking regulations; and most recently the Substance Use Disorder Prevention that Promotes Opioid Recovery and Treatment for Patients and Communities (SUPPORT) Act of 2018 that includes significant policies for addressing the opioid crisis. These statutes are heavily laden with provisions that directly call for or describe roles for the use of health information technology to help providers comply with new federal requirements under Medicare and state Medicaid programs.

Reform of payment policies for Medicare and Medicaid continues to evolve. The Patient Protection and Affordable Care Act became law in 2010; this comprehensive health care reform legislation introduced value-based principles into federal health insurance payments systems, sought to improve health care quality, and expanded access to affordable health insurance. MACRA built upon the value based policies introduced by the ACA. These legislative initiatives accelerated the adoption of "Alternative Payment Models" (APMs) as bundled payment models based on episodes of care or per capita payment for defined populations as alternatives to traditional fee for service payments to providers. New APMs continue to be developed under the authorities of the Centers for Medicare and Medicaid Innovations, and value-based efforts such as the Medicare Shared Savings Program Accountable Care Organization (MSSP ACO) program or Bundled Payment for Care Improvement (BPCI) Advanced episode-based payment model program have seen their second iteration. APMs have evolved to usually require two-sided risk (shared saving and shared losses), and use of Certified EHR Technology (CEHRT) as a precondition for program participation. However, even after failed attempts to repeal the ACA, subsequent judicial developments continue to create uncertainty for the continued implementation of the ACA. Given a fractious and polarized legislative environment at the federal level, the near term prospects for health care related legislation face uncertainty. Because of ongoing federal fiscal budgetary pressures yet to be resolved for federal health programs, we cannot predict the full effect of health care legislation on our business at this time. The direction and pace of health care reform initiatives may adversely impact either our operational results or the way we operate our business. We also anticipate significant impacts from information blocking provisions of the Cures Act which includes mandated adoption of new certified capabilities and updates to support new interoperability requirements as a part of required use of certified HCIT. We expect expanded surveillance by federal agencies of certified HCIT and its use by our clients. We also anticipate newly expanded regulations under the federal Self-Referral and Anti-Kickback Laws that will contain expanded safe harbors for value based care, and that may promote expanded donation of certified HCIT and of cybersecurity technologies in support of trusted health information exchange to support coordinated patient care within value based APMs. In response to this uncertainty, purchasers of HCIT may elect to update HCIT already in use and postpone investment decisions in new or replacement HCIT, including investments in our Solutions and Services. Future legislation and regulation may ultimately impact the fiscal stability and sustainability of HCIT purchasers. Differences in demand related to new regulatory requirements and near-term compliance deadlines that contribute to demand for our Solutions and Services could impact our financial results. There can be no certainty that any legislation that may be adopted will be favorable to our business. We cannot predict whether or when future health care reform initiatives at the federal or state level or other initiatives affecting our business will be proposed, enacted or implemented or what impact those initiatives may have on our business, results of operations and financial condition.

The health care industry is highly regulated, and thus, we are subject to several laws, regulations and industry initiatives, non-compliance with certain of which could materially adversely affect our operations or otherwise adversely affect our business, results of operations and financial condition. As a participant in the health care industry, our operations and relationships, and those of our clients, are regulated by several U.S. federal, state, local and foreign governmental entities. The impact of these regulations on us is both direct, to the extent that we are ourselves subject to these laws and regulations, and also indirect, in terms of government program requirements applicable to our clients for the use of HCIT. Even though we may not be directly regulated by specific health care laws and regulations, our Solutions and

Services must be capable of being used by our clients in a way that complies with those laws and regulations. There are a significant and wide-ranging number of regulations both within the U.S. and abroad, such as regulations in the areas of health care fraud, information blocking, e-prescribing, claims processing and transmission, health care devices, the security and privacy of patient data and interoperability standards, that may be directly or indirectly applicable to our operations and relationships or the business practices of our clients. Specific risks include, but are not limited to, the following:

Health Care Fraud. U.S. federal and state governments continue to enhance regulation of and increase their scrutiny over practices involving health care fraud, waste and abuse perpetuated by health care providers and professionals whose services are reimbursed by Medicare, Medicaid and other government health care programs. Our health care provider clients, as well as our provision of Solutions and Services to government entities, subject our business to laws and regulations on fraud and abuse which, among other things, prohibit the direct or indirect payment or receipt of any remuneration for patient referrals, or arranging for or recommending referrals or other business paid for in whole or in part by these federal or state health care programs. U.S. federal enforcement personnel have substantial funding, powers and remedies to pursue suspected or perceived fraud and abuse. The effect of this government regulation on our clients is difficult to predict. Many of the regulations applicable to our clients and that may be applicable to us, including those relating to marketing incentives offered in connection with health care device sales and information blocking, are vague or indefinite and have not been interpreted by the courts. They may be interpreted or applied by prosecutorial, regulatory or judicial authorities in a manner that could broaden their applicability to us or require our clients to make changes in their operations or the way in which they deal with us. If such laws and regulations are determined to be applicable to us and if we fail to comply with any applicable laws and regulations, we could be subject to civil and criminal penalties, sanctions or other liability, including exclusion from government health programs, which could have a material adverse effect on our business, results of operations and financial condition. Even an unsuccessful challenge by a regulatory or prosecutorial authority of our activities could result in adverse publicity, require a costly response from us and adversely affect our business, results of operations and financial condition.

Preparation, Transmission, Submission and Collection of Medical Claims for Reimbursement. Our Solutions and Services are capable of electronically transmitting claims for services and items rendered by a physician to many patients' payers for approval and reimbursement. We also provide revenue cycle management services to our clients that include the coding, preparation, submission and collection of claims for medical service to payers for reimbursement. Such claims are governed by U.S. federal and state laws. U.S. federal law provides civil liability to any persons that knowingly submit, or cause to be submitted, a claim to a payer, including Medicare, Medicaid and private health plans, seeking payment for any services or items that overbills or bills for services or items that have not been provided to the patient. U.S. federal law may also impose criminal penalties for intentionally submitting such false claims. In addition, federal and state law regulates the collection of debt and may impose monetary penalties for violating those regulations. We have policies and procedures in place that we believe result in the accurate and complete preparation, transmission, submission and collection of claims, provided that the information given to us by our clients is also accurate and complete. The HIPAA security, privacy and transaction standards, as discussed below, also have a potentially significant effect on our claims preparation, transmission and submission services, because those services must be structured and provided in a way that supports our clients' HIPAA compliance obligations. In connection with these laws, we may be subjected to U.S. federal or state government investigations and possible penalties may be imposed upon us; false claims actions may have to be defended; private payers may file claims against us; and we may be excluded from Medicare, Medicaid or other government-funded health care programs. Any investigation or proceeding related to these laws, even if unwarranted or without merit, may have a material adverse effect on our business, results of operations and financial condition.

Regulation of Health Care Devices. The U.S. Food and Drug Administration ("FDA") has determined that certain of our Solutions and Services are medical devices that are actively regulated under the Federal Food, Drug and Cosmetic Act ("Act") and amendments to the Act. Other countries have similar regulations in place related to medical devices, that now or may in the future apply to certain of our Solutions and Services. If other of our Solutions and Services are deemed to be actively regulated medical devices by the FDA or similar regulatory agencies in countries where we do business, we could be subject to extensive requirements governing pre- and post-marketing activities including pre-market notification clearance. Complying with these medical device regulations globally is time consuming and expensive and could be subject to unanticipated and significant delays. Further, it is possible that these regulatory agencies may become more active in regulating software and devices that are used in health care. If we are unable to obtain the required regulatory approvals for any such Solutions and Services, our short- and long-term business plans for these Solutions and Services could be delayed or canceled.

There have been nine FDA inspections at various Cerner sites since 2003. Inspections conducted at our Headquarters Campus, Realization Campus and Innovations Campus in 2010 and 2017 each resulted in the issuance of an FDA Form 483 observation to which we responded promptly. The FDA has taken no further action with respect to either of the Form

483 observations that were issued in 2010 and 2017. The remaining FDA inspections, including inspections at our campuses in 2006, 2007 and 2014, resulted in no issuance of a Form 483. We remain subject to periodic FDA inspections and we could be required to undertake additional actions to comply with the Act and any other applicable regulatory requirements. Our failure to comply with the Act and any other applicable regulatory requirements could have a material adverse effect on our ability to continue to manufacture, distribute and deliver our Solutions and Services. The FDA has many enforcement tools including recalls, device corrections, seizures, injunctions, refusal to grant pre-market clearance of products, civil fines and criminal prosecutions. Any of the foregoing could have a material adverse effect on our business, results of operations and financial condition.

Security and Privacy. U.S. federal, state and local and foreign laws regulate the confidentiality of personal information, how that information may be used, and the circumstances under which such information may be released. These regulations govern both the disclosure and use of confidential personal and patient medical record information and require the users of such information to implement specified security and privacy measures. U.S. regulations currently in place governing electronic health data transmissions continue to evolve and are often unclear and difficult to apply. Laws in non-U.S. jurisdictions are also evolving and may have similar or even stricter requirements related to the treatment of personal or patient information.

Data protection regulations impact how businesses, including both us and our clients, can collect and process the personal data of individuals. The costs of compliance with, and other burdens imposed by, such laws, regulations and policies, or modifications thereto, that are applicable to us may limit the use and adoption of our Solutions and Services and could have a material adverse impact on our business, results of operations and financial condition. Furthermore, we incur development, resource, and capital costs in delivering, updating, and supporting Solutions and Services to enable our clients to comply with these varying and evolving standards. Governmental enforcement personnel have substantial powers and remedies to pursue suspected or perceived violations. If we fail to comply with any applicable laws or regulations or fail to deliver compliant Solutions and Services, we could be subject to civil penalties, sanctions and contract liability. Enforcement investigations, even if meritless, could have a negative impact on our reputation, cause us to lose existing clients or limit our ability to attract new clients.

In the U.S., HIPAA regulations apply national standards for some types of electronic health information transactions and the data elements used in those transactions to ensure the integrity, security and confidentiality of health information and standards to protect the privacy of individually identifiable health information. Covered entities under HIPAA, which include health care organizations such as our clients, our employer clinic business and our claims processing, transmission and submission services, are required to comply with HIPAA privacy standards, transaction regulations and security regulations.

Evolving HIPAA and HITECH-related laws and regulations in the U.S. and data privacy and security laws and regulations in non-U.S. jurisdictions could restrict the ability of our clients to obtain, use or disseminate patient information. This could adversely affect demand for our Solutions and Services if they are not re-designed in a timely manner to meet the requirements of any new interpretations or regulations that seek to protect the privacy and security of patient data or enable our clients to execute new or modified health care transactions. We may need to expend additional capital, software development and other resources to modify our Solutions and Services to address these evolving data security and privacy issues. Furthermore, our failure to maintain confidentiality of sensitive personal information in accordance with the applicable regulatory requirements could damage our reputation and expose us to claims, fines and penalties. U.S. state data breach notification laws continue to expand the type of personal information they encompass, such as health and insurance information, and in many cases are more burdensome than the HIPAA/HITECH breach reporting requirements.

In non-U.S. jurisdictions, we are subject to transnational, national and local data protection legislation, including the EU General Data Protection Regulation ("GDPR"), Canadian Personal Information Protection and Electronic Documents Act (PIPEDA) and Canadian Provincial legislation. These regulations may impose restrictions on the processing of personal data (including health data) that, in some respects, are more stringent, and impose more significant burdens on subject businesses, than current privacy standards in the U.S. The EU regulation establishes several obligations that organizations must follow with respect to use of personal data, including a prohibition on the transfer of personal information from the EU to other countries whose laws do not adequately protect the privacy and security of personal data to European standards. In addition to this EU-wide legislation, certain European member states have adopted more stringent data protection standards, particularly for health data. We have addressed these requirements, relative to data transfers, by self-certifying our compliance with the EU-U.S. Privacy Shield Framework to the U.S. Department of Commerce International Trade Administration ("ITA"). However, continued criticism of the Privacy Shield by officials in Europe casts uncertainty as to the long-term effectiveness of the Privacy Shield to support EU-U.S. transfers of personal data. For that reason, we are also pursuing alternative methods of compliance (e.g. Standard Contractual Clauses), but those methods also may be subject to scrutiny by data protection authorities in European member states.

The GDPR impacts how businesses, including both us and our clients, can collect and process the personal data of EU individuals. We have incurred development costs in delivering Solutions and Services as we update our Solutions and Services to enable our European clients to comply with these varying and evolving standards. The costs of compliance with, and other burdens imposed by, such laws, regulations and policies, or modifications thereto, that are applicable to us may limit the use and adoption of our Solutions and Services and could have a material adverse impact on our business, results of operations and financial condition.

The GDPR grants broad enforcement powers to regulatory agencies to investigate and enforce our compliance with their data privacy and security requirements. Governmental enforcement personnel, particularly in the EU, have substantial powers and remedies to pursue suspected or perceived violations. If we fail to comply with any applicable laws or regulations or fail to deliver compliant Solutions and Services, we could be subject to civil penalties, sanctions or contract liability. Enforcement investigations, even if meritless, could have a negative impact on our reputation, cause us to lose existing clients or limit our ability to attract new clients.

Development and adoption of ML and AI technologies offer the potential to significantly improve the delivery of healthcare. The application of ML and AI technologies to personal and patient information may be regulated under some privacy laws (e.g. GDPR). Furthermore, the lack of standards for measuring the accuracy and effectiveness of ML and AI can raise new or exacerbate existing technological, legal or other challenges that could impact our reputation and have a material adverse impact on our results of operations.

Interoperability Standards. Our clients continue to be concerned and often require that our Solutions and Services be interoperable with other third party HCIT suppliers. Market forces and governmental/regulatory authorities create software interoperability standards that may apply to our Solutions and Services. These expectations for interoperability are supported by the information blocking prohibitions of the Cures Act. If our Solutions and Services are not consistent with those requirements, we could be forced to incur substantial additional development costs to conform. The Office of the National Coordinator for Health Information Technology (ONC) is also charged under the Cures Act with developing a Trusted Exchange Framework that establishes governance requirements for trusted health information exchange in the U.S. ONC has developed the U.S. Common Data Set for Interoperability which may lay the groundwork for future data exchange requirements for trusted exchange. ONC continues to modify and refine these standards. We may incur increased software development and administrative expense and delays in delivering Solutions and Services if we need to update our Solutions and Services to conform to these varying and evolving requirements. In addition, delays in interpreting these standards may result in postponement or cancellation of our clients' decisions to purchase our Solutions and Services. If our Solutions and Services are not compliant with these evolving standards, our market position and sales could be impaired, and we may have to invest significantly in changes to our Solutions and Services.

Federal Requirements for Certified Health Information Technology . Various U.S. federal, state and non-government agencies continue to generate requirements for the use of certified health information technology. In many cases, these requirements have become conditions for receiving payment for health care services to beneficiaries of federal health insurance programs. These requirements are expansions of the statutory ARRA HITECH program that began providing incentive payments in 2011 to hospitals and eligible providers for the "meaningful use of certified electronic health record technology ("CEHRT")." Although those incentive programs have expired, CEHRT continues to be a condition of participation in federal health care programs. In 2015, MACRA required the use of CEHRT as part of its Quality Payment Program for eligible providers under Medicare. CEHRT is also one of the areas measured under the Merit based Incentive Payment System (known as MIPS) by which the Medicare Physician Fee Schedule was restructured. In the last several years, participation in Medicare's "alternative payment models" to replace traditional "fee for service" payments with quality and risk-sharing payment models has been conditioned on CEHRT and this continues with the Trump Administration. The Cures Act has tied CEHRT to its policy goals of reducing barriers to the exchange of health information data blocking, encouraging nationwide interoperability, consumer access to health information and improving health information availability between consumers and their care teams. The regulations establishing the certification standards for CEHRT will continue to be updated to support these policy goals with greater emphasis on interoperability, consumer engagement, patient safety and health information privacy and security. The ONC is soon to finalize additional regulations under the Cures Act to enforce the act's policy directives relating to data blocking and interoperability. These regulations will also mandate adoption of updated and expanded certified capabilities of CEHRT that our clients must adopt to remain able to participate in the federal programs mentioned earlier. In addition, the ONC has increased its surveillance activities concerning vendor compliance relative to CEHRT.

We have completed certification efforts to meet current CEHRT requirements that became mandatory for certain Federal programs on January 1, 2019, and for many others that became mandatory during 2019. We will continue to address additional regulatory requirements as they evolve to support the mandatory updates that are expected as a result of the Cures Act. However, these standards and specifications are subject to interpretation by the entities designated to certify our electronic health care technology as CEHRT compliant. Additionally, if our business practices or our Solutions and Services are not compliant with these evolving regulatory requirements, our market position and sales could be impaired, and we may have to invest significantly in changes to our Solutions and Services. Further, we bear potential financial risks where we are alleged to have not appropriately complied with these regulations. We also bear financial risk where we have entered into agreements with clients to warrant their ability to meet future federal program requirements that require use of CEHRT. While a client's ability to meet future federal health program related attestation requirements may be dependent on the client's ability to adopt, rollout and attain sufficient use of our certified Solutions and Services on a timely basis, we may face risks that come from issues in full adoption of our certified Solutions and Services, which in turn could lead to a client missing its attestation targets. These risks are enhanced when we are under agreements to provide application management services to our clients that place responsibilities on us for application configuration and implementation as a prerequisite to meaningful use attainment ordinarily borne by the client.

Risks Related to Our Common Stock

Our quarterly operating results may vary, which could adversely affect our stock price. Our quarterly operating results have varied in the past and may continue to vary in future periods, including variations from guidance, expectations or historical results or trends. Quarterly operating results may vary for a number of reasons including demand for our Solutions and Services, the financial condition of our current and potential clients, our long sales cycle, potentially long installation and implementation cycles for larger, more complex systems, accounting policy changes and other factors described in this section and elsewhere in this report. As a result of health care industry trends and the market for our Solutions and Services, a large percentage of our revenues are generated by the sale and installation of larger, more complex and higher-priced systems. The sales process for these systems is lengthy and involves a significant technical evaluation and commitment of capital and other resources by the client. Sales may be subject to delays due to changes in clients' internal budgets, procedures for approving large capital expenditures, competing needs for other capital expenditures, additions or amendments to applicable laws, availability of personnel resources or by actions taken by competitors. Delays in the expected sale, installation or implementation of these large systems may have a significant negative impact on our anticipated quarterly revenues and consequently our earnings, since a significant percentage of our expenses are relatively fixed. Because of the complexity and value of our contracts, the loss of even a small number of clients could have a significant negative effect on our financial results.

Revenue recognized in any quarter may depend upon our or our clients' abilities to meet project milestones. Delays in meeting these milestone conditions or modification of the project plan could result in a shift of revenue recognition from one quarter to another and could have a material adverse effect on results of operations for a particular quarter. We may also experience seasonality in revenues. For example, our revenues historically have been lower in the first quarter of the year and greater in the fourth quarter of the year, primarily as a result of clients' year-end efforts to make final capital expenditures for the then-current year. These seasonal variations may lead to fluctuations in our annual and quarterly revenues and operating results.

Our sales forecasts may vary from actual sales in a particular quarter. We use a "pipeline" system, a common industry practice, to forecast sales and trends in our business. Our sales associates monitor the status of all sales opportunities, such as the date when they estimate that a client will make a purchase decision and the potential dollar amount of the sale. These estimates are aggregated periodically to generate a sales pipeline. We compare this pipeline at various points in time to evaluate trends in our business. This analysis provides guidance in business planning and forecasting, but these pipeline estimates are by their nature speculative. Our pipeline estimates are not necessarily reliable predictors of revenues in a particular quarter or over a longer period of time, partially because of changes in the pipeline and in conversion rates of the pipeline into contracts that can be very difficult to estimate. A negative variation in the expected conversion rate or timing of the pipeline into contracts, or in the pipeline itself, could cause our plan or forecast to be inaccurate and thereby adversely affect business results. For example, a slowdown in information technology spending, adverse economic conditions, new or changed laws related to our industry or a variety of other factors can cause purchasing decisions to be delayed, reduced in amount or cancelled, which would reduce the overall pipeline conversion rate in a particular period of time. Because a substantial portion of our contracts are completed in the latter part of a quarter, we may not be able to adjust our cost structure quickly enough in response to a revenue shortfall resulting from a decrease in our pipeline conversion rate in any given fiscal quarter.

The trading price of our common stock may be volatile. The market for our common stock may experience significant price and volume fluctuations in response to a number of factors including actual or anticipated variations in operating results, articles or rumors about our performance or Solutions and Services, announcements of technological innovations or new services or products by our competitors or us, changes in expectations of future financial performance or estimates of securities analysts, governmental regulatory action, health care reform measures, client relationship developments, economic conditions and other factors, many of which are beyond our control. Furthermore, the stock market in general, and the markets for software, health care devices, other health care solutions and services and information technology companies in particular have experienced extreme volatility that often has been unrelated to the operating performance of particular companies. These broad market and industry fluctuations may adversely affect the trading price of our common stock, regardless of actual operating performance. As a matter of policy, we do not generally comment on our stock price or rumors.

We might not be successful in achieving expected operating efficiencies and sustaining or improving operating expense reductions, and might experience business disruptions and adverse tax consequences associated with restructuring, realignment and costs reduction activities. Our Board of Directors has implemented and plans to continue to implement several restructuring and realignment initiatives to reduce costs and increase operating efficiencies. There can be no assurance that we will realize, in full or in part, the anticipated benefits of these initiatives. For example, as part of our ongoing portfolio management, we may decide to divest assets or businesses. When we decide to sell assets or a business, we may encounter difficulty in finding buyers or alternative exit strategies on acceptable terms in a timely manner, which could delay the achievement of our strategic objectives. We may also experience greater dis-synergies than expected, and the impact of the divestiture on our revenue growth could be larger than projected.

Our financial goals assume a level of productivity improvement and cost reduction. If we are unable to deliver on these goals, while continuing to invest in business growth, or if the volume and nature of change overwhelms available resources, our business operations and financial results could be materially and adversely impacted. Our ability to successfully manage and execute these initiatives and realize expected savings and benefits in the amounts and at the times anticipated is important to our business success. Any failure to do so, which could result from our inability to successfully execute organizational change, cost-cutting initiatives and productivity improvement plans, changes in global or regional economic conditions, competition, changes in the industries in which we compete, unanticipated costs or charges, inability to attract or retain key personnel, attrition beyond any planned reduction in workforce, and other factors described herein, could have a material adverse effect on our businesses, financial condition and results of operations. Moreover, our ability to achieve our other strategic goals and business plans might be adversely affected and we could experience business disruptions with clients and elsewhere if our restructuring and realignment efforts and our cost reduction activities prove ineffective.

Lower than expected revenue growth or shifts in our revenue mix could adversely affect our results of operations.
Our revenue growth and mix could vary over time due to a number of factors, including timing of contracts signing, changes in the health of our end markets, unexpected client attrition, and the mix of software, hardware, devices, maintenance, support and services revenues, which carry different margin rates which can vary from period to period. Our operating results could be harmed by changes in revenue mix and costs, together with numerous other factors, including rapid growth in lower margin services business, declines in software, and growth in non-cash expenses, such as amortization and depreciation. Any one of these factors or the cumulative effects of certain of these factors may result in significant fluctuations in our results of operations. This variability and unpredictability could result in our failure to meet internal expectations or those of securities analysts or investors for a particular period. If we fail to meet or exceed such expectations for these or any other reasons, the market price of our shares could decline.

We cannot guarantee that our capital allocation strategy, which may include share repurchases and dividend payments, will be fully implemented or that it will enhance long-term shareholder value. In fiscal year 2019, our Board of Directors approved an amendment to our stock repurchase program, increasing the total authorized purchase program to $3.70 billion, in the aggregate. As of December 28, 2019, the total available for repurchase under the amended program was $1.68 billion. The repurchase program does not have an expiration date and we are not obligated to repurchase a specified number or dollar value of shares. Additionally, during fiscal year 2019, we commenced a quarterly cash dividend program. While we expect to pay a cash dividend on a quarterly basis, future declarations of such quarterly cash dividends are subject to approval by the Board of Directors and the Board of Directors' determination that the declaration of dividends are in the best interests of Cerner and its shareholders. Either or both of our repurchase or dividend programs may be suspended or terminated at any time and, even if fully implemented, may not enhance long-term shareholder value.

Our business could be negatively affected as a result of any future proxy fight or the actions of activist shareholders. Proxy contests or related activist activities could adversely affect our business for a number of reasons, including, but not limited to, the fact that responding to proxy contests and other actions by activist shareholders can be costly and time-consuming and can create perceived uncertainties as to our future direction and governance that may result in the loss of potential business opportunities and may make it more difficult to attract and retain qualified personnel, business partners, customers and others important to our success. Any future proxy contest or activist activities could also cause our stock price to experience periods of volatility. Further, if a proxy contest or a related settlement results in a change in the composition of our Board of Directors it could, in certain circumstances, give third parties certain rights under our existing contractual obligations, which could adversely affect our business.

Our Directors have authority to issue preferred stock and our corporate governance documents contain anti-takeover provisions. Our Board of Directors has the authority to issue up to 1,000,000 shares of preferred stock and to determine the preferences, rights and privileges of those shares without any further vote or action by the shareholders. The rights of the holders of common stock may be harmed by rights granted to the holders of any preferred stock that may be issued in the future and issuances of preferred stock could be used to delay or hinder a change of control of the Company.

In addition, some provisions of our Certificate of Incorporation and Bylaws could make it more difficult for a potential acquirer to acquire a majority of our outstanding voting stock or otherwise effect a change of control of the Company. These include provisions that provide for a classified board of directors, require advance notice of stockholder proposals at stockholder meetings, prohibit shareholders from taking action by written consent and restrict the ability of shareholders to call special meetings. We are also subject to provisions of Delaware law that prohibit us from engaging in any business combination with any interested shareholder for a period of three years from the date the person became an interested shareholder, unless certain conditions are met, which could have the effect of delaying or preventing a change of control.

Risks Relating to Forward-looking Statements

Statements made in this report, the annual report to shareholders of which this report is made a part, other reports and proxy statements filed with the SEC, communications to shareholders, press releases and oral statements made by representatives of the Company that are not historical in nature, or that state the Company's or management's intentions, hopes, beliefs, expectations, plans, goals or predictions of future events or performance, may constitute "forward-looking statements" within the meaning of Section 27A of the Securities Act of 1933, as amended, and Section 21E of the Securities Exchange Act of 1934, as amended (the "Exchange Act"). Forward-looking statements can often be identified by the use of forward-looking terminology, such as "could," "can," "should," "will," "intended," "continue," "believe," "may," "expect," "hope," "anticipate," "goal," "forecast," "plan," "guidance," "opportunity," "prospects" or "estimate" or the negative of these words, variations thereof or similar expressions. Forward-looking statements are not guarantees of future performance or results. They involve risks, uncertainties and assumptions. It is important to note that any such performance and actual results, financial condition or business, could differ materially from those expressed in such forward-looking statements. Factors that could cause or contribute to such differences include, but are not limited to, those discussed in this Item 1A. Risk Factors and elsewhere herein or in other reports filed with the SEC. Other unforeseen factors not identified herein could also have such an effect. Any forward-looking statements made in this report speak only as of the date of this report. Except as required by law, we undertake no obligation to update or revise forward-looking statements to reflect changed assumptions, the occurrence of unanticipated events or changes in our business, results of operations, financial condition or business over time.

Market and Industry Data

This annual report on Form 10-K may contain market, industry and government data and forecasts that have been obtained from publicly available information, various industry publications and other published industry sources. We have not independently verified the information and cannot make any representation as to the accuracy or completeness of such information. None of the reports and other materials of third party sources referred to in this annual report on Form 10-K were prepared for use in, or in connection with, this annual report.

Item 1B. Unresolved Staff Comments.

None

Item 2. Properties.

As of the end of 2019, we owned approximately 6.0 million gross square feet of real estate located in the greater Kansas City metro area and Malvern, Pennsylvania. Such property primarily consists of office space, data center, and warehouse facilities used primarily by our Domestic segment.

As of the end of 2019, we also leased approximately 334 thousand gross square feet of office space in the U.S. used by our Domestic segment, and approximately 1.5 million gross square feet of office and data center space outside the U.S., primarily in Australia, Canada, Europe, India, and the Middle East, which is used by our International segment.

In general, we believe our facilities are suitable to meet our current and reasonably anticipated future needs.

Item 3. Legal Proceedings.

From time to time, we are involved in litigation which is incidental to our business. See Note (12) of the notes to consolidated financial statements included under Part II, in Item 8 of this annual report on Form 10-K for information regarding our dispute with Fujitsu Services Limited. In our opinion, no litigation to which we are currently a party is likely to have a material adverse effect on our consolidated financial condition, results of operations, or cash flows.

Item 4. Mine Safety Disclosures.

Not applicable.

Part II.

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

Our common stock trades on the Nasdaq Global Select Market [SM] under the symbol CERN. The following table sets forth the high, low and last sales prices for the fiscal quarters of 2019 and 2018 as reported by the *Nasdaq Global Select Market*.

	2019			2018		
	High	**Low**	**Last**	**High**	**Low**	**Last**
First Quarter	$ 59.19	$ 50.51	$ 57.21	$ 73.43	$ 56.49	$ 58.00
Second Quarter	73.36	56.52	73.30	63.22	52.05	59.79
Third Quarter	76.47	65.86	68.37	67.57	59.49	64.41
Fourth Quarter	74.10	65.02	73.28	65.44	48.78	52.01

At January 28, 2020, there were approximately 930 owners of record.

In 2019, our Board of Directors declared three separate cash dividends of $0.18 per share on our issued and outstanding common stock. Subject to declaration by our Board of Directors, we expect to continue paying quarterly cash dividends as a part of our current capital allocation strategy. Future dividends will be subject to the determination, declaration and discretion of our Board of Directors and compliance with covenants under our outstanding debt agreements. Refer to Note (16) of the notes to consolidated financial statements for further information regarding our dividend program.

The table below provides information with respect to Common Stock purchases by the Company during the fourth fiscal quarter of 2019:

Period	**Total Number of Shares Purchased (a)**	**Average Price Paid per Share**	**Total Number of Shares Purchased as Part of Publicly Announced Plans or Programs (b)**	**Approximate Dollar Value of Shares That May Yet Be Purchased Under the Plans or Programs (b)**
September 29, 2019 - October 26, 2019	—	$ —	—	$ 483,460,421
October 27, 2019 - November 23, 2019	4,440,632	67.54	4,440,549	183,549,247
November 24, 2019 - December 28, 2019	—	—	—	1,683,549,247
Total	4,440,632	$ 67.54	4,440,549	

(a) Of the 4,440,632 shares of common stock, par value $0.01 per share, presented in the table above, 83 shares were originally granted to employees as restricted stock pursuant to our 2011 Omnibus Equity Incentive Plan (the "Omnibus Plan"). The Omnibus Plan allows for the withholding of shares to satisfy tax obligations due upon the vesting of restricted stock. Pursuant to the Omnibus Plan, the 83 shares reflected above were relinquished by employees in exchange for our agreement to pay U.S. federal and state withholding obligations resulting from the vesting of the Company's restricted stock.

(b) Under our current share repurchase program, which was initially approved by our Board of Directors on May 23, 2017 (and announced May 25, 2017) and most recently amended on December 12, 2019 (as announced on December 13, 2019), the Company is authorized to repurchase up to $3.70 billion of shares of our common stock, excluding transaction costs. The repurchases are to be effectuated in the open market, by block purchase, in privately negotiated transactions, or through other transactions managed by broker-dealers. No time limit was set for the completion of the program. During 2019, we repurchased 18.8 million shares for total consideration of $1.30 billion under the program pursuant to Rule 10b5-1 plans. As of December 28, 2019, $1.68 billion remains available for repurchase under the program. Refer to Note (16) of the notes to consolidated financial statements for further information regarding our share repurchase program.

See Part III, Item 12 for information relating to securities authorized for issuance under our equity compensation plans.

Item 6. Selected Financial Data.

(In thousands, except per share data)	2019[1]	2018[2]	2017[3]	2016	2015[4]
Statement of Operations Data:					
Revenues	$ 5,692,598	$ 5,366,325	$ 5,142,272	$ 4,796,473	$ 4,425,267
Operating earnings	600,669	774,785	960,471	911,013	781,136
Earnings before income taxes	654,512	800,851	967,129	918,434	781,380
Net earnings	529,454	630,059	866,978	636,484	539,362
Earnings per share:					
Basic	1.66	1.91	2.62	1.88	1.57
Diluted	1.65	1.89	2.57	1.85	1.54
Weighted average shares outstanding:					
Basic	318,229	330,084	331,373	337,740	343,178
Diluted	321,235	333,572	337,999	343,653	350,908
Balance Sheet Data:					
Working capital	$ 1,069,176	$ 1,356,114	$ 1,590,632	$ 773,960	$ 1,049,967
Total assets	6,894,622	6,708,636	6,469,311	5,629,963	5,561,984
Long-term debt, excluding current installments	1,038,382	438,802	515,130	537,552	563,353
Shareholders' equity	4,317,328	4,928,389	4,785,348	3,927,947	3,870,384

(1) In 2019, we adopted new lease accounting guidance as further discussed in Note (6) of the notes to consolidated financial statements.

(2) In 2018, we adopted new revenue recognition guidance as further discussed in Note (2) of the notes to consolidated financial statements.

(3) Includes the impact of certain U.S. income tax reform, as further described in Note (14) of the notes to consolidated financial statements.

(4) In 2015, we acquired our Health Services business from Siemens AG.

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

The following Management Discussion and Analysis ("MD&A") is intended to help the reader understand our results of operations and financial condition. This MD&A is provided as a supplement to, and should be read in conjunction with, our financial statements and the accompanying notes to the financial statements.

All references to years in this MD&A represent fiscal years unless otherwise noted. Refer to Note (1) of the notes to consolidated financial statements for information regarding our fiscal year end.

Information regarding our 2017 results of operations, including a year-to-year comparison against 2018, may be found in Item 7. Management's Discussion and Analysis of Financial Condition and Results of Operations in our annual report on Form 10-K for the period ended December 29, 2018, which was filed with the Securities and Exchange Commission on February 8, 2019.

Management Overview

Our revenues are primarily derived by selling, implementing, operating and supporting software solutions, clinical content, hardware, devices and services that give health care providers and other stakeholders secure access to clinical, administrative and financial data in real or near-real time, helping them to improve quality, safety and efficiency in the delivery of health care.

Our core strategy is to create organic growth by investing in research and development ("R&D") to create solutions and tech-enabled services for the health care industry. We may also supplement organic growth with acquisitions or strategic investments.

Cerner's long history of growth has created an important strategic footprint in health care, with Cerner holding more than 25 percent market share in the U.S. acute care EHR market and a leading market share in several non-U.S. regions. Foundational to our growth going forward is delivering value to this core client base, including executing effectively on our large U.S. federal contracts and cross-selling key solutions and services in areas such as revenue cycle. We are also investing in platform modernization, with a focus on delivering a software as a service platform that we expect to lower total cost of ownership, improve clinician experience and patient outcomes, and enable clients to accelerate adoption of new functionality and better leverage third-party innovations.

We also expect to continue driving growth by leveraging our *HealtheIntent* platform, which is the foundation for established and new offerings for both provider and non-provider markets. The EHR-agnostic *HealtheIntent* platform enables Cerner to become a strategic partner with health care stakeholders and help them improve performance under value-based contracting. The platform, along with our *CareAware* platform, also supports offerings in areas such long-term care, home care and hospice, rehabilitation, behavioral health, community care, care team communications, health systems operations, consumer and employer, and data-as-a-service.

Beyond our strategy for driving revenue growth, we are also focused on earnings growth. After several years of margin compression related to slowing revenue growth, increased mix of low-margin services, and lower software demand due to the end of direct government incentives for EHR adoptions, Cerner implemented a new operating structure and introduced other initiatives focused on cost optimization and process improvement in 2019. To assist in these efforts, we engaged an outside consulting firm to conduct a review of our operations and cost structure. We made good progress in 2019 and expect this progress to be reflected in improved profitability in 2020 and beyond. We are focused on ongoing identification of opportunities to operate more efficiently and on achieving the efficiencies without impacting the quality of our solutions and services and commitments to our clients.

We are also focused on delivering strong levels of cash flow which we expect to accomplish by continuing to grow earnings and prudently managing capital expenditures. We expect to use future cash flow and debt, as appropriate, to meet our capital allocation objectives, which include investing in our business, potential acquisitions or other strategic investments to drive profitable growth, and returning capital to shareholders through share repurchases and dividends.

Results Overview

Bookings, which reflects the value of executed contracts for software, hardware, professional services and managed services, was $5.99 billion in 2019, which is a decrease of 11% compared to $6.72 billion in 2018, with the decrease primarily reflecting a more selective approach to low-margin, long-term contracts that typically represent large booking values.

Revenues for 2019 increased 6% to $5.69 billion, compared to $5.37 billion in 2018. The increase in revenue reflects ongoing demand from new and existing clients for Cerner's solutions and tech-enabled services driven by their needs to keep up with regulatory requirements, adapt to changing reimbursement models, and deliver safer and more efficient care.

Net earnings for 2019 decreased 16% to $529 million, compared to $630 million in 2018. Diluted earnings per share decreased 13% to $1.65 in 2019, compared to $1.89 in 2018. The overall decrease in net earnings and diluted earnings per share was primarily a result of increased operating expenses, including expenses incurred in connection with our operational improvement initiatives discussed below, partially offset by increased revenues.

We had cash collections of receivables of $5.79 billion in 2019, compared to $5.49 billion in 2018. Days sales outstanding was 72 days for the 2019 fourth quarter, compared to 74 days for the 2019 third quarter and 79 days for the 2018 fourth quarter. Operating cash flows for 2019 were $1.31 billion, compared to $1.45 billion in 2018.

Operational Improvement Initiatives

We transitioned to a new operating structure in the first quarter of 2019. The Company has been focused on leveraging the impact of this reorganization and identifying additional efficiencies. Currently, we are focused on reducing operating expenses and generating other efficiencies that are expected to provide longer-term operating margin expansion. We are also considering exiting certain low-margin businesses and being more selective as we consider new business opportunities. To assist in these efforts, we have engaged an outside consulting firm to conduct a review of our operations and cost structure. We are focused on ongoing identification of opportunities to operate more efficiently and on achieving the efficiencies without impacting the quality of our solutions and services and commitments to our clients.

In the near term, we expect to incur expenses in connection with these efforts. Such expenses may include, but are not limited to, consultant and other professional services fees, employee separation costs, contract termination costs, and other such related expenses. We recognized $221 million of expenses related to these efforts in 2019, which are included in operating expenses in our consolidated statements of operations and discussed further below. We expect to incur additional expenses in connection with these initiatives in future periods, which may be material.

Health Care Information Technology Market Outlook

We have provided an assessment of the health care information technology market under "Health Care and Health Care IT Industry" in Part I, Item 1 "Business," which is incorporated herein by reference.

Results of Operations

Fiscal Year 2019 Compared to Fiscal Year 2018

(In thousands)	2019	*% of Revenue*	2018	*% of Revenue*	% Change
Revenues	$ 5,692,598	100%	$ 5,366,325	100%	6 %
Costs of revenue	1,071,041	19%	937,348	17%	14 %
Margin	4,621,557	81%	4,428,977	83%	4 %
Operating expenses					
Sales and client service	2,675,337	47%	2,493,696	46%	7 %
Software development	737,136	13%	683,663	13%	8 %
General and administrative	520,598	9%	389,469	7%	34 %
Amortization of acquisition-related intangibles	87,817	2%	87,364	2%	1 %
Total operating expenses	4,020,888	71%	3,654,192	68%	10 %
Total costs and expenses	5,091,929	89%	4,591,540	86%	11 %
Operating earnings	600,669	11%	774,785	14%	(22)%
Other income, net	53,843		26,066		
Income taxes	(125,058)		(170,792)		
Net earnings	$ 529,454		$ 630,059		(16)%

Revenues & Backlog

Revenues increased 6% to $5.69 billion in 2019, as compared to $5.37 billion in 2018. This increase was primarily driven by a $181 million increase in professional services revenue due to growth in implementation activity; growth in licensed software revenue of $67 million as a result of continued demand for our solutions; and growth in managed services revenue of $59 million as a result of increased hosting services. Refer to Note (2) of the notes to consolidated financial statements for further information regarding revenues disaggregated by our business models.

Backlog, which reflects contracted revenue that has not yet been recognized as revenue, was $13.71 billion at the end of 2019, compared to $15.25 billion at the end of 2018. This decrease was primarily driven by the termination of certain client contracts, discussed further below. We expect to recognize 30% of our backlog as revenue over the next 12 months.

We believe that backlog may not necessarily be a comprehensive indicator of future revenue as certain of our arrangements may be canceled (or conversely renewed) at our clients' option; thus contract consideration related to such cancellable periods has been excluded from our calculation of backlog. However, historically our experience has been that such cancellation provisions are rarely exercised. We expect to recognize $760 million of revenue over the next 12 months under currently executed contracts related to such cancellable periods, which is not included in our calculation of backlog.

Costs of Revenue

Costs of revenue as a percent of revenues were 19% in 2019, compared to 17% in 2018. The higher costs of revenue as a percent of revenues was primarily driven by higher third-party costs associated with professional services revenue.

Costs of revenue include the cost of reimbursed travel expense, sales commissions, third party consulting services and subscription content and computer hardware, devices and sublicensed software purchased from manufacturers for delivery to clients. It also includes the cost of hardware maintenance and sublicensed software support subcontracted to the manufacturers. Such costs, as a percent of revenues, typically have varied as the mix of revenue (software, hardware, devices, maintenance, support, and services) carrying different margin rates changes from period to period. Costs of revenue does not include the costs of our client service personnel who are responsible for delivering our service offerings. Such costs are included in sales and client service expense.

Operating Expenses

Total operating expenses increased 10% to $4.02 billion in 2019, compared to $3.65 billion in 2018.

- Sales and client service expenses as a percent of revenues were 47% in 2019, compared to 46% in 2018. These expenses increased 7% to $2.68 billion in 2019, from $2.49 billion in 2018. Sales and client service expenses include salaries and benefits of sales, marketing, support, and services personnel, depreciation and other expenses associated with our managed services business, communications expenses, unreimbursed travel expenses, expense for share-based payments, and trade show and advertising costs. The increase in sales and client service expenses was primarily driven by a $72 million increase in personnel expenses, inclusive of higher associate benefits costs; a $16 million increase in bad debt expense related to client receivables; $66 million of charges recognized in 2019 in connection with the termination of certain client contracts prior to the end of their stated terms; and a $30 million charge in connection with a client dispute recognized in 2019. We expect the termination of such client contracts to reduce future revenues by approximately $170 million on an annualized basis. We do not expect a significant impact to future operating earnings, as the terminated contacts related to lower margin business. Refer to Note (12) of the notes to consolidated financial statements for further information regarding the client dispute. The 2018 amount includes a pre-tax charge of $45 million to provide an allowance against certain client receivables with Fujitsu Services Limited ("Fujitsu"), as further discussed in Note (12) of the notes to consolidated financial statements.
- Software development expenses as a percent of revenues were 13% in both 2019 and 2018. Expenditures for software development include ongoing development and enhancement of the *Cerner Millennium* and *HealtheIntent* platforms, with a focus on supporting key initiatives to enhance physician experience, revenue cycle, population health management, and health network solutions. In addition, 2019 includes costs incurred in connection with our efforts to modernize our platforms, with a focus on development of a software as a service platform. A summary of our total software development expense in 2019 and 2018 is as follows:

	For the Years Ended	
(In thousands)	2019	2018
Software development costs	$ 783,593	$ 747,128
Capitalized software costs	(270,948)	(271,787)
Capitalized costs related to share-based payments	(2,923)	(1,906)
Amortization of capitalized software costs	227,414	210,228
Total software development expense	$ 737,136	$ 683,663

- General and administrative expenses as a percent of revenues were 9% in 2019, compared to 7% in 2018. These expenses increased 34% to $521 million in 2019, from $389 million in 2018. General and administrative expenses include salaries and benefits for corporate, financial and administrative staffs, utilities, communications expenses, professional fees, depreciation and amortization, transaction gains or losses on foreign currency, expense for share-based payments, certain organizational restructuring and other expense. The increase in general and administrative expenses is primarily driven by expenses incurred in 2019 in connection with our operational improvement initiatives discussed above; inclusive of $86 million of charges associated with employee separation benefits, as further discussed in Note (1) of the notes to consolidated financial statements. We expect to incur additional expenses in connection with these efforts in future periods, which may be material.
- Amortization of acquisition-related intangibles as a percent of revenues was 2% in both 2019 and 2018. These expenses increased 1% to $88 million in 2019, from $87 million in 2018. Amortization of acquisition-related intangibles includes the amortization of customer relationships, acquired technology, trade names, and non-compete agreements recorded in connection with our business acquisitions. The increase in amortization of acquisition-related intangibles includes the impact of intangibles recognized in connection with our acquisition of AbleVets, LLC ("AbleVets") in 2019. Refer to Note (8) of the notes to consolidated financial statements for further information regarding our acquisition of AbleVets.

Non-Operating Items

- Other income, net was $54 million in 2019, compared to $26 million in 2018. The 2019 period includes a $16 million gain recognized on the disposition of one of our equity investments and a $14 million unrealized gain recognized on another one of our equity investments. Refer to Note (13) of the notes to consolidated financial statements for further information regarding the components of other income, net.

- Our effective tax rate was 19% in 2019, compared to 21% in 2018. The decrease in the effective tax rate in 2019 is primarily due to increased excess tax benefits recognized as a component of income tax expense due to elevated stock option exercise activity. Refer to Note (14) of the notes to consolidated financial statements for further information regarding our effective tax rate. We do not expect significant changes to our overall effective tax rate in 2020, from what is reported for 2019.

Operations by Segment

We have two operating segments: Domestic and International (formerly referred to as Global). The Domestic segment includes revenue contributions and expenditures associated with business activity in the United States. The International segment includes revenue contributions and expenditures linked to business activity outside the United States, primarily from Australia, Canada, Europe, and the Middle East. Refer to Note (19) of the notes to consolidated financial statements for further information regarding our reportable segments.

The following table presents a summary of our operating segment information for the years ended 2019 and 2018:

(In thousands)	2019	*% of Segment Revenue*	2018	*% of Segment Revenue*	% Change
Domestic Segment					
Revenues	$ 5,038,127	100%	$ 4,730,266	100%	7%
Costs of revenue	967,035	19%	827,904	18%	17%
Operating expenses	2,398,422	48%	2,164,465	46%	11%
Total costs and expenses	3,365,457	67%	2,992,369	63%	12%
Domestic operating earnings	1,672,670	33%	1,737,897	37%	(4)%
International Segment					
Revenues	654,471	100%	636,059	100%	3%
Costs of revenue	104,006	16%	109,444	17%	(5)%
Operating expenses	276,914	42%	321,116	50%	(14)%
Total costs and expenses	380,920	58%	430,560	68%	(12)%
International operating earnings	273,551	42%	205,499	32%	33%
Other, net	(1,345,552)		(1,168,611)		15%
Consolidated operating earnings	$ 600,669		$ 774,785		(22)%

Domestic Segment

- Revenues increased 7% to $5.04 billion in 2019, from $4.73 billion in 2018. This increase was primarily driven by a $186 million increase in professional services revenue due to growth in implementation activity; growth in licensed software revenue of $56 million as a result of continued demand for our solutions; and growth in managed services revenue of $39 million as a result of increased hosting services. Refer to Note (2) of the notes to consolidated financial statements for further information regarding revenues disaggregated by our business models.
- Costs of revenue as a percent of revenues were 19% in 2019, compared to 18% in 2018. The higher costs of revenue as a percent of revenues was primarily driven by higher third-party costs associated with professional services revenue.
- Operating expenses as a percent of revenues were 48% in 2019, compared to 46% in 2018. The higher operating expenses as a percent of revenues was primarily driven by $66 million of charges in connection with client contract terminations and the $30 million charge in connection with a client dispute, both recognized in 2019 and discussed above.

International Segment

- Revenues increased 3% to $654 million in 2019, from $636 million in 2018. This increase was primarily driven by a $20 million increase in managed services revenue due to increased hosting services and growth in licensed software revenue of $11 million as a result of continued demand for our solutions; partially offset by a $15 million decrease in technology resale revenues. Refer to Note (2) of the notes to consolidated financial statements for further information regarding revenues disaggregated by our business models.
- Costs of revenue as a percent of revenues were 16% in 2019, compared to 17% in 2018. The lower costs of revenue as a percent of revenues was primarily driven by a lower mix of technology resale revenue, which carries a higher cost of revenue.
- Operating expenses as a percent of revenues were 42% in 2019, compared to 50% in 2018. The decrease as a percent of revenues is primarily due to a pre-tax charge of $45 million in 2018 to provide an allowance against certain client receivables with Fujitsu, as further discussed in Note (12) of the notes to consolidated financial statements.

Other, net

Operating results not attributed to an operating segment include expenses such as software development, general and administrative expenses, share-based compensation expense, certain amortization and depreciation, certain organizational restructuring and other expense. These expenses increased 15% to $1.35 billion in 2019, from $1.17 billion in 2018. The increase is primarily due to expenses incurred in 2019 in connection with our operational improvement initiatives discussed above; inclusive of $86 million of charges associated with employee separation benefits, as further discussed in Note (1) of the notes to consolidated financial statements.

The effects of inflation on our business during 2019 and 2018 were not significant.

Liquidity and Capital Resources

Our liquidity is influenced by many factors, including the amount and timing of our revenues, our cash collections from our clients and the amount we invest in software development, acquisitions, capital expenditures, and our share repurchase and dividend programs.

Our principal sources of liquidity are our cash, cash equivalents, which primarily consist of money market funds and time deposits with original maturities of less than 90 days, short-term investments, and borrowings under our Credit Agreement. At the end of 2019, we had cash and cash equivalents of $442 million and short-term investments of $100 million, as compared to cash and cash equivalents of $374 million and short-term investments of $401 million at the end of 2018.

We have entered into a Credit Agreement with a syndicate of lenders that provides for an unsecured $1.00 billion revolving credit loan facility, along with a letter of credit facility up to $100 million (which is a sub-facility of the $1.00 billion revolving credit loan facility). We have the ability to increase the maximum capacity to $1.20 billion at any time during the Credit Agreement's term, subject to lender participation and the satisfaction of specified conditions. The Credit Agreement expires in May 2024. As of the end of 2019, we had outstanding revolving credit loans and letters of credit of $600 million and $30 million, respectively; which reduced our available borrowing capacity to $370 million under the Credit Agreement. Refer to Note (10) of the notes to consolidated financial statements for additional information regarding our Credit Agreement and other sources of debt financing.

We believe that our present cash position, together with cash generated from operations, short-term investments and, as appropriate, remaining availability under our Credit Agreement and other sources of debt financing, will be sufficient to meet anticipated cash requirements during 2020.

The following table summarizes our cash flows in 2019 and 2018:

	For the Years Ended	
(In thousands)	**2019**	**2018**
Cash flows from operating activities	$ 1,313,099	$ 1,454,009
Cash flows from investing activities	(640,408)	(828,937)
Cash flows from financing activities	(601,380)	(609,787)
Effect of exchange rate changes on cash	(3,594)	(12,082)
Total change in cash and cash equivalents	67,717	3,203
Cash and cash equivalents at beginning of period	374,126	370,923
Cash and cash equivalents at end of period	$ 441,843	$ 374,126
Free cash flow (non-GAAP)	$ 567,710	$ 733,388

Cash from Operating Activities

	For the Years Ended	
(In thousands)	**2019**	**2018**
Cash collections from clients	$ 5,787,180	$ 5,486,654
Cash paid to employees and suppliers and other	(4,348,438)	(4,032,498)
Cash paid for interest	(25,639)	(15,707)
Cash paid for taxes, net of refunds	(100,004)	15,560
Total cash from operations	$ 1,313,099	$ 1,454,009

Cash flows from operations decreased $141 million in 2019 compared to 2018, due primarily to net refunds of taxes in 2018 along with cash payments in 2019 associated with our operational improvement initiatives discussed above. Days sales outstanding was 72 days in the fourth quarter of 2019, compared to 74 days for the third quarter of 2019 and 79 days for the fourth quarter of 2018.

Cash from Investing Activities

(In thousands)	For the Years Ended 2019	2018
Capital purchases	$ (471,518)	$ (446,928)
Capitalized software development costs	(273,871)	(273,693)
Sales and maturities of investments, net of purchases	215,107	(71,497)
Purchase of other intangibles	(35,587)	(36,819)
Acquisition of business, net of cash acquired	(74,539)	—
Total cash flows from investing activities	$ (640,408)	$ (828,937)

Cash flows from investing activities consist primarily of capital spending, investment, and acquisition activities.

Our capital spending in 2019 was driven by capitalized equipment purchases primarily to support growth in our managed services business, investments in a cloud infrastructure to support cloud-based solutions, building and improvement purchases to support our facilities requirements and capitalized spending to support our ongoing software development initiatives. Total capital spending in 2019 exceeded 2018 levels, primarily driven by spending to support our facilities requirements, including the continued construction of our Innovations Campus (office space development located in Kansas City, Missouri). Capital purchases are expected to decrease in 2020, primarily driven by the expected completion of construction on the current phases of our Innovations Campus in the first half of 2020.

Short-term investment activity historically consists of the investment of cash generated by our business in excess of what is necessary to fund operations. The 2019 and 2018 activity is impacted by excess cash being used to execute on our capital allocation strategy, including the share repurchases and cash dividends discussed below. Additionally, our investment mix has changed such that our funds are more heavily held in cash and cash equivalents versus short-term and long-term investments, primarily due to interest rates currently available on cash deposits.

On July 27, 2018, we acquired a minority interest in Essence Group Holdings Corporation for cash consideration of $266 million. Refer to Note (4) of the notes to consolidated financial statements for further information regarding this investment.

In October 2019, we acquired all of the issued and outstanding membership interests of AbleVets, LLC, a Virginia limited liability company ("AbleVets"). AbleVets is a health IT engineering and consulting company specializing in cybersecurity, cloud and system development solutions for federal organizations. Consideration for the acquisition was cash of $75 million. Refer to Note (8) of the notes to consolidated financial statements for further information regarding this business acquisition.

We expect to continue seeking and completing strategic business acquisitions, investments, and relationships that are complementary to our business.

Cash from Financing Activities

(In thousands)	For the Years Ended 2019	2018
Long-term debt issuance	$ 600,000	$ —
Repayment of long-term debt	—	(75,000)
Cash from option exercises (net of taxes paid in connection with shares surrendered by associates)	241,435	81,476
Treasury stock purchases	(1,320,542)	(623,127)
Dividends paid	(113,823)	—
Other	(8,450)	6,864
Total cash flows from financing activities	$ (601,380)	$ (609,787)

In May 2019, we borrowed $600 million of revolving credit loans under the Credit Agreement. In March 2018, we repaid our $75 million floating rate Series 2015-C Notes due February 15, 2022. Refer to Note (10) of the notes to consolidated financial statements for further information regarding our outstanding indebtedness.

We expect to incur additional indebtedness in the next 12 months, for which the amount and timing is yet to be determined. The proceeds from such indebtedness are expected to be deployed in accordance with our current capital allocation strategy, which may include share repurchases and dividend payments (as discussed further below), as well as for general corporate purposes, including acquisitions and investments. The terms and availability of such debt financing may be impacted by economic and financial market conditions, as well as our financial condition and results of operations at the time we seek such financing, and there can be no assurances that we will be able to obtain such financing on terms that will be acceptable or advantageous to us.

Cash inflows from stock option exercises are dependent on a number of factors, including the price of our common stock, grant activity under our stock option and equity plans, and overall market volatility. We expect net cash inflows from stock option exercises to continue in 2020 based on the number of exercisable options at the end of 2019 and our current stock price. Refer to Note (16) of the notes to consolidated financial statements for additional information regarding our stock option and equity plans.

During 2019 and 2018, we repurchased 18.8 million and 11.2 million shares, respectively, of our common stock for total consideration of $1.30 billion and $644 million, respectively. As of December 28, 2019, $1.68 billion remains available for repurchase under our current repurchase program. We expect to continue to repurchase shares under this program in the next 12 months, but such repurchases will be dependent on a number of factors, including the price of our common stock and other cash flow needs. Although we expect to continue to repurchase shares, there is no assurance that we will repurchase up to the full amount remaining under the program.

In 2019, our Board of Directors declared three separate cash dividends of $0.18 per share on our issued and outstanding common stock. Subject to declaration by our Board of Directors, we expect to continue paying quarterly cash dividends as a part of our current capital allocation strategy. Future dividends will be subject to the determination, declaration and discretion of our Board of Directors and compliance with covenants under our outstanding debt agreements.

The source of funds for such repurchases and dividends may include cash generated from operations, liquidation of investment holdings, and the incurrence of indebtedness. Refer to Note (16) of the notes to consolidated financial statements for further information regarding our share repurchase and dividend programs.

Free Cash Flow (Non-GAAP)

	For the Years Ended	
(In thousands)	**2019**	**2018**
Cash flows from operating activities (GAAP)	$ 1,313,099	$ 1,454,009
Capital purchases	(471,518)	(446,928)
Capitalized software development costs	(273,871)	(273,693)
Free cash flow (non-GAAP)	$ 567,710	$ 733,388

Free cash flow decreased $166 million in 2019, compared to 2018, primarily due to a decrease in cash from operations along with increased capital expenditures. Free cash flow is a non-GAAP financial measure used by management, along with GAAP results, to analyze our earnings quality and overall cash generation of the business, and for management compensation purposes. We define free cash flow as cash flows from operating activities reduced by capital purchases and capitalized software development costs. The table above sets forth a reconciliation of free cash flow to cash flows from operating activities, which we believe is the GAAP financial measure most directly comparable to free cash flow. The presentation of free cash flow is not meant to be considered in isolation, nor as a substitute for, or superior to, GAAP results, and investors should be aware that non-GAAP measures have inherent limitations and should be read only in conjunction with our consolidated financial statements prepared in accordance with GAAP. Free cash flow may also be different from similar non-GAAP financial measures used by other companies and may not be comparable to similarly titled captions of other companies due to potential inconsistencies in the method of calculation. We believe free cash flow is important to enable investors to better understand and evaluate our ongoing operating results and allows for greater transparency in the review and understanding of our overall financial, operational and economic performance, because free cash flow takes into account certain capital expenditures necessary to operate our business.

Contractual Obligations, Commitments and Off Balance Sheet Arrangements

The following table represents a summary of our contractual obligations and commercial commitments at the end of 2019, except short-term purchase order commitments arising in the ordinary course of business.

	Payments Due by Period						
(In thousands)	2020	2021	2022	2023	2024	2025 and thereafter	Total
Balance sheet obligations[(a)]:							
Long-term debt obligations	$ —	$ —	$ 225,000	$ —	$ 600,000	$ 214,162	$ 1,039,162
Interest on long-term debt obligations	28,843	27,927	24,488	21,382	13,262	3,580	119,482
Other obligations:							
Operating lease obligations	33,845	29,604	23,903	16,850	8,250	43,238	155,690
Purchase obligations	151,950	95,933	34,501	37,237	30,462	560,925	911,008
Total	$ 214,638	$ 153,464	$ 307,892	$ 75,469	$ 651,974	$ 821,905	$ 2,225,342

(a) At the end of 2019, liabilities for unrecognized tax benefits were$19 million.

Off-Balance Sheet Arrangements

Refer to Note (10) of the notes to consolidated financial statements for information regarding our interest rate swap agreement, which is accounted for as a cash flow hedge in accordance with ASC Topic 815, *Derivatives and Hedging*. LIBOR is scheduled to be phased out by the end of 2021. When LIBOR ceases to exist, we will need to agree upon a replacement index with the lenders under our Credit Agreement at the time, and such new rates may not be as favorable to us as those in effect prior to any LIBOR phase-out. If the swap and the Credit Agreement replacement rates are not identical, our hedge could be less effective.

Recent Accounting Pronouncements

Refer to Note (1) of the notes to consolidated financial statements for information regarding recently issued accounting pronouncements.

Critical Accounting Policies

We believe that there are several accounting policies that are critical to understanding our historical and future performance, as these policies affect the reported amount of revenue and other significant areas involving our judgments and estimates. These significant accounting policies relate to revenue recognition, software development, and income taxes. These accounting policies and our procedures related to these accounting policies are described in detail below and under specific areas within this MD&A. In addition, Note (1), Note (2), and Note (14) of the notes to consolidated financial statements expands upon discussion of our accounting policies for these areas.

Revenue Recognition

In the first quarter of 2018, we adopted Accounting Standards Update ("ASU") 2014-09, *Revenue from Contracts with Customers (Topic 606).* ASU 2014-09, as amended, replaced most existing revenue recognition guidance in U.S. GAAP. This guidance requires a significant amount of judgments and estimates in implementing its five-step process to be followed in determining the amount and timing of revenue recognition and related disclosures. Refer to Note (2) of the notes to consolidated financial statements for further discussion regarding significant judgments involved in our application of ASU 2014-09.

Software Development Costs

Costs incurred internally in creating computer software solutions and enhancements to those solutions are expensed until completion of a detailed program design, which is when we determine that technological feasibility has been established. Thereafter, all software development costs are capitalized until such time as the software solutions and enhancements are available for general release, and the capitalized costs subsequently are reported at the lower of amortized cost or net realizable value.

Net realizable value is computed as the estimated gross future revenues from each software solution less the amount of estimated future costs of completing and disposing of that product. Because the development of projected net future revenues related to our software solutions used in our net realizable value computation is based on estimates, a significant reduction in our future revenues could impact the recovery of our capitalized software development costs. If we missed our estimates of net future revenues by 10%, the amount of our capitalized software development costs would not be impaired.

Capitalized costs are amortized based on current and expected net future revenue for each software solution with minimum annual amortization equal to the straight-line amortization over the estimated economic life of the software solution. We are amortizing capitalized costs over five years. The five-year period over which capitalized software development costs are amortized is an estimate based upon our forecast of a reasonable useful life for the capitalized costs. Historically, use of our software programs by our clients has exceeded five years and is capable of being used a decade or more.

We expect that major software information systems companies, large information technology consulting service providers and systems integrators and others specializing in the health care industry may offer competitive products or services. The pace of change in the HCIT market is rapid and there are frequent new product introductions, product enhancements and evolving industry standards and requirements. As a result, the capitalized software solutions may become less valuable or obsolete and could be subject to impairment.

Income Taxes
We make a number of assumptions and estimates in determining the appropriate amount of expense to record for income taxes. These assumptions and estimates consider the taxing jurisdictions in which we operate as well as current tax regulations. Accruals are established for estimates of tax effects for certain transactions, business structures and future projected profitability of our businesses based on our interpretation of existing facts and circumstances. If these assumptions and estimates were to change as a result of new evidence or changes in circumstances, the change in estimate could result in a material adjustment to the consolidated financial statements.

We have discussed the development and selection of these critical accounting estimates with the Audit Committee of our Board of Directors and the Audit Committee has reviewed our disclosure contained herein.

Item 7A. Quantitative and Qualitative Disclosures about Market Risk.

We are exposed to interest rate risk, primarily changes in LIBOR, related to outstanding revolving credit loans under our Credit Agreement. As of December 28, 2019, the interest rate on revolving credit loans outstanding was 2.54% based on LIBOR plus the applicable spread. In order to manage this exposure, we have entered into an interest rate swap agreement, to hedge the variability of cash flows associated with such interest obligations through May 2024. The interest rate swap effectively fixes the interest rate on the hedged indebtedness under our Credit Agreement at 3.06%. Refer to Note (10) of the notes to consolidated financial statements for further information regarding outstanding indebtedness and our interest rate swap agreement.

We have global operations, and as a result, we are exposed to market risk related to foreign currency exchange rate fluctuations. Foreign currency fluctuations through December 28, 2019 have not had a material impact on our financial position or operating results. We currently do not use currency hedging instruments, though we actively monitor our exposure to foreign currency fluctuations and may use hedging transactions in the future if management deems it appropriate. We believe most of our global operations are naturally hedged for foreign currency risk as our foreign subsidiaries invoice their clients and satisfy their obligations primarily in their local currencies. There can be no guarantee that the impact of foreign currency fluctuations in the future will not have a material impact on our financial position or operating results.

Item 8. Financial Statements and Supplementary Data.

The Financial Statements and notes to consolidated financial statements required by this Item are submitted as a separate part of this report. See Note (20) to the consolidated financial statements for supplementary financial information.

Item 9. Changes in and Disagreements with Accountants on Accounting and Financial Disclosure.

N/A

Item 9A. Controls and Procedures.

a) Evaluation of Disclosure Controls and Procedures.

We carried out an evaluation, under the supervision and with the participation of our management, including our Chief Executive Officer ("CEO") and Chief Financial Officer ("CFO"), of the effectiveness of our disclosure controls and procedures (as defined in the Exchange Act Rules 13a-15(e) and 15d-15(e)) as of the end of the period covered by this annual report (the "Evaluation Date"). Based upon that evaluation, our CEO and CFO have concluded that, as of the Evaluation Date, our disclosure controls and procedures were designed, and were effective, to provide reasonable assurance that the information required to be disclosed by us in reports we file or submit under the Exchange Act is recorded, processed, summarized and reported within the time period specified in SEC rules and forms and is accumulated and communicated to our management, including our CEO and CFO, to allow timely decisions regarding required disclosure.

b) Management's Report on Internal Control over Financial Reporting.

We are responsible for establishing and maintaining adequate internal control over financial reporting (as defined in Rule 13a-15(f) under the Exchange Act). We assessed the effectiveness of our internal control over financial reporting as of December 28, 2019. In making this assessment, we used the criteria set forth by the Committee of Sponsoring Organizations of the Treadway Commission ("COSO") in its Internal Control-Integrated Framework (2013). Based on this assessment, we have concluded that, as of December 28, 2019, our internal control over financial reporting was effective based on these criteria. Our independent registered public accounting firm that audited the consolidated financial statements included in this annual report has issued an audit report on the effectiveness of our internal control over financial reporting, which is included herein under "Report of Independent Registered Public Accounting Firm".

c) Changes in Internal Control over Financial Reporting.

There were no changes in our internal controls over financial reporting during the fiscal quarter ended December 28, 2019, that have materially affected, or are reasonably likely to materially affect, our internal controls over financial reporting.

d) Limitations on Controls.

We can provide no assurance that our disclosure controls and procedures or our internal control over financial reporting can prevent all errors and all fraud under all circumstances. A control system, no matter how well conceived and operated, can provide only reasonable, not absolute, assurance that the objectives of the control system are met. Further, the design of a control system must reflect the fact that there are resource constraints, and the benefits of controls must be considered relative to their costs. Because of the inherent limitations in all control systems, no evaluation of controls can provide absolute assurance that all control issues and instances of fraud, if any, within the Company have been or will be detected. The design of any system of controls also is based in part upon certain assumptions about the likelihood of future events, and there can be no assurance that any design will succeed in achieving its stated goals under all potential future conditions; over time, controls may become inadequate because of changes in conditions, or the degree of compliance with policies or procedures may deteriorate. Because of the inherent limitations in a cost-effective control system, misstatements due to error or fraud may occur and not be detected.

Item 9B. Other Information.

N/A

PART III.

Item 10. Directors, Executive Officers and Corporate Governance.

The information under "Information Concerning Directors," "Meetings of the Board and Committees," "Corporate Governance: Code of Business Conduct and Ethics," "Consideration of Director Nominees," "Committees of the Board: Audit Committee" and "Certain Transactions" as it relates to family relationships as set forth in the Company's definitive proxy statement related to its 2020 annual meeting of stockholders (the "Proxy Statement"), which will be filed with the SEC not later than 120 days after the end of the Company's fiscal year pursuant to Regulation 14A, is incorporated herein by reference.

There have been no material changes to the procedures by which security holders may recommend nominees to our Board of Directors since our last disclosure thereof in our 2019 proxy statement.

The information required by this Item 10 regarding our Executive Officers is set forth under the caption "Information about our Executive Officers" in Part I above.

Item 11. Executive Compensation.

The information under "Committees of the Board: Compensation Committee," "Director Compensation," " 2019 Director Compensation Table," "Compensation Committee Report," "Compensation Discussion and Analysis," "Summary Compensation Table," " 2019 Grants of Plan-Based Awards," "Outstanding Equity Awards at 2019 Fiscal Year-End," " 2019 Option Exercises and Stock Vested," "Potential Payments Under Termination or Change in Control," "Pay Ratio" and "Compensation Committee Interlocks and Insider Participation" set forth in the Proxy Statement, which will be filed with the SEC not later than 120 days after the end of the Company's fiscal year pursuant to Regulation 14A, is incorporated herein by reference.

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

The following table provides information about our common stock that may be issued under our equity compensation plans as of December 28, 2019:

(In thousands, except per share data)

Plan category	Securities to be issued upon exercise of outstanding options and rights (1)	Weighted average exercise price per share (2)	Securities available for future issuance(3)
Equity compensation plans approved by security holders(4)	18,050	$ 56.36	24,400
Equity compensation plans not approved by security holders	—	—	—
Total	18,050		24,400

(1) Includes grants of stock options, restricted stock and restricted stock units.

(2) Includes weighted-average exercise price of outstanding stock options only.

(3) Excludes securities to be issued upon exercise of outstanding options and rights.

(4) Includes the Stock Option Plan D, Stock Option Plan E, 2001 Long-Term Incentive Plan F, 2004 Long-Term Incentive Plan G and 2011 Omnibus Equity Incentive Plan. All new grants are made under the 2011 Omnibus Equity Incentive Plan, as the previous plans are no longer active.

The information under "Security Ownership of Certain Beneficial Owners and Management" set forth in the Proxy Statement, which will be filed with the SEC not later than 120 days after the end of the Company's fiscal year pursuant to Regulation 14A, is incorporated herein by reference.

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

The information under "Certain Transactions" and "Meetings of the Board and Committees" set forth in the Proxy Statement, which will be filed with the SEC not later than 120 days after the end of the Company's fiscal year pursuant to Regulation 14A, is incorporated herein by reference.

Item 14. Principal Accountant Fees and Services.

The information under "Relationship with Independent Registered Public Accounting Firm" set forth in the Proxy Statement, which will be filed with the SEC not later than 120 days after the end of the Company's fiscal year pursuant to Regulation 14A, is incorporated herein by reference.

PART IV.

Item 15. Exhibits, Financial Statement Schedules.

a) Financial Statements and Exhibits

(1) Consolidated Financial Statements:

(2) Financial Statement Schedules

All schedules are omitted because they are not required or the required information is shown in the financial statements or notes thereto.

b) Exhibits

Exhibit Number	Exhibit Description	Incorporated by Reference Form	Exhibit(s)	Filing Date SEC File No./Film No.	Filed Herewith
3.1	Third Restated Certificate of Incorporation of Cerner Corporation	10-K	3(a)	2/11/2015	
3.2	Amended & Restated Bylaws of Cerner Corporation (effective March 2, 2018)	8-K	3.1	3/6/2018	
4.1	Specimen stock certificate	10-K	4(a)	2/28/2007 000-15386/07658265	
4.2	Description of Company Securities				X
10.1*	2006 Form of Indemnification Agreement for use between the Registrant and its Directors	10-K	10(a)	2/28/2007 000-15386/07658265	
10.2*	2010 Form of Indemnification Agreement for use between the Registrant and its Directors and Section 16 Officers	8-K	99.1	6/3/2010 000-15386/10875957	
10.3*	Executive Employment Agreement between Cerner Corporation and Brent Shafer	10-K	10.3	2/12/2018	
10.4*	Relocation Agreement between Cerner Corporation and Brent Shafer	10-Q	10.2	5/3/2018	
10.5*	Amended & Restated Aircraft Time Sharing Agreement between Cerner Corporation and Brent Shafer	10-Q	10.1	10/26/2018	
10.6*	Amended Employment Agreement between Cerner Corporation and Michael R. Nill	8-K	10.2	9/11/2017	
10.7*	Separation Agreement between Cerner Corporation and Michael R. Nill				X
10.8*	Amended Employment Agreement between Cerner Corporation and Jeffrey A. Townsend	8-K	10.3	9/11/2017	
10.9*	Relocation Agreement between Cerner Corporation and Jeffrey A. Townsend	10-Q	10.10	10/27/2017	
10.10*	Executive Senior Advisor Letter Agreement between Cerner Corporation and Jeffrey A. Townsend				X
10.11*	Amended Employment Agreement between Cerner Corporation and Marc G. Naughton	8-K	10.4	9/11/2017	
10.12*	Amended Employment Agreement between Cerner Corporation and John Peterzalek	10-K	10.13	2/8/2019	
10.13*	Amended Employment Agreement between Cerner Corporation and Donald D. Trigg				X
10.14*	Amended Stock Option Plan D of Registrant dated December 8, 2000	10-K	10(f)	3/30/2001 000-15386/1586224	
10.15*	Amended Stock Option Plan E of Registrant dated December 8, 2000	10-K	10(g)	3/30/2001 000-15386/1586224	

10.16*	Cerner Corporation Associate Equity Participation Program Non-Qualified Stock Option Agreement	10-K	10.16	2/8/2019

10.17*	Cerner Corporation 2004 Long-Term Incentive Plan G (as amended on December 3, 2007)	10-K	10(g)	2/27/2008 000-15386/08646565
10.18*	Cerner Corporation 2004 Long-Term Incentive Plan G Nonqualified Stock Option Grant Certificate	10-K	10(q)	2/27/2008 000-15386/08646565
10.19*	Cerner Corporation 2011 Omnibus Equity Incentive Plan (As Amended and Restated May 22, 2015)	8-K	10.2	5/27/2015
10.20*	Cerner Corporation 2011 Omnibus Equity Incentive Plan (As amended and Restated May 30, 2019)	8-K	10.1	6/3/2019
10.21*	Cerner Corporation 2011 Omnibus Equity Incentive Plan - Director Restricted Stock Agreement	10-Q	10.2	5/6/2016
10.22*	2011 Omnibus Equity Incentive Plan - Form of Director Restricted Stock Agreement	10-Q	10.5	4/26/2019
10.23*	Cerner Corporation 2011 Omnibus Equity Incentive Plan - Performance Based Restricted Stock Agreement	10-K	10(u)	2/8/2013 000-15386/13586825
10.24*	Cerner Corporation 2011 Omnibus Equity Incentive Plan - Performance Based Restricted Stock Agreement	10-Q	10.3	5/6/2016
10.25*	Cerner Corporation 2011 Omnibus Equity Incentive Plan - Performance Based Restricted Stock Agreement	10-Q	10.4	10/27/2017
10.26*	2011 Omnibus Equity Incentive Plan - Form of Performance Based Restricted Stock Agreement	10-Q	10.4	4/26/2019
10.27*	Cerner Corporation 2011 Omnibus Equity Incentive Plan - Time Based Restricted Stock Agreement	10-Q	10.4	5/6/2016
10.28*	Cerner Corporation 2011 Omnibus Equity Incentive Plan - Time Based Restricted Stock Agreement	10-Q	10.3	10/27/2017
10.29*	2011 Omnibus Equity Incentive Plan - Form of Time Based Restricted Stock Agreement	10-Q	10.3	4/26/2019
10.30*	Cerner Corporation 2011 Omnibus Equity Incentive Plan-Non-Qualified Stock Option Grant Certificate	10-K	10(v)	2/8/2013 000-15386/13586825
10.31*	Cerner Corporation 2011 Omnibus Equity Incentive Plan-Non-qualified Stock Option Grant Certificate	10-Q	10.5	5/6/2016
10.32*	Cerner Corporation 2011 Omnibus Equity Incentive Plan - Non-Qualified Stock Option Grant Certificate	10-Q	10.2	8/3/2016
10.33*	Cerner Corporation 2011 Omnibus Equity Incentive Plan - Non-Qualified Stock Option Grant Certificate	10-Q	10.2	10/27/2017
10.34*	Cerner Corporation 2011 Omnibus Equity Incentive Plan - Time-Based Restricted Stock Unit Agreement	10-Q	10.2	4/28/2017
10.35*	Cerner Corporation 2011 Omnibus Equity Incentive Plan - Time-Based Restricted Stock Unit Agreement	10-Q	10.5	10/27/2017
10.36*	Cerner Corporation 2011 Omnibus Equity Incentive Plan - Performance-Based Restricted Stock Unit Agreement	10-Q	10.3	4/28/2017
10.37*	Cerner Corporation 2011 Omnibus Equity Incentive Plan - Performance-Based Restricted Stock Unit Agreement	10-Q	10.6	10/27/2017
10.38*	Cerner Corporation 2001 Associate Stock Purchase Plan as Amended and Restated January 1, 2019	10-K	10.37	2/8/2019
10.39*	Cerner Corporation 2018 Performance Compensation Plan (effective January 1, 2018)	8-K	10.1	3/6/2018

10.40*	2018 Executive Performance Agreement - Section 16 Officer	8-K	10.2	3/6/2018

10.41*	Form 2019 Executive Performance Agreement - Section 16 Officer	10-Q	10.2	4/26/2019	
10.42	Interparty Agreement, dated January 19, 2010, among Kansas Unified Development, LLC, OnGoal, LLC and Cerner Corporation	8-K	99.1	1/25/2010 000-15386/10543089	
10.43	Master Note Purchase Agreement between Cerner Corporation and the Purchasers listed in Schedule A thereto dated December 4, 2014	8-K	10.1	12/5/2014 000-15386/141269611	
10.44	Third Amended and Restated Credit Agreement, dated October 30, 2015, among Cerner Corporation and U.S. Bank National Association, Bank of America, N.A. and Commerce Bank, N.A.	8-K	10.1	11/3/2015	
10.45	First Amendment to Third Amended and Restated Credit Agreement dated May 6, 2019 among Cerner Corporation, U.S. Bank National Association, Commerce Bank N.A., and Bank of America, N.A.	8-K	10.1	5/7/2019	
10.46	Second Amendment to Third Amended and Restated Credit Agreement dated November 5, 2019 among Cerner Corporation, U.S. Bank National Association, Commerce Bank N.A., Bank of America, N.A. and PNC Bank, National Association.	8-K	10.1	11/5/2019	
10.47	Master Note Agreement dated November 11, 2019, between Cerner Corporation and the Purchasers listed therein	8-K	10.4	11/5/2019	
21	Subsidiaries of Registrant				X
23	Consent of Independent Registered Public Accounting Firm				X
31.1	Certification of Brent Shafer pursuant to Section 302 of Sarbanes-Oxley Act of 2002				X
31.2	Certification of Marc G. Naughton pursuant to Section 302 of Sarbanes-Oxley Act of 2002				X
32.1	Certification of Brent Shafer pursuant to 18 U.S.C. Section 1350, as adopted pursuant to Section 906 of Sarbanes-Oxley Act of 2002				X
32.2	Certification of Marc G. Naughton pursuant to 18 U.S.C. Section 1350, as adopted pursuant to Section 906 of Sarbanes-Oxley Act of 2002				X
101.INS	XBRL Instance Document - the instance document does not appear in the interactive data file because its XBRL tags are embedded within the inline XBRL document.				X
101.SCH	Inline XBRL Taxonomy Extension Schema Document				X
101.CAL	Inline XBRL Taxonomy Extension Calculation Linkbase Document				X
101.LAB	Inline XBRL Taxonomy Extension Labels Linkbase Document				X
101.PRE	Inline XBRL Taxonomy Extension Presentation Linkbase Document				X

101.DEF	Inline XBRL Taxonomy Extension Definition Linkbase Document	X
104	Cover Page Interactive Data File - formatted in Inline XBRL and contained in Exhibit 101.	X

* Indicates a management contract or compensatory plan or arrangement required to be identified by Part IV, Item 15(a)(3).

PLEASE NOTE: Pursuant to the rules and regulations of the Securities and Exchange Commission, we have filed or incorporated by reference the agreements referenced above as exhibits to this annual report on Form 10-K. The agreements have been filed to provide investors with information regarding their respective terms. The agreements are not intended to provide any other factual information about the Company or its business or operations. In particular, the assertions embodied in any representations, warranties and covenants contained in the agreements may be subject to qualifications with respect to knowledge and materiality different from those applicable to investors and may be qualified by information in confidential disclosure schedules not included with the exhibits. These disclosure schedules may contain information that modifies, qualifies and creates exceptions to the representations, warranties and covenants set forth in the agreements. Moreover, certain representations, warranties and covenants in the agreements may have been used for the purpose of allocating risk between the parties, rather than establishing matters as facts. In addition, information concerning the subject matter of the representations, warranties and covenants may have changed after the date of the respective agreement, which subsequent information may or may not be fully reflected in the Company's public disclosures. Accordingly, investors should not rely on the representations, warranties and covenants in the agreements as characterizations of the actual state of facts about the Company or its business or operations on the date hereof.

Item 16. Form 10-K Summary.

None.

SIGNATURES

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

CERNER CORPORATION

Date: February 10, 2020

By: /s/ Brent Shafer
D. Brent Shafer
Chairman of the Board and
Chief Executive Officer

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

Signature and Title	Date
/s/ Brent Shafer Brent Shafer, Chairman of the Board and Chief Executive Officer (Principal Executive Officer)	February 10, 2020
/s/ Marc G. Naughton Marc G. Naughton, Executive Vice President and Chief Financial Officer (Principal Financial Officer)	February 10, 2020
/s/ Michael R. Battaglioli Michael R. Battaglioli, Vice President and Chief Accounting Officer (Principal Accounting Officer)	February 10, 2020
/s/ Gerald E. Bisbee, Jr. Gerald E. Bisbee, Jr., Ph.D., Director	February 10, 2020
/s/ Mitchell E. Daniels Mitchell E. Daniels, Director	February 10, 2020
/s/ Linda M. Dillman Linda M. Dillman, Director	February 10, 2020
/s/ Julie L. Gerberding Julie L. Gerberding, M.D., Director	February 10, 2020
/s/ John J. Greisch John J. Greisch, Director	February 10, 2020
/s/ Melinda J. Mount Melinda J. Mount, Director	February 10, 2020
/s/ George A. Riedel George A. Riedel, Director	February 10, 2020
/s/ R. Halsey Wise R. Halsey Wise, Director	February 10, 2020
/s/ William D. Zollars William D. Zollars, Director	February 10, 2020

Report of Independent Registered Public Accounting Firm

To the Shareholders and Board of Directors
Cerner Corporation:

Opinion on Internal Control Over Financial Reporting

We have audited Cerner Corporation and subsidiaries' (the "Company") internal control over financial reporting as of December 28, 2019, based on criteria established in *Internal Control - Integrated Framework (2013)* issued by the Committee of Sponsoring Organizations of the Treadway Commission. In our opinion, the Company maintained, in all material respects, effective internal control over financial reporting as of December 28, 2019, based on criteria established in *Internal Control - Integrated Framework (2013)* issued by the Committee of Sponsoring Organizations of the Treadway Commission.

We also have audited, in accordance with the standards of the Public Company Accounting Oversight Board (United States) (PCAOB), the consolidated balance sheets of the Company as of December 28, 2019 and December 29, 2018, the related consolidated statements of operations, comprehensive income, cash flows, and changes in shareholders' equity for each of the years in the three-year period ended December 28, 2019, and the related notes (collectively, the consolidated financial statements), and our report dated February 10, 2020 expressed an unqualified opinion on those consolidated financial statements.

Basis for Opinion

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

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

Definition and Limitations of Internal Control Over Financial Reporting

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

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

/s/KPMG LLP
Kansas City, Missouri
February 10, 2020

Report of Independent Registered Public Accounting Firm

To the Shareholders and Board of Directors
Cerner Corporation:

Opinion on the Consolidated Financial Statements

We have audited the accompanying consolidated balance sheets of Cerner Corporation and subsidiaries (the "Company") as of December 28, 2019 and December 29, 2018, the related consolidated statements of operations, comprehensive income, cash flows, and changes in shareholders' equity for each of the years in the three-year period ended December 28, 2019, and the related notes (collectively, the "consolidated financial statements"). In our opinion, the consolidated financial statements present fairly, in all material respects, the financial position of the Company as of December 28, 2019 and December 29, 2018, and the results of its operations and its cash flows for each of the years in the three-year period ended December 28, 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 December 28, 2019, based on criteria established in *Internal Control - Integrated Framework (2013)* issued by the Committee of Sponsoring Organizations of the Treadway Commission, and our report dated February 10, 2020 expressed an unqualified opinion on the effectiveness of the Company's internal control over financial reporting.

Changes in Accounting Principle

As discussed in Note 6 to the consolidated financial statements, the Company has changed its method of accounting for leases in fiscal year 2019 due to the adoption of Accounting Standard Update 2016-02 "Leases (Topic 842)". As discussed in Note 2 to the consolidated financial statements, the Company has changed its method of accounting for revenue transactions with customers in fiscal year 2018 due to the adoption of Accounting Standards Update 2014-09, "Revenue from Contracts with Customers (Topic 606)".

Basis for Opinion

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

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

Critical Audit Matter

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

Assessment of the determination of distinct performance obligations and pattern of revenue recognition

As discussed in Note 2 to the consolidated financial statements, the Company enters into contracts with customers that may include various combinations of performance obligations related to software licensing, computer hardware, and services comprised of consulting, hosting, implementation, and software support. When allocating revenue to performance obligations, the Company estimates the stand-alone selling price for the performance obligations that exist in each contract. Revenue is recognized when the performance obligations have been satisfied, which may be at a point in time or over time. During 2019, the Company recognized $526.5 million related to revenue recognized as of a point in time, a portion of which relates to software licenses.

We identified the assessment of the determination of distinct performance obligations and pattern of revenue recognition as a critical audit matter. Evaluating whether individual software solutions and services are considered distinct performance obligations that should be accounted for separately may require significant judgment. The determination of performance obligations and the pattern of revenue recognition significantly influences the amount and timing of revenue recognized. Especially challenging auditor judgment was required to evaluate whether such software solutions and services are considered distinct performance obligations as contract terms are specific to each contract, and can result in different determinations. Additionally, the Company allocates consideration to the perpetual software license performance obligation based on the residual approach, therefore the incomplete determination of performance obligations or incorrect pattern of revenue recognition in a contract could have a significant impact on the timing of revenue recognition. This assessment requires an understanding of the contract components and involves subjective auditor judgment in determining that all performance obligations are identified.

The primary procedures performed to address this critical audit matter included the following. We tested certain internal controls related to the identification of distinct performance obligations and the determination of timing of revenue recognition. We obtained and read contracts and other relevant documents for a selection of license software revenue and tested the identification of significant terms, including the identification of distinct performance obligations. We evaluated the timing of revenue recognition for the identified performance obligations for a selection of contracts.

/s/KPMG LLP

We have served as the Company's auditor since 1983.

Kansas City, Missouri
February 10, 2020

CERNER CORPORATION AND SUBSIDIARIES
CONSOLIDATED BALANCE SHEETS
As of December 28, 2019 and December 29, 2018

(In thousands, except share data)	2019	2018
Assets		
Current assets:		
Cash and cash equivalents	$ 441,843	$ 374,126
Short-term investments	99,931	401,285
Receivables, net	1,139,595	1,183,494
Inventory	23,182	25,029
Prepaid expenses and other	392,073	334,870
Total current assets	2,096,624	2,318,804
Property and equipment, net	1,858,772	1,743,575
Right-of-use assets	123,155	—
Software development costs, net	939,859	894,512
Goodwill	883,158	847,544
Intangible assets, net	364,439	405,305
Long-term investments	419,419	300,046
Other assets	209,196	198,850
Total assets	$ 6,894,622	$ 6,708,636
Liabilities and Shareholders' Equity		
Current liabilities:		
Accounts payable	$ 273,440	$ 293,534
Current installments of long-term debt and capital lease obligations	—	4,914
Deferred revenue	360,025	399,189
Accrued payroll and tax withholdings	245,843	195,931
Other current liabilities	148,140	69,122
Total current liabilities	1,027,448	962,690
Long-term debt	1,038,382	438,802
Deferred income taxes	377,657	336,379
Other liabilities	133,807	42,376
Total liabilities	2,577,294	1,780,247
Shareholders' Equity:		
Common stock, $.01 par value, 500,000,000 shares authorized, 367,634,796 shares issued at December 28, 2019 and 362,212,843 shares issued at December 29, 2018	3,676	3,622
Additional paid-in capital	1,905,171	1,559,562
Retained earnings	5,934,909	5,576,525
Treasury stock, 56,723,546 shares at December 28, 2019 and 37,905,013 shares at December 29, 2018	(3,407,768)	(2,107,768)
Accumulated other comprehensive loss, net	(118,660)	(103,552)
Total shareholders' equity	4,317,328	4,928,389
Total liabilities and shareholders' equity	$ 6,894,622	$ 6,708,636

See notes to consolidated financial statements.

CERNER CORPORATION AND SUBSIDIARIES
CONSOLIDATED STATEMENTS OF OPERATIONS
For the years ended December 28, 2019, December 29, 2018 and December 30, 2017

	For the Years Ended		
(In thousands, except per share data)	2019	2018	2017
Revenues	$ 5,692,598	$ 5,366,325	$ 5,142,272
Costs and expenses:			
Costs of revenue	1,071,041	937,348	854,091
Sales and client service	2,675,337	2,493,696	2,276,821
Software development (Includes amortization of $227,414, $210,228 and $173,250, respectively)	737,136	683,663	605,046
General and administrative	520,598	389,469	355,267
Amortization of acquisition-related intangibles	87,817	87,364	90,576
Total costs and expenses	5,091,929	4,591,540	4,181,801
Operating earnings	600,669	774,785	960,471
Other income, net	53,843	26,066	6,658
Earnings before income taxes	654,512	800,851	967,129
Income taxes	(125,058)	(170,792)	(100,151)
Net earnings	$ 529,454	$ 630,059	$ 866,978
Basic earnings per share	$ 1.66	$ 1.91	$ 2.62
Diluted earnings per share	$ 1.65	$ 1.89	$ 2.57
Basic weighted average shares outstanding	318,229	330,084	331,373
Diluted weighted average shares outstanding	321,235	333,572	337,999

See notes to consolidated financial statements.

CERNER CORPORATION AND SUBSIDIARIES
CONSOLIDATED STATEMENTS OF COMPREHENSIVE INCOME
For the years ended December 28, 2019, December 29, 2018 and December 30, 2017

	For the Years Ended		
(In thousands)	**2019**	**2018**	**2017**
Net earnings	$ 529,454	$ 630,059	$ 866,978
Foreign currency translation adjustment and other (net of taxes (benefit) of $(1,288), $(645) and $4,909, respectively)	(3,408)	(30,575)	37,463
Unrealized loss on cash flow hedge (net of tax benefit of $4,137 in 2019)	(12,578)	—	—
Unrealized holding gain (loss) on available-for-sale investments (net of taxes (benefit) of $290, $132 and $(416), respectively)	878	405	(680)
Comprehensive income	$ 514,346	$ 599,889	$ 903,761

See notes to consolidated financial statements.

CERNER CORPORATION AND SUBSIDIARIES
CONSOLIDATED STATEMENTS OF CASH FLOWS
For the years ended December 28, 2019, December 29, 2018 and December 30, 2017

	For the Years Ended		
(In thousands)	**2019**	**2018**	**2017**
CASH FLOWS FROM OPERATING ACTIVITIES:			
Net earnings	$ 529,454	$ 630,059	$ 866,978
Adjustments to reconcile net earnings to net cash provided by operating activities:			
Depreciation and amortization	687,966	642,591	580,723
Share-based compensation expense	103,641	95,423	83,019
Provision for deferred income taxes	51,125	34,428	47,409
Investment gains	(29,621)	—	—
Changes in assets and liabilities (net of business acquired):			
Receivables, net	58,113	(207,785)	(32,836)
Inventory	1,855	(9,307)	(972)
Prepaid expenses and other	(76,748)	156,216	(191,369)
Accounts payable	(8,734)	65,202	6,960
Accrued income taxes	(4,599)	(27,849)	18,358
Deferred revenue	(39,245)	81,538	(3,114)
Other accrued liabilities	39,892	(6,507)	(67,481)
Net cash provided by operating activities	1,313,099	1,454,009	1,307,675
CASH FLOWS FROM INVESTING ACTIVITIES:			
Capital purchases	(471,518)	(446,928)	(362,083)
Capitalized software development costs	(273,871)	(273,693)	(274,148)
Purchases of investments	(364,648)	(623,293)	(632,048)
Sales and maturities of investments	579,755	551,796	292,074
Purchase of other intangibles	(35,587)	(36,819)	(29,646)
Acquisition of business, net of cash acquired	(74,539)	—	—
Net cash used in investing activities	(640,408)	(828,937)	(1,005,851)
CASH FLOWS FROM FINANCING ACTIVITIES:			
Long-term debt issuance	600,000	—	—
Repayment of long-term debt	—	(75,000)	—
Proceeds from exercise of stock options	258,036	91,349	76,705
Payments to taxing authorities in connection with shares directly withheld from associates	(16,601)	(9,873)	(11,584)
Treasury stock purchases	(1,320,542)	(623,127)	(173,434)
Dividends paid	(113,823)	—	—
Other	(8,450)	6,864	(2,671)
Net cash used in financing activities	(601,380)	(609,787)	(110,984)
Effect of exchange rate changes on cash and cash equivalents	(3,594)	(12,082)	9,222
Net increase in cash and cash equivalents	67,717	3,203	200,062
Cash and cash equivalents at beginning of period	374,126	370,923	170,861
Cash and cash equivalents at end of period	$ 441,843	$ 374,126	$ 370,923

See notes to consolidated financial statements.

CERNER CORPORATION AND SUBSIDIARIES
CONSOLIDATED STATEMENTS OF CHANGES IN SHAREHOLDERS' EQUITY
For the years ended December 28, 2019, December 29, 2018 and December 30, 2017

	Common Stock					
(In thousands)	Shares	Amount	Additional Paid-in Capital	Retained Earnings	Treasury Stock	Accumulated Other Comprehensive Loss, Net
Balance at December 31, 2016	**353,731**	**$ 3,537**	**$ 1,230,913**	**$ 4,094,327**	**$ (1,290,665)**	**$ (110,165)**
Exercise of stock options and vests of restricted shares and share units	5,474	55	66,439	—	—	—
Employee share-based compensation expense	—	—	83,019	—	—	—
Cumulative effect of accounting change (ASU 2016-16)	—	—	—	(22,439)	—	—
Other comprehensive income (loss)	—	—	—	—	—	36,783
Treasury stock purchases	—	—	—	—	(173,434)	—
Net earnings	—	—	—	866,978	—	—
Balance at December 30, 2017	**359,205**	**3,592**	**1,380,371**	**4,938,866**	**(1,464,099)**	**(73,382)**
Exercise of stock options and vests of restricted shares and share units	3,008	30	83,768	—	—	—
Employee share-based compensation expense	—	—	95,423	—	—	—
Cumulative effect of accounting change (ASU 2014-09)	—	—	—	7,600	—	—
Other comprehensive income (loss)	—	—	—	—	—	(30,170)
Treasury stock purchases	—	—	—	—	(643,669)	—
Net earnings	—	—	—	630,059	—	—
Balance at December 29, 2018	**362,213**	**3,622**	**1,559,562**	**5,576,525**	**(2,107,768)**	**(103,552)**
Exercise of stock options and vests of restricted shares and share units	5,422	54	241,968	—	—	—
Employee share-based compensation expense	—	—	103,641	—	—	—
Other comprehensive income (loss)	—	—	—	—	—	(15,108)
Treasury stock purchases	—	—	—	—	(1,300,000)	—
Cash dividends declared	—	—	—	(171,070)	—	—
Net earnings	—	—	—	529,454	—	—
Balance at December 28, 2019	**367,635**	**$ 3,676**	**$ 1,905,171**	**$ 5,934,909**	**$ (3,407,768)**	**$ (118,660)**

See notes to consolidated financial statements.

CERNER CORPORATION AND SUBSIDIARIES
NOTES TO CONSOLIDATED FINANCIAL STATEMENTS

(1) Basis of Presentation, Nature of Operations and Summary of Significant Accounting Policies

Basis of Presentation

The consolidated financial statements include all the accounts of Cerner Corporation ("Cerner," the "Company," "we," "us" or "our") and its subsidiaries. All significant intercompany transactions have been eliminated in consolidation.

The consolidated financial statements were prepared using accounting principles generally accepted in the United States of America ("GAAP"). These principles require us to make estimates and assumptions that affect the reported amounts of assets and liabilities, the disclosure of contingent assets and liabilities and the reported amounts of revenues and expenses. Actual results could differ from those estimates.

Fiscal Period End

Prior to fiscal year 2020, our fiscal year ended on the Saturday closest to December 31. Fiscal years 2019, 2018 and 2017 each consisted of 52 weeks and ended on December 28, 2019, December 29, 2018 and December 30, 2017, respectively. All references to years in these notes to consolidated financial statements represent fiscal years unless otherwise noted.

In December 2019, our Board of Directors approved a resolution to change our fiscal year to a calendar year, commencing with fiscal year 2020. Accordingly, our 2020 fiscal year will be extended and run from December 29, 2019 to December 31, 2020, with subsequent fiscal years beginning on January 1 and ending on December 31 of each year. Beginning December 29, 2019, the first day of our 2020 first quarter, our quarterly results will be for the periods ending March 31, June 30, September 30 and December 31.

Nature of Operations

We design, develop, market, install, host and support health care information technology, health care devices, hardware and content solutions for health care organizations and consumers. We also provide a wide range of value-added services, including implementation and training, remote hosting, operational management services, revenue cycle services, support and maintenance, health care data analysis, clinical process optimization, transaction processing, employer health centers, employee wellness programs and third party administrator services for employer-based health plans.

Voluntary Separation Plans

In January 2019, we adopted a voluntary separation plan ("2019 VSP") for eligible associates. Generally, the 2019 VSP was available to U.S. associates who met a minimum level of combined age and tenure, excluding, among others, our executive officers. Associates who elected to participate in the 2019 VSP received financial benefits commensurate with their tenure and position, along with vacation payout, medical benefits, and accelerated vesting of certain share-based payment awards. The irrevocable acceptance period for associates electing to participate in the 2019 VSP ended in April 2019. In the second quarter of 2019, we recorded pre-tax charges for the 2019 VSP of $41 million. Such charges are included in general and administrative expense in our consolidated statements of operations.

In the third quarter of 2019, we offered voluntary separation benefits to certain associates primarily located outside the U.S. The irrevocable acceptance period for associates to accept such offers ended in September 2019. In the third quarter of 2019, we recorded corresponding pre-tax charges of $11 million. Such charges are included in general and administrative expense in our consolidated statements of operations.

Involuntary Separation Benefits

During 2019, we recorded pre-tax charges of $34 million in connection with the involuntary termination of approximately 380 U.S. associates. Such charges are included in general and administrative expense in our consolidated statements of operations. Separation benefits for these associates include cash severance, contribution to a health reimbursement account, career transition assistance, and accelerated vesting of certain share-based payment awards. At December 28, 2019, a liability of $9 million for such obligations is included in accrued payroll and tax withholdings in our consolidated balance sheets, which we expect to settle/pay in the first quarter of 2020.

Contract Termination Costs

During 2019, we recorded pre-tax charges of $66 million in connection with the termination of certain client contracts prior to end of their stated terms, the majority of which was paid in cash. Such charges are included in our Domestic operating segment, and presented in sales and client service expense in our consolidated statements of operations. At December 28, 2019, our consolidated balance sheets do not include a liability for any obligations related to such contract terminations.

Supplemental Disclosures of Cash Flow Information

	For the Years Ended		
(In thousands)	**2019**	**2018**	**2017**
Cash paid during the year for:			
Interest (including amounts capitalized of $17,190, $12,710, and $10,387, respectively)	$ 25,639	$ 15,707	$ 17,914
Income taxes, net of refunds	100,004	(15,560)	186,544

Summary of Significant Accounting Policies

(a) Cash Equivalents - Cash equivalents consist of short-term debt securities with original maturities of less than 90 days.

(b) Investments in Debt Securities – We account for our investments in debt securities as available-for-sale investments in accordance with Accounting Standards Codification Topic ("ASC") 320, *Investments-Debt Securities*. Short-term available-for-sale investments are primarily invested in time deposits, commercial paper, government and corporate bonds, with maturities of less than one year. Long-term available-for-sale investments are primarily invested in government and corporate bonds with maturities of less than two years.

Available-for-sale investments are recorded at fair value with the unrealized gains and losses reflected in accumulated other comprehensive loss until realized. Realized gains and losses from the sale of available-for-sale investments, if any, are determined on a specific identification basis.

We regularly review investment securities for impairment based on both quantitative and qualitative criteria that include the extent to which cost exceeds fair value, the duration of any market decline, and the financial health of and specific prospects for the issuer. Unrealized losses that are other than temporary are recognized in earnings.

Generally, premiums are amortized and discounts are accreted over the life of the security as adjustments to interest income for our investments. For investments in callable debt securities, any premiums are amortized to the earliest call date. Interest income is recognized when earned.

Refer to Note (4) and Note (11) for further description of these assets and their fair value.

(c) Investments in Equity Securities - We account for our investments in equity securities that give us the ability to exercise significant influence over the operating and financial policies of an investee under the equity method in accordance with ASC 323, *Investments-Equity Method and Joint Ventures*. Under the equity method, we recognize our share of the earnings or losses of an investee, generally on a three-month lag. Such share of the investee's earnings or losses are presented in other income, net in our consolidated statements of operations.

We account for our investments in equity securities that do not qualify for equity method accounting in accordance with ASC 321, *Investments-Equity Securities* ("ASC 321"). We measure these investments at fair value with changes in fair value recognized in other income, net in our consolidated statements of operations for such investments with readily determinable fair values. For these investments that do not have readily determinable fair values, we measure such investments at cost minus impairment, if any, plus or minus changes resulting from observable price changes in orderly transactions for the identical or similar investment of the same issuer.

(d) Concentrations - The majority of our cash and cash equivalents are held at three major financial institutions. The majority of our cash equivalents consist of money market funds. Deposits held with banks may exceed the amount of insurance provided on such deposits. Generally these deposits may be redeemed upon demand.

(e) Inventory - Inventory consists primarily of computer hardware and sublicensed software, held for resale. Inventory is recorded at the lower of cost (first-in, first-out) or net realizable value.

(f) Property and Equipment - We account for property and equipment in accordance with ASC 360, *Property, Plant, and Equipment*. Property, equipment and leasehold improvements are stated at cost. Depreciation of property and equipment is computed using the straight-line method over periods of one to 50 years. Amortization of leasehold improvements is computed using a straight-line method over the shorter of the lease terms or the useful lives, which range from periods of one to 15 years.

(g) Software Development Costs - Our software solutions are offered to our clients both through traditional licenses as well as software as a service delivery models. Development costs associated with the certain solutions offered exclusively through a software as a service model are accounted for in accordance with ASC 350-40, *Internal-Use Software*. All other client solution development costs, which represent a significant majority of development costs, are accounted for in accordance with ASC 985-20, *Costs of Software to be Sold, Leased or Marketed* .

Under ASC 985-20, software development costs incurred in creating computer software solutions are expensed until technological feasibility has been established upon completion of a detailed program design. Thereafter, all software development costs incurred through the software's general release date are capitalized and subsequently recorded at the lower of amortized cost or net realizable value. Capitalized costs are amortized based on current and expected future revenue for each software solution with minimum annual amortization equal to the straight-line amortization over the estimated economic life of the solution. We amortize capitalized costs over five years.

Under ASC 350-40, software development costs related to preliminary project activities and post-implementation and maintenance activities are expensed as incurred. We capitalize direct costs related to application development activities that are probable to result in additional functionality. Capitalized costs are amortized on a straight-line basis over five years. We test for impairment whenever events or changes in circumstances that could impact recoverability occur.

See Note (7) for further information relating to our software development costs.

(h) Goodwill - We account for goodwill under the provisions of ASC 350, *Intangibles – Goodwill and Other*. Goodwill is not amortized but is evaluated for impairment annually or whenever there is an impairment indicator. All goodwill is assigned to a reporting unit, where it is subject to an annual impairment assessment. Based on these evaluations, there was no impairment of goodwill in 2019, 2018 or 2017. Refer to Note (9) for more information on goodwill and other intangible assets.

(i) Intangible Assets - We account for intangible assets in accordance with ASC 350, *Intangibles – Goodwill and Other*. Amortization of finite-lived intangible assets is computed using the straight-line method over periods of three to 30 years.

(j) Income Taxes - Income taxes are accounted for in accordance with ASC 740, *Income Taxes*. Deferred tax assets and liabilities are recognized for the future tax consequences attributable to differences between the financial statement carrying amounts of existing assets and liabilities and their respective tax bases. Deferred tax assets and liabilities are measured using enacted tax rates expected to apply to taxable income in the years in which those temporary differences are expected to be recovered or settled. Refer to Note (14) for additional information regarding income taxes.

(k) Earnings per Common Share - Basic earnings per share ("EPS") excludes dilution and is computed, in accordance with ASC 260, *Earnings Per Share*, by dividing income available to common shareholders by the weighted-average number of common shares outstanding for the period. Diluted EPS reflects the potential dilution that could occur if securities or other contracts to issue stock were exercised or converted into common stock or resulted in the issuance of common stock that then shared in our earnings. Refer to Note (15) for additional details of our earnings per share computations.

(l) Accounting for Share-based Payments - We recognize all share-based payments to associates, directors and consultants, including grants of stock options, restricted stock and performance shares, in the financial statements as compensation cost based on their fair value on the date of grant, in accordance with ASC 718, *Compensation-Stock Compensation*. This compensation cost is recognized over the vesting period on a straight-line basis for the fair value of awards that actually vest. Refer to Note (16) for a detailed discussion of share-based payments.

(m) Voluntary Separation Benefits - We account for voluntary separation benefits in accordance with the provisions of ASC 712, *Compensation-Nonretirement Postemployment Benefits*. Voluntary separation benefits are recorded to expense when the associates irrevocably accept the offer and the amount of the termination liability is reasonably estimable.

(n) Exit or Disposal Cost Obligations - We account for involuntary employee separation benefits pursuant to one-time benefit arrangements and contract termination costs in accordance with ASC 420, *Exit or Disposal Cost Obligations* .

(o) Foreign Currency - In accordance with ASC 830, *Foreign Currency Matters*, assets and liabilities of non-U.S. subsidiaries whose functional currency is the local currency are translated into U.S. dollars at exchange rates prevailing at the balance sheet date. Revenues and expenses are translated at average exchange rates during the year. The net exchange differences resulting from these translations are reported in accumulated other comprehensive loss. Gains and losses resulting from foreign currency transactions are included in the consolidated statements of operations.

(p) Collaborative Arrangements - In accordance with ASC 808, *Collaborative Arrangements*, third party costs incurred and revenues generated by arrangements involving joint operating activities of two or more parties that are each actively involved and exposed to risks and rewards of the activities are classified in the consolidated statements of operations on a gross basis only if we are determined to be the principal participant in the arrangement. Otherwise, third party revenues and costs generated by collaborative arrangements are presented on a net basis. Payments between participants are recorded and classified based on the nature of the payments.

(q) Accounting Pronouncements Adopted in 2019

Leases. In the first quarter of 2019, we adopted new lease accounting guidance. Refer to Note (6) for further details.

Callable Debt Securities. In March 2017, the Financial Accounting Standards Board ("FASB") issued Accounting Standards Update ("ASU") 2017-08, *Receivables - Nonrefundable Fees and Other Costs (Subtopic 310-20): Premium Amortization on Purchased Callable Debt Securities* , which shortens the amortization period for certain investments in callable debt securities purchased at a premium by requiring the premium be amortized to the earliest call date. Such guidance impacts how premiums are amortized on our available-for-sale investments. We adopted ASU 2017-08 in the first quarter of 2019. Such guidance did not have an impact on our consolidated financial statements and related disclosures.

Accumulated Other Comprehensive Income. In February 2018, the FASB issued ASU 2018-02, *Income Statement - Reporting Comprehensive Income (Topic 220): Reclassification of Certain Tax Effects from Accumulated Other Comprehensive Income* , which allows a reclassification from accumulated other comprehensive income ("AOCI") to retained earnings for "stranded tax effects" resulting from certain U.S. tax reform enacted in December 2017. Such "stranded tax effects" were created when deferred tax assets and liabilities related to items in AOCI were remeasured at the lower U.S. corporate tax rate in the period of enactment. We adopted ASU 2018-02 in the first quarter of 2019, and did not elect to reclassify "stranded tax effects" from AOCI to retained earnings.

(r) Recently Issued Accounting Pronouncements

Credit Losses on Financial Instruments. In June 2016, the FASB issued ASU 2016-13, *Financial Instruments - Credit Losses (Topic 326): Measurement of Credit Losses on Financial Instruments*, which provides new guidance regarding the measurement and recognition of credit impairment for certain financial assets. Such guidance will impact how we determine our allowance for estimated uncollectible receivables and evaluate our available-for-sale investments for impairment. ASU 2016-13 is effective for the Company in the first quarter of 2020, with early adoption permitted in the first quarter of 2019. We are currently evaluating the effect that ASU 2016-13 will have on our consolidated financial statements and related disclosures, and we did not early adopt.

Collaborative Arrangements. In November 2018, the FASB issued ASU 2018-18, *Collaborative Arrangements (Topic 808): Clarifying the Interaction between Topic 808 and Topic 606* , which clarifies when transactions between participants in a collaborative arrangement are within the scope of the FASB's new revenue standard (Topic 606). Such guidance clarifies revenue recognition and financial statement presentation for transactions between collaboration participants. ASU 2018-18 is effective for the Company in the first quarter of 2020, with early adoption permitted. The standard requires retrospective application to the date we adopted Topic 606, December 31, 2017. We are currently evaluating the effect that ASU 2018-18 will have on our consolidated financial statements and related disclosures, and we did not early adopt.

(2) Revenue Recognition

In May 2014, the FASB issued ASU 2014-09 *, Revenue from Contracts with Customers (Topic 606)* , which requires an entity to recognize the amount of revenue to which it expects to be entitled for the transfer of promised goods or services to customers. ASU 2014-09 replaced most existing revenue recognition guidance in U.S. GAAP. The standard contains a five-step process to be followed in determining the amount and timing of revenue recognition. It also provides guidance on accounting for costs incurred to obtain or fulfill contracts with customers, and establishes disclosure requirements which are more extensive than those required under prior U.S. GAAP.

ASU 2014-09, as amended ("Topic 606"), was effective for the Company in the first quarter of 2018. We selected the Modified Retrospective (cumulative effect) transition method of adoption. Such method provides that the cumulative effect from prior periods upon applying the new guidance to contracts which were not complete as of the adoption date be recognized in our consolidated balance sheets as of December 31, 2017, including an adjustment to retained earnings. A summary of such cumulative effect adjustment is as follows:

(In thousands)	**Increase / (Decrease)**
Receivables, net	$ (79,492)
Prepaid expenses and other	(2,253)
Other assets	81,157
Accounts payable	(9,361)
Deferred income taxes	1,173
Retained earnings	7,600

Prior periods were not retrospectively adjusted. The impact of applying Topic 606 (versus prior U.S. GAAP) increased 2018 revenues and earnings before income taxes by $207 million and $101 million, respectively. This impact was primarily driven by certain new contracts in 2018, which included certain specified upgrades for which we are required to estimate stand-alone selling price when allocating transaction consideration to performance obligations. Under prior U.S. GAAP, we would not have been able to establish vendor specific objective evidence ("VSOE") of fair value for such items, and thus would have delayed the timing of revenue recognition for such contracts.

The application of Topic 606 (versus prior U.S. GAAP) did not have a significant impact on other line items in our consolidated statements of operations, statements of comprehensive income, and statements of cash flows in 2018. Additionally, the application of Topic 606 did not have a significant impact on our consolidated balance sheet as of December 29, 2018.

Revenue Recognition Policy

We enter into contracts with customers that may include various combinations of our software solutions and related services, which are generally capable of being distinct and accounted for as separate performance obligations. The predominant model of customer procurement involves multiple deliverables and includes a software license agreement, project-related implementation and consulting services, software support, hosting services, and computer hardware. We allocate revenues to each performance obligation within an arrangement based on estimated relative stand-alone selling price. Revenue is then recognized for each performance obligation upon transfer of control of the software solution or services to the customer in an amount that reflects the consideration we expect to receive.

Generally, we recognize revenue under Topic 606 for each of our performance obligations as follows:

- Perpetual software licenses - We recognize perpetual software license revenues when control of such licenses are transferred to the client ("point in time"). We determine the amount of consideration allocated to this performance obligation using the residual approach.
- Software as a service - We recognize software as a service ratably over the related hosting period ("over time") .
- Time-based software and content license fees - We recognize a license component of time-based software and content license fees upon delivery to the client ("point in time") and a non-license component (i.e. support) ratably over the respective contract term ("over time").
- Hosting - Remote hosting recurring services are recognized ratably over the hosting service period ("over time"). Certain of our hosting arrangements contain fees deemed to be a "material right" under Topic 606. We recognize such fees over the term that will likely affect the client's decision about whether to renew the related hosting service ("over time").

- Services - We recognize revenue for fixed fee services arrangements over time, utilizing a labor hours input method. For fee-for-service arrangements, we recognize revenue over time as hours are worked at the rates clients are invoiced, utilizing the "as invoiced" practical expedient available in Topic 606. For stand-ready services arrangements, we recognize revenue ratably over the related service period.
- Support and maintenance - We recognize support and maintenance fees ratably over the related contract period ("over time") .
- Hardware - We recognize hardware revenues when control of such hardware/devices is transferred to the client ("point in time") .
- Transaction processing - We recognize transaction processing revenues ratably as we provide such services ("over time") .

Such revenues are recognized net of any taxes collected from customers and subsequently remitted to governmental authorities.

Disaggregation of Revenue

The following table presents revenues disaggregated by our business models:

	For the Years Ended								
	2019			2018			2017[1]		
(In thousands)	Domestic Segment	International Segment	Total	Domestic Segment	International Segment	Total	Domestic Segment	International Segment	Total
Licensed software	$ 628,958	$ 51,627	$ 680,585	$ 573,034	$ 40,544	$ 613,578	$ 563,524	$ 48,666	$ 612,190
Technology resale	225,076	21,809	246,885	208,722	36,354	245,076	248,524	25,069	273,593
Subscriptions	333,298	25,417	358,715	300,555	25,154	325,709	446,426	22,963	469,389
Professional services	1,760,532	231,946	1,992,478	1,574,407	237,056	1,811,463	1,393,056	198,793	1,591,849
Managed services	1,098,695	115,205	1,213,900	1,060,081	94,860	1,154,941	970,609	76,523	1,047,132
Support and maintenance	904,204	200,434	1,104,638	921,336	196,780	1,118,116	856,304	190,352	1,046,656
Reimbursed travel	87,364	8,033	95,397	92,131	5,311	97,442	96,728	4,735	101,463
Total revenues	$ 5,038,127	$ 654,471	$ 5,692,598	$ 4,730,266	$ 636,059	$ 5,366,325	$ 4,575,171	$ 567,101	$ 5,142,272

[1]As noted above, prior period amounts were not adjusted upon our adoption of Topic 606.

The following table presents our revenues disaggregated by timing of revenue recognition:

	For the Years Ended					
	2019			2018		
(In thousands)	Domestic Segment	International Segment	Total	Domestic Segment	International Segment	Total
Revenue recognized over time	$ 4,565,172	$ 600,953	$ 5,166,125	$ 4,271,934	$ 569,780	$ 4,841,714
Revenue recognized at a point in time	472,955	53,518	526,473	458,332	66,279	524,611
Total revenues	$ 5,038,127	$ 654,471	$ 5,692,598	$ 4,730,266	$ 636,059	$ 5,366,325

Significant Customers

In 2019, a certain customer within our Domestic segment comprised 13% of our consolidated revenues.

Transaction Price Allocated to Remaining Performance Obligations

As of December 28, 2019, the aggregate amount of transaction price allocated to performance obligations that are unsatisfied (or partially unsatisfied) for executed contracts approximates $13.71 billion, of which we expect to recognize approximately 30% of the revenue over the next 12 months and the remainder thereafter. As of December 29, 2018, the aggregate amount of transaction price allocated to performance obligations that were unsatisfied (or partially unsatisfied) for executed contracts approximated $15.25 billion.

Contract Liabilities

Our payment arrangements with clients typically include an initial payment due upon contract signing and date-based licensed software payment terms and payments based upon delivery for services, hardware and sublicensed software. Customer payments received in advance of satisfaction of the related performance obligations are deferred as contract liabilities. Such amounts are classified in our consolidated balance sheets as deferred revenue. During 2019 and 2018, substantially all of our contract liability balance at the beginning of each respective year was recognized in revenues during that year.

Costs to Obtain or Fulfill a Contract

We have determined the only significant incremental costs incurred to obtain contracts with clients within the scope of Topic 606 are sales commissions paid to our associates. We record sales commissions as an asset, and amortize to expense ratably over the remaining performance periods of the related contracts with remaining performance obligations. As of December 28, 2019 and December 29, 2018, our consolidated balance sheets included assets of $89 million and $86 million, respectively, related to sales commissions to be expensed in future periods, which are included in other assets.

We recognized $41 million of amortization related to these sales commissions assets in each of 2019 and 2018, which is included in costs of revenue in our consolidated statements of operations.

Significant Judgments when Applying Topic 606

Our contracts with clients typically include various combinations of our software solutions and related services. Determining whether such software solutions and services are considered distinct performance obligations that should be accounted for separately versus together may require significant judgment. Specifically, judgment is required to determine whether software licenses are distinct from services and hosting included in an arrangement.

Contract transaction price is allocated to performance obligations using estimated stand-alone selling price . Judgment is required in estimating stand-alone selling price for each distinct performance obligation. We determine stand-alone selling price maximizing observable inputs such as stand-alone sales when they exist or substantive renewal prices charged to clients. In instances where stand-alone selling price is not observable, we utilize an estimate of stand-alone selling price. Such estimates are derived from various methods that include: cost plus margin, historical pricing practices, and the residual approach, which requires a considerable amount of judgment.

The labor hours input method used for our fixed fee services performance obligation is dependent on our ability to reliably estimate the direct labor hours to complete a project, which may span several years. We utilize our historical project experience and detailed planning process as a basis for our future estimates to complete current projects.

Certain of our arrangements contain variable consideration. We do not believe our estimates of variable consideration to be significant to our determination of revenue recognition.

Practical Expedients - Topic 606 Adoption

We reflected the aggregate effect of all contract modifications occurring prior to the Topic 606 adoption date when (i) identifying the satisfied and unsatisfied performance obligations, (ii) determining the transaction price, and (iii) allocating the transaction price to the satisfied and unsatisfied performance obligations.

Revenue Recognition - 2017 and Prior

Prior to the adoption of Topic 606, we recognized software related revenue in accordance with the provisions of ASC 985-605, *Software - Revenue Recognition* and non-software related revenue in accordance with ASC 605, *Revenue Recognition*. In general, revenue was recognized when all of the following criteria were met:

- Persuasive evidence of an arrangement existed;
- Delivery had occurred or services had been rendered;
- Our fee was fixed or determinable; and
- Collection of the revenue was reasonably assured.

For multiple element arrangements that contained software and non-software elements, we allocated revenue to software and software-related elements as a group and any non-software element separately. After the arrangement consideration had been allocated to the non-software elements, revenue was recognized when the basic revenue recognition criteria were met for each element. For the group of software and software-related elements, revenue was recognized under the guidance applicable to software transactions.

Since we did not have VSOE of fair value on software licenses within our multiple element arrangements, we recognized revenue on our software and software-related elements using the residual method. Under the residual method, license revenue was recognized in a multiple-element arrangement when VSOE of fair value existed for all of the undelivered elements in the arrangement, when software was delivered, installed and all other conditions to revenue recognition were met. We allocated revenue to each undelivered element in a multiple-element arrangement based on the element's respective fair value, with the fair value determined by the price charged when that element was sold separately. Specifically, we determined the fair value of (i) the software support, hardware maintenance, sublicensed software support, remote hosting, subscriptions and software as a service portions of the arrangement based on the substantive renewal price for those services charged to clients; (ii) the professional services (including training and consulting) portion of the arrangement based on the hourly rates that we charged for these services when sold apart from a software license; and (iii) the sublicensed software based on its price when sold separately from the software. The residual amount of the fee after allocating revenue to the fair value of the undelivered elements was attributed to the licenses for software solutions. If evidence of the fair value could not be established for the undelivered elements of a license agreement using VSOE, the entire amount of revenue under the arrangement was deferred until those elements were delivered or VSOE of fair value was established.

We also entered into arrangements that included multiple non-software deliverables. For each element in a multiple element arrangement that did not contain software-related elements to be accounted for as a separate unit of accounting, the following were met: the delivered products or services had value to the client on a stand-alone basis; and for an arrangement that includes a general right of return relative to the delivered products or services, delivery or performance of the undelivered product or service was considered probable and is substantially controlled by the Company. We allocated the arrangement consideration to each element based on the selling price hierarchy of VSOE of fair value, if it existed, or third-party evidence ("TPE") of selling price. If neither VSOE nor TPE were available, we used estimated selling price.

For certain arrangements, revenue for software, implementation services and, in certain cases, support services for which VSOE of fair value could not be established were accounted for as a single unit of accounting. If VSOE of fair value could not be established for both the implementation services and the support services, the entire arrangement fee was recognized ratably over the period during which the implementation services were expected to be performed or the support period, whichever was longer, beginning with delivery of the software, provided that all other revenue recognition criteria were met.

(3) Receivables

Client receivables represent recorded revenues that have either been billed, or for which we have an unconditional right to invoice and receive payment in the future. We periodically provide long-term financing options to creditworthy clients through extended payment terms. Generally, these extended payment terms provide for date-based payments over a fixed period, not to exceed the term of the overall arrangement. Thus, our portfolio of client contracts contains a financing component, which is recognized over time as a component of other income, net in our consolidated statements of operations.

We perform ongoing credit evaluations of our clients and generally do not require collateral from our clients. We provide an allowance for estimated uncollectible accounts based on specific identification, historical experience and our judgment.

A summary of net receivables is as follows:

(In thousands)	2019	2018
Client receivables	$ 1,245,670	$ 1,237,127
Less: Allowance for doubtful accounts	106,075	64,561
Client receivables, net of allowance	1,139,595	1,172,566
Other receivables	—	10,928
Total receivables, net	$ 1,139,595	$ 1,183,494

A reconciliation of the beginning and ending amount of our allowance for doubtful accounts is as follows:

(in thousands)	2019	2018	2017
Allowance for doubtful accounts - beginning balance	$ 64,561	$ 52,786	$ 43,028
Additions charged to costs and expenses	57,167	25,529	29,248
Deductions[a]	(15,653)	(13,754)	(19,490)
Allowance for doubtful accounts - ending balance	$ 106,075	$ 64,561	$ 52,786

[a] Deductions in 2017 include a $13 million reclassification to other non-current assets.

During 2019 and 2018, we received total client cash collections of $5.79 billion and $5.49 billion, respectively.

(4) Investments

Available-for-sale investments at the end of 2019 were as follows:

(In thousands)	Adjusted Cost	Gross Unrealized Gains	Gross Unrealized Losses	Fair Value
Cash equivalents:				
Money market funds	$ 185,666	$ —	$ —	$ 185,666
Time deposits	64,286	—	—	64,286
Total cash equivalents	249,952	—	—	249,952
Short-term investments:				
Time deposits	2,506	—	—	2,506
Government and corporate bonds	83,272	52	(11)	83,313
Total short-term investments	85,778	52	(11)	85,819
Long-term investments:				
Government and corporate bonds	96,186	91	(67)	96,210
Total available-for-sale investments	$ 431,916	$ 143	$ (78)	$ 431,981

Available-for-sale investments at the end of 2018 were as follows:

(In thousands)	Adjusted Cost	Gross Unrealized Gains	Gross Unrealized Losses	Fair Value
Cash equivalents:				
Money market funds	$ 76,471	$ —	$ —	$ 76,471
Time deposits	71,461	—	—	71,461
Commercial paper	10,000	—	—	10,000
Total cash equivalents	157,932	—	—	157,932
Short-term investments:				
Time deposits	31,947	—	—	31,947
Commercial paper	75,445	—	(91)	75,354
Government and corporate bonds	294,941	1	(958)	293,984
Total short-term investments	402,333	1	(1,049)	401,285
Long-term investments:				
Government and corporate bonds	18,247	—	(55)	18,192
Total available-for-sale investments	$ 578,512	$ 1	$ (1,104)	$ 577,409

We sold available-for-sale investments for proceeds of $233 million, $45 million and $29 million in 2019, 2018 and 2017, respectively, resulting in insignificant gains/losses in each period.

Other Investments

At December 28, 2019 and December 29, 2018, we had investments in equity securities that do not have readily determinable fair values of $314 million and $277 million, respectively, accounted for in accordance with ASC 321. Such investments are included in long-term investments in our consolidated balance sheets. We did not record any changes in the measurement of such investments in 2019 or 2018, respectively.

At December 28, 2019, we had investments in equity securities with readily determinable fair values of $14 million, accounted for in accordance with ASC 321. Such investments are included in short-term investments in our consolidated balance sheets. Changes in the measurement of such investments in 2019 of $14 million favorably impacted other income, net.

At December 28, 2019 and December 29, 2018, we had investments in equity securities reported under the equity method of accounting of $9 million and $5 million, respectively.

Essence Group Holdings Corporation

On July 27, 2018, we acquired a minority interest in Essence Group Holdings Corporation ("Essence Group") for cash consideration of $266 million under a Stock Purchase Agreement ("SPA") dated July 9, 2018. Such investment is presented in long-term investments in our consolidated balance sheets and is accounted for in accordance with ASC 321.

Concurrently with the execution of the SPA, we announced a strategic operating relationship with Lumeris Healthcare Outcomes, LLC ("Lumeris"), a subsidiary of Essence Group, pursuant to which we will collaborate to bring to market an EHR-agnostic offering, *Maestro Advantage™*, designed to help providers who participate in value-based arrangements, including Medicare Advantage and provider-sponsored health plans, control costs and improve outcomes. Additionally, in July 2018, we sold certain solutions to Lumeris for an aggregate contract value of $28 million, of which we recognized $12 million and $5 million as revenues in 2019 and 2018, respectively.

(5) Property and Equipment

A summary of property, equipment and leasehold improvements stated at cost, less accumulated depreciation and amortization, is as follows:

(In thousands)	Depreciable Lives (Yrs)	2019	2018
Computer and communications equipment	1 — 5	$ 1,855,550	$ 1,686,747
Land, buildings and improvements	12 — 50	1,374,541	1,239,122
Leasehold improvements	1 — 15	214,608	214,697
Furniture and fixtures	5 — 12	132,540	132,180
Other equipment	3 — 20	1,078	1,255
		3,578,317	3,274,001
Less accumulated depreciation and leasehold amortization		1,719,545	1,530,426
Total property and equipment, net		$ 1,858,772	$ 1,743,575

Depreciation and leasehold amortization expense for 2019, 2018 and 2017 was $347 million, $323 million and $290 million, respectively.

(6) Leases

In February 2016, the FASB issued ASU 2016-02, *Leases (Topic 842)*, which introduced a new accounting model that requires most leases to be reported on the balance sheet. It also established disclosure requirements, which are more extensive than those required under prior U.S. GAAP. The standard requires use of the modified retrospective (cumulative effect) transition approach and was effective for the Company in the first quarter of 2019. We selected the effective date of ASU 2016-02 as the date of initial application on transition, as permitted by ASU 2016-02, as amended ("Topic 842"). Under this transition method, the cumulative effect from prior periods upon applying the new guidance to arrangements containing leases was recognized in our consolidated balance sheets as of December 30, 2018. We did not recast comparative periods.

A summary of such cumulative effect adjustment is as follows:

(In thousands)	Increase / (Decrease)
Right-of-use asset	$ 129,652
Prepaid expenses and other	3,968
Other current liabilities	22,767
Other liabilities	110,853

Arrangements Containing Leases

The cumulative effect adjustment above, is primarily comprised of arrangements where we are the lessee under operating leases for real estate (office, data center, and warehouse space) and certain dedicated fiber optic lines within our infrastructure. The duration of these agreements ranges from several months to in excess of 20 years. Generally, variable lease payments under these operating lease agreements relate to amounts based on changes to an index or rate (i.e. percentage change in the consumer price index). We do not have any arrangements where we are the lessee, classified as finance leases in our consolidated financial statements.

In addition to the items described above, we also procure hotel stays and rental cars in connection with associate business travel, and the use of certain equipment for trade shows, client presentations, conferences, and internal meetings. We have made the policy election to classify such arrangements as short-term leases, as defined in Topic 842. As such, we have not recognized lease liabilities and right-of-use assets for such arrangements in our consolidated financial statements. The duration of these arrangements is less than one month. Therefore, we do not disclose any short-term lease expense, as permitted by Topic 842. Expense for such items is recognized on a straight-line basis over the term of such arrangements.

Arrangements in which we are the lessor are not significant to our consolidated financial statements.

Amounts Included in the Consolidated Financial Statements

The following table presents a summary of lease liability and right-of-use asset amounts included in our consolidated balance sheets as of December 28, 2019, under operating lease arrangements where we are the lessee:

(In thousands)

Description	Balance Sheet Classification	December 28, 2019
Right-of-use asset	Right-of-use assets	$ 123,155
Lease liability - current	Other current liabilities	29,541
Lease liability - non-current	Other liabilities	104,614

Lease liabilities recorded upon the commencement of operating leases during 2019 were $30 million.

Operating lease cost was $37 million and variable lease cost was less than $1 million in 2019.

Maturity Analysis

Aggregate future payments under operating lease arrangements where we are the lessee (by fiscal year) are as follows:

(In thousands)	Operating Lease Obligations
2020	$ 33,845
2021	29,604
2022	23,903
2023	16,850
2024	8,250
2025 and thereafter	43,238
Aggregate future payments	155,690
Impact of discounting	(21,535)
Aggregate lease liability at December 28, 2019	$ 134,155

At December 28, 2019, the weighted-average remaining lease term and weighted-average discount rate for our operating lease arrangements where we are the lessee were 7.11 years and 3.7%, respectively.

Prior Periods

Prior to the adoption of Topic 842, we accounted for arrangements where we were the lessee under operating leases in accordance with ASC 840, *Leases*. Rent expense for office and warehouse space for our regional and global offices was $31 million in both 2018 and 2017. Aggregate minimum future payments under these non-cancelable operating leases as of December 29, 2018, were as follows:

(In thousands)	Operating Lease Obligations
2019	$ 29,739
2020	27,669
2021	22,904
2022	17,240
2023	10,166
2024 and thereafter	17,743
	$ 125,461

(7) Software Development

A summary of software development costs, net is as follows:

	2019		2018	
(In thousands)	Gross Carrying Amount	Accumulated Amortization	Gross Carrying Amount	Accumulated Amortization
Software to be sold, leased or marketed	$ 2,379,028	$ 1,586,134	$ 2,173,931	$ 1,398,090
Software delivered exclusively as a service	305,233	158,268	243,424	124,753
Total	$ 2,684,261	$ 1,744,402	$ 2,417,355	$ 1,522,843
Software development costs, net		$ 939,859		$ 894,512

Estimated aggregate amortization expense for each of the next five years is as follows:

(In thousands)	
2020	$ 252,370
2021	238,404
2022	190,241
2023	137,172
2024	89,972

Information regarding our software development costs is included in the following table:

	For the Years Ended		
(In thousands)	2019	2018	2017
Software development costs	$ 783,593	$ 747,128	$ 705,944
Capitalized software development costs	(273,871)	(273,693)	(274,148)
Amortization of capitalized software development costs	227,414	210,228	173,250
Total software development expense	$ 737,136	$ 683,663	$ 605,046

(8) Business Acquisition

On October 25, 2019, we acquired all of the issued and outstanding membership interests of AbleVets, LLC, a Virginia limited liability company ("AbleVets"). AbleVets is a health IT engineering and consulting company specializing in cybersecurity, cloud and system development solutions for federal organizations. We believe this acquisition enhances our resource capabilities and growth opportunities within our federal business. These factors, combined with the synergies and economies of scale expected from combining the operations of AbleVets, are the basis for acquisition and comprise the resulting goodwill recorded.

Consideration for the acquisition was $75 million in cash. The purchase price is subject to post-closing adjustments for working capital and certain other adjustments, as specified in the Purchase Agreement dated October 17, 2019, as amended.

The acquisition of AbleVets is being treated as a purchase in accordance with ASC 805, *Business Combinations*, which requires allocation of the purchase price to the estimated fair values of assets and liabilities acquired in the transaction. The allocation of purchase price is based on management's judgment after evaluating several factors, including a valuation assessment. The allocation of purchase price is subject to changes as working capital and certain other adjustments are agreed upon and finalized, and additional information becomes available; however, we do not expect material changes. The following is a summary of the preliminary allocation of purchase price:

(In thousands)	**Allocation Amount**
Cash and cash equivalents	$ 471
Receivables, net	11,690
Prepaid expenses and other	911
Property and equipment, net	1,240
Right-of-use assets	8,448
Goodwill	37,071
Intangible assets, net	37,402
Accounts payable	(5,244)
Deferred revenue	(157)
Accrued payroll and tax withholdings	(5,812)
Other current liabilities	(2,994)
Other liabilities	(8,016)
Total purchase price	$ 75,010

The fair values of the acquired intangible assets were estimated by applying the income approach. Such estimations required the use of inputs that were unobservable in the marketplace (Level 3), including a discount rate that we estimated would be used by a market participant in valuing these assets, projections of revenues and cash flows, and client attrition rates, among others. Refer to Note (11) for further information about the fair value level hierarchy.

The goodwill was allocated to our Domestic operating segment and is expected to be deductible for tax purposes. Identifiable intangible assets primarily consist of customer relationship intangible assets and are being amortized over a weighted-average period of 8 years. The operating results of AbleVets were combined with our operating results subsequent to the purchase date of October 25, 2019. Pro-forma results of operations, assuming this acquisition was made at the beginning of the earliest period presented, have not been presented because the effect of this acquisition was not material to our results.

(9) Goodwill and Other Intangible Assets

The changes in the carrying amounts of goodwill by segment were as follows:

(In thousands)	Domestic	International	Total
Balance at the end of 2017	$ 782,664	$ 70,341	$ 853,005
Foreign currency translation adjustment and other	—	(5,461)	(5,461)
Balance at the end of 2018	782,664	64,880	847,544
Goodwill recorded in connection with the AbleVets acquisition	37,071	—	37,071
Foreign currency translation adjustment and other	—	(1,457)	(1,457)
Balance at the end of 2019	$ 819,735	$ 63,423	$ 883,158

A summary of net intangible assets is as follows:

	2019		2018	
(In thousands)	Gross Carrying Amount	Accumulated Amortization	Gross Carrying Amount	Accumulated Amortization
Customer lists	$ 500,914	$ 271,211	$ 465,909	$ 229,545
Purchased software	364,144	353,722	361,964	311,738
Internal use software	174,572	99,272	143,520	78,633
Trade names	41,731	26,574	40,025	21,275
Other	49,389	15,532	47,905	12,827
Total	$ 1,130,750	$ 766,311	$ 1,059,323	$ 654,018
Intangible assets, net		$ 364,439		$ 405,305

Amortization expense for 2019, 2018 and 2017 was $114 million, $109 million and $118 million, respectively.

Estimated aggregate amortization expense for each of the next five years is as follows:

(In thousands)	
2020	$ 79,434
2021	69,235
2022	63,892
2023	53,125
2024	46,180

(10) Long-term Debt

The following is a summary of indebtedness outstanding:

(In thousands)	2019	2018
Credit agreement loans	$ 600,000	$ —
Senior notes	425,000	425,000
Capital lease obligations (under ASC Topic 840)	—	4,914
Other	14,162	14,162
Debt and capital lease obligations	1,039,162	444,076
Less: debt issuance costs	(780)	(360)
Debt and capital lease obligations, net	1,038,382	443,716
Less: current portion	—	(4,914)
Long-term debt	$ 1,038,382	$ 438,802

Credit Agreement

In May 2019 and November 2019, we entered into amendments to our Third Amended and Restated Credit Agreement (as amended, the "Credit Agreement") with a syndicate of lenders. The Credit Agreement provides for an unsecured revolving credit facility expiring in May 2024, and includes: (a) a revolving credit loan facility of up to $1.00 billion at any time outstanding, and (b) a letter of credit facility of up to $100 million at any time outstanding (which is a sub-facility of the $1.00 billion revolving credit loan facility). The Credit Agreement also includes an accordion feature allowing an increase of the credit facility of up to an additional $200 million ($1.20 billion in the aggregate) at any time outstanding, subject to lender participation and the satisfaction of specified conditions. Borrowings outstanding under the Credit Agreement are due in May 2024, with prepayment permitted at any time. Proceeds may be used for working capital and general corporate purposes, including but not limited to certain business acquisitions and purchases under our share repurchase programs. The Credit Agreement provides certain restrictions on our ability to borrow, incur liens, sell assets and pay dividends, and contains certain leverage and interest coverage covenants.

Generally, interest on revolving credit loans is payable at a variable rate based on LIBOR, prime, or the U.S. federal funds rate, plus a spread that varies depending on leverage ratios maintained. Unused commitment, letter of credit, and other fees are also payable under the Credit Agreement. As of December 28, 2019, the interest rate on revolving credit loans outstanding was 2.54% based on LIBOR plus the applicable spread.

As of December 28, 2019, we had outstanding revolving credit loans and letters of credit of $600 million and $30 million, respectively; which reduced our available borrowing capacity to $370 million under the Credit Agreement.

Senior Notes

On December 4, 2014, we entered into a Master Note Purchase Agreement (the "Master Note Purchase Agreement") with the Purchasers listed therein, pursuant to which we may issue and sell up to an aggregate principal amount of $1.50 billion of unsecured senior promissory notes to those Purchasers electing to purchase. In January 2015, we issued $500 million aggregate principal amount of unsecured Senior Notes ("Senior Notes"), pursuant to the Master Note Purchase Agreement. The issuance consisted of $225 million of 3.18% Series 2015-A Notes due February 15, 2022, $200 million of 3.58% Series 2015-B Notes due February 14, 2025, and $75 million in floating rate Series 2015-C Notes due February 15, 2022. Interest is payable semiannually on February 15th and August 15th in each year, commencing on August 15, 2015 for the Series 2015-A Notes and Series 2015-B Notes. The Master Note Purchase Agreement contains certain leverage and interest coverage ratio covenants and provides certain restrictions on our ability to borrow, incur liens, sell assets, and other customary terms. Proceeds from the Senior Notes are available for general corporate purposes. As of December 28, 2019, the remaining $1.00 billion available for sale is uncommitted and subject to participation by the Purchasers under the Master Note Purchase Agreement.

In March 2018, we repaid our $75 million floating rate Series 2015-C Notes due February 15, 2022.

Capital Lease Obligations

Capital lease obligations primarily related to the procurement of hardware and health care devices , accounted for in accordance with ASC Topic 840.

Other

Other indebtedness includes estimated amounts payable through September 1, 2025, under an agreement entered into in September 2015.

2019 Shelf Agreement

In November 2019, we entered into a Master Note Agreement (the "2019 Shelf Agreement"), pursuant to which we may issue and sell up to an aggregate principal amount of $1.05 billion of unsecured senior promissory notes ("Notes") over a three year period. The $1.05 billion available for sale is uncommitted and subject to participation by the Purchasers under the 2019 Shelf Agreement. The Notes will be priced based on real-time quotes for treasuries and credit spreads at the time of issuance and will either be Fixed Rate Notes or Floating Rate Notes, depending on the terms agreed to between us and the Purchasers. Proceeds from the Notes may be used for general corporate purposes. No Notes have been issued under the 2019 Shelf Agreement as of December 28, 2019.

Covenant Compliance

As of December 28, 2019, we were in compliance with all debt covenants .

Interest Rate Swap

We are exposed to market risk from fluctuations in the variable interest rates on outstanding indebtedness under our Credit Agreement. In order to manage this exposure, we have entered into an interest rate swap agreement, with an initial notional amount of $600 million, to hedge the variability of cash flows associated with such interest obligations through May 2024. The interest rate swap has an effective start date of May 13, 2019, and is designated as a cash flow hedge, which effectively fixes the interest rate on the hedged indebtedness under our Credit Agreement at 3.06%. As of December 28, 2019, this swap was in a net liability position with an aggregate fair value of $17 million, which is presented in our consolidated balance sheets in other current liabilities. We classify fair value measurements of our interest rate swap as Level 2, as further described in Note (11).

Our interest rate swap agreement is accounted for in accordance with ASC Topic 815, *Derivatives and Hedging*. Such agreement is designated as a cash flow hedge and considered to be highly effective under hedge accounting principles. Therefore, the swap agreement is recognized in our consolidated balance sheets as either an asset or liability, measured at fair value. Changes in the fair value of the swap agreement are initially recorded in accumulated other comprehensive loss, net and then subsequently recognized in our consolidated statements of operations in the periods in which earnings are affected by the hedged item. All cash flows associated with the swap agreement are classified as operating activities in our consolidated statements of cash flows.

Maturities of indebtedness outstanding at the end of 2019 are as follows:

(In thousands)	**Credit Agreement Loans**	**Senior Notes**	**Other**	**Total**
2020	$ —	$ —	$ —	$ —
2021	—	—	—	—
2022	—	225,000	—	225,000
2023	—	—	—	—
2024	600,000	—	—	600,000
2025 and thereafter	—	200,000	14,162	214,162
Total	$ 600,000	$ 425,000	$ 14,162	$ 1,039,162

(11) Fair Value Measurements

We determine fair value measurements used in our consolidated financial statements based upon the price that would be received to sell an asset or paid to transfer a liability in an orderly transaction between market participants at the measurement date. The fair value hierarchy distinguishes between (1) market participant assumptions developed based on market data obtained from independent sources (observable inputs) and (2) an entity's own assumptions about market participant assumptions developed based on the best information available in the circumstances (unobservable inputs). The fair value hierarchy consists of three broad levels, which gives the highest priority to unadjusted quoted prices in active markets for identical assets or liabilities (Level 1) and the lowest priority to unobservable inputs (Level 3). The three levels of the fair value hierarchy are described below:

- Level 1 – Valuations based on quoted prices in active markets for identical assets or liabilities that the entity has the ability to access.
- Level 2 – Valuations based on quoted prices for similar assets or liabilities, quoted prices in markets that are not active, or other inputs that are observable or can be corroborated by observable data for substantially the full term of the assets or liabilities.
- Level 3 – Valuations based on inputs that are supported by little or no market activity and that are significant to the fair value of the assets or liabilities.

The following table details our financial assets measured and recorded at fair value on a recurring basis at the end of 2019:

(In thousands)

		Fair Value Measurements Using		
Description	**Balance Sheet Classification**	**Level 1**	**Level 2**	**Level 3**
Money market funds	Cash equivalents	$ 185,666	$ —	$ —
Time deposits	Cash equivalents	—	64,286	—
Time deposits	Short-term investments	—	2,506	—
Government and corporate bonds	Short-term investments	—	83,313	—
Government and corporate bonds	Long-term investments	—	96,210	—

The following table details our financial assets measured and recorded at fair value on a recurring basis at the end of 2018:

(In thousands)

		Fair Value Measurements Using		
Description	**Balance Sheet Classification**	**Level 1**	**Level 2**	**Level 3**
Money market funds	Cash equivalents	$ 76,471	$ —	$ —
Time deposits	Cash equivalents	—	71,461	—
Commercial Paper	Cash equivalents	—	10,000	—
Time deposits	Short-term investments	—	31,947	—
Commercial paper	Short-term investments	—	75,354	—
Government and corporate bonds	Short-term investments	—	293,984	—
Government and corporate bonds	Long-term investments	—	18,192	—

Our interest rate swap agreement is measured and recorded at fair value on a recurring basis using a Level 2 valuation. The fair value of such agreement is based on the market standard methodology of netting the discounted expected future variable cash receipts and the discounted future fixed cash payments. The variable cash receipts are based on an expectation of future interest rates derived from observed market interest rate forward curves. Since these inputs are observable in active markets over the terms that the instrument is held, the derivative is classified as Level 2 in the hierarchy.

We estimate the fair value of our long-term, fixed rate debt using a Level 3 discounted cash flow analysis based on current borrowing rates for debt with similar maturities. We estimate the fair value of our long-term, variable rate debt using a Level 3 discounted cash flow analysis based on LIBOR rate forward curves. The fair value of our long-term debt, including current maturities, at the end of 2019 and 2018 was approximately $1.07 billion and $431 million, respectively. The carrying amount of such debt at the end of 2019 and 2018 was $1.03 billion and $425 million, respectively.

(12) Contingencies

We accrue estimates for resolution of any legal and other contingencies when losses are probable and reasonably estimable in accordance with ASC 450, *Contingencies* (“ASC 450”). No less than quarterly, we review the status of each significant matter underlying a legal proceeding or claim and assess our potential financial exposure. We accrue a liability for an estimated loss if the potential loss from any legal proceeding or claim is considered probable and the amount can be reasonably estimated. Significant judgment is required in both the determination of probability and the determination as to whether the amount of an exposure is reasonably estimable, and accruals are based only on the information available to our management at the time the judgment is made, which may prove to be incomplete or inaccurate or unanticipated events and circumstances may occur that might cause us to change those estimates and assumptions. Furthermore, the outcome of legal proceedings is inherently uncertain, and we may incur substantial defense costs and expenses defending any of these matters. Should any one or a combination of more than one of these proceedings be successful, or should we determine to settle any one or a combination of these matters, we may be required to pay substantial sums, become subject to the entry of an injunction or be forced to change the manner in which we operate our business, which could have a material adverse impact on our business, results of operations, cash flows or financial condition.

In 2019, we incurred a $30 million pre-tax charge in connection with a client dispute that arose during the same period, for which we paid cash of $20 million and $10 million in July 2019 and January 2020, respectively. Such pre-tax charge is included in sales and client service expense in our consolidated statements of operations. We have entered into a settlement with the client, releasing us from certain claims related to this dispute. We have not accrued a reserve for any additional damages or claims at this time because we cannot reasonably determine the probability of a loss and we cannot reasonably estimate the amount of loss, if any. While we can provide no assurances as to the ultimate outcome of any damages resulting from the excluded claims arising from this dispute, we believe the amount, if any, we will be required to pay to fully settle this dispute will not have a material adverse impact on our business, results of operations, cash flows or financial condition.

As previously disclosed, we continue to be in dispute with Fujitsu Services Limited ("Fujitsu") regarding Fujitsu's obligation to pay amounts to us due upon the termination of a subcontract, including client receivables, in connection with Fujitsu's contract as the prime contractor in the National Health Service ("NHS") initiative to automate clinical processes and digitize medical records in the Southern region of England. The NHS terminated its contract with Fujitsu, which gave rise to the termination of our subcontract with Fujitsu. We filed a request for arbitration with the London Court of International Arbitration on April 22, 2019 seeking damages. On December 30, 2019, Fujitsu filed its Defense and Counterclaim (the "Counterclaim") in response. In its Counterclaim, Fujitsu defends against our claim in full and argues that we are liable to Fujitsu for: (i) £306 million in damages based on our alleged fraudulent misrepresentations inducing Fujitsu to enter into the subcontract; or (ii) alternatively, £173.8 million in damages based on our alleged breaches of the subcontract.

We believe that Fujitsu's claims are without merit and will vigorously defend against them, and we continue to believe that we have valid and equitable grounds for recovery of the disputed client receivables; however, there can be no assurances as to the outcome of the dispute. As previously disclosed, we recorded a pre-tax charge of $45 million in the fourth quarter of 2018 to provide an allowance against the disputed client receivables reflecting the uncertainty in collection of such receivables and related litigation risk resulting from the conclusion of the non-binding alternative dispute resolution procedures, which occurred before we filed our request for arbitration. Such pre-tax charge is included in sales and client service expense in our consolidated statements of operations. We have not concluded that a loss related to the new claims raised by Fujitsu in the Counterclaim is probable, nor have we accrued a liability related to these claims beyond the previously reported pre-tax charge recorded in the fourth quarter of 2018. Although we believe a loss may be reasonably possible (as defined in ASC 450), we do not have sufficient information to determine the amount or range of reasonably possible loss with respect to the Counterclaim given that the dispute is in the early stages of the arbitration process.

Cerner Health Services, Inc. ("Cerner HS"), a wholly owned subsidiary of Cerner Corporation, filed a lawsuit in the Chester County, Pennsylvania, Court of Common Pleas against NextGen Healthcare Information Systems, LLC ("NextGen") relating to a dispute arising out of a supplier relationship initially established between Siemens Health Services, Inc. and NextGen prior to the acquisition of the assets of Siemens Health Services, Inc. by Cerner HS in 2015. In September 2017, the court issued a preliminary injunction to prevent NextGen from refusing to honor certain contractual obligations to support Cerner HS's clients who use NextGen ambulatory EHR solutions. In September 2018, NextGen filed a counterclaim alleging breach of contract and tortious interference but did not specify its damages. In August 2019, NextGen provided an expert report alleging profit disgorgement damages of $135 million or, alternatively, $30.5 million in lost profit damages, but the report did not discuss how our actions allegedly caused NextGen's damages. In December 2019, we deposed NextGen's expert, gaining additional clarity on categories of alleged damages but not on the alleged theories of liability. A jury trial is set to begin on April 20, 2020. We believe NextGen's claims are without merit and will vigorously defend against them; however, there can be no assurances as to the outcome of the dispute. We have not concluded that a loss related to the claims raised by NextGen in its counterclaim is probable, nor have we accrued a liability related to these claims. Although a loss may be reasonably possible (as defined in ASC 450), we do not have sufficient information to determine the amount or range of reasonably possible loss in light of the inherent difficulty of predicting the outcome of litigation generally, the wide range of damages presented by NextGen's expert, and the continued lack of clarity on the causal connection between Cerner Corporation's and Cerner HS's actions and any alleged damages.

The terms of our agreements with our clients generally provide for limited indemnification of such clients against losses, expenses and liabilities arising from third party or other claims based on, among other things, alleged infringement by our solutions of an intellectual property right of third parties or damages caused by data privacy breaches or system interruptions. The terms of such indemnification often limit the scope of and remedies for such indemnification obligations and generally include, as applicable, a right to replace or modify an infringing solution. For several reasons, including the lack of a sufficient number of prior indemnification claims relating to IP infringement, data privacy breaches or system interruptions, the inherent uncertainty stemming from such claims, and the lack of a monetary liability limit for such claims under the terms of the corresponding agreements with our clients, we cannot determine the maximum amount of potential future payments, if any, related to such indemnification provisions.

In addition to commitments and obligations in the ordinary course of business, we are involved in various other legal proceedings and claims that arise in the ordinary course of business, including for example, employment and client disputes and litigation alleging solution and implementation defects, personal injury, intellectual property infringement, violations of law and breaches of contract and warranties. Many of these proceedings are at preliminary stages and many seek an indeterminate amount of damages. At this time, we do not believe the range of potential losses under such claims to be material to our consolidated financial statements.

(13) Other Income

A summary of non-operating income and expense is as follows:

	For the Years Ended		
(In thousands)	**2019**	**2018**	**2017**
Interest income	$ 38,227	$ 34,211	$ 18,933
Interest expense	(14,469)	(7,987)	(8,012)
Gain on sale of equity investment	15,509	—	—
Unrealized gain on equity investment	14,112	—	—
Other	464	(158)	(4,263)
Other income, net	$ 53,843	$ 26,066	$ 6,658

(14) Income Taxes

Income tax expense (benefit) for 2019, 2018 and 2017 consists of the following:

	For the Years Ended		
(In thousands)	2019	2018	2017
Current:			
Federal	$ 45,575	$ 89,551	$ 37,708
State	13,429	24,804	4,878
Foreign	14,929	22,009	10,156
Total current expense	73,933	136,364	52,742
Deferred:			
Federal	30,353	31,129	13,676
State	11,747	8,144	23,278
Foreign	9,025	(4,845)	10,455
Total deferred expense	51,125	34,428	47,409
Total income tax expense	$ 125,058	$ 170,792	$ 100,151

Temporary differences between the financial statement carrying amounts and tax basis of assets and liabilities that give rise to significant portions of deferred income taxes at the end of 2019 and 2018 relate to the following:

(In thousands)	2019	2018
Deferred tax assets:		
Accrued expenses	$ 31,995	$ 31,273
Tax credits and separate return net operating losses	19,186	22,826
Share-based compensation	52,643	60,901
Lease liability	29,939	—
Other	12,701	14,951
Gross deferred tax assets	146,464	129,951
Less: Valuation Allowance	—	(1,404)
Total deferred tax assets	146,464	128,547
Deferred tax liabilities:		
Software development costs	(247,217)	(229,624)
Property and equipment	(171,267)	(131,516)
Prepaid expenses	(39,311)	(39,154)
Contract and service revenues and costs	(12,112)	(35,933)
Lease right-of-use assets	(28,100)	—
Other	(10,549)	(6,199)
Total deferred tax liabilities	(508,556)	(442,426)
Net deferred tax liability	$ (362,092)	$ (313,879)

At the end of 2019, we had net operating loss carry-forwards from foreign jurisdictions of $25 million that are available to offset future taxable income with no expiration. In addition, we had a state income tax credit carry-forward of $11 million available to offset income tax liabilities through December 31, 2030. We expect to fully utilize the net operating loss and tax credit carry-forwards in future periods.

At the end of 2019, we had not provided tax on the cumulative undistributed earnings of certain foreign subsidiaries of approximately $80 million, because it is our intention to reinvest these earnings indefinitely. The unrecognized deferred tax liability relating to these earnings is approximately $17 million.

The effective income tax rates for 2019, 2018, and 2017 were 19%, 21%, and 10%, respectively. These effective rates differ from the U.S. federal statutory rate of 21% for 2019 and 2018 and 35% for 2017 as follows:

	For the Years Ended		
(In thousands)	**2019**	**2018**	**2017**
Tax expense at statutory rates	$ 137,447	$ 168,179	$ 338,495
State income tax, net of federal benefit	18,561	25,321	22,214
Tax credits	(22,750)	(19,737)	(17,727)
Foreign rate differential	(6,328)	(4,851)	(26,379)
Share-based compensation	(8,090)	(1,696)	(62,501)
Change in U.S. tax rate	—	—	(170,999)
Deemed mandatory repatriation	—	—	25,114
Permanent differences	3,278	6,224	(10,700)
Other, net	2,940	(2,648)	2,634
Total income tax expense	$ 125,058	$ 170,792	$ 100,151

H.R. 1, *An Act to provide for reconciliation pursuant to titles II and V* of the concurrent resolution on the budget for fiscal year 2018 ("U.S. Tax Reform"), was enacted on December 22, 2017. U.S. Tax reform provides for, among other things, the reduction of the U.S. corporate tax rate from 35% to 21%, effective January 1, 2018. The impact of U.S. Tax Reform on our 2017 tax rate includes the impact of the revaluation of our net deferred tax liability to the lower enacted tax rate, and the impact of mandatory deemed repatriation. U.S. Tax Reform impacts our 2018 and 2019 tax rates through the reduced federal statutory tax rate, partially offset by the repeal of the permanent domestic production deduction, increases to permanently nondeductible expenses, as well as a new global intangible low-taxed income ("GILTI") inclusion. We have elected to account for GILTI Tax as incurred, and therefore have not provided any deferred tax impacts of GILTI in our consolidated financial statements.

A reconciliation of the beginning and ending amount of unrecognized tax benefit is presented below:

(In thousands)	**2019**	**2018**	**2017**
Unrecognized tax benefit - beginning balance	$ 18,688	$ 15,287	$ 9,769
Gross decreases - tax positions in prior periods	(2,383)	—	(1,734)
Gross increases - tax positions in prior periods	1,220	1,591	7,252
Gross increases - tax positions in current year	1,607	2,370	—
Settlements	—	(541)	—
Currency translation	(7)	(19)	—
Unrecognized tax benefit - ending balance	$ 19,125	$ 18,688	$ 15,287

If recognized, $12 million of the unrecognized tax benefit will favorably impact our effective tax rate. It is reasonably possible that our unrecognized tax benefits may decrease by up to $15 million within the next twelve months. Our federal returns have been examined by the Internal Revenue Service through 2016. Our federal returns are open for examination for 2017 and thereafter. We have various state and foreign returns under examination.

The ending amounts of accrued interest and penalties related to unrecognized tax benefits were $4 million in 2019 and $3 million in 2018. We classify interest and penalties as income tax expense in our consolidated statement of operations, and our income tax expense for 2019 and 2018 each included $1 million of interest and penalties.

The foreign portion of our earnings before income taxes was $109 million, $89 million, and $126 million in 2019, 2018, and 2017 respectively, and the remaining portion was domestic.

(15) Earnings Per Share

A reconciliation of the numerators and the denominators of the basic and diluted per share computations are as follows:

	2019			2018			2017		
(In thousands, except per share data)	Earnings (Numerator)	Shares (Denominator)	Per-Share Amount	Earnings (Numerator)	Shares (Denominator)	Per-Share Amount	Earnings (Numerator)	Shares (Denominator)	Per-Share Amount
Basic earnings per share:									
Income available to common shareholders	$ 529,454	318,229	$ 1.66	$ 630,059	330,084	$ 1.91	$ 866,978	331,373	$ 2.62
Effect of dilutive securities:									
Stock options, non-vested shares and share units	—	3,006		—	3,488		—	6,626	
Diluted earnings per share:									
Income available to common shareholders including assumed conversions	$ 529,454	321,235	$ 1.65	$ 630,059	333,572	$ 1.89	$ 866,978	337,999	$ 2.57

Options to purchase 9.6 million, 12.9 million and 10.6 million shares of common stock at per share prices ranging from $52.32 to $75.83, $50.04 to $73.40 and $50.04 to $73.40, were outstanding at the end of 2019, 2018 and 2017, respectively, but were not included in the computation of diluted earnings per share because they were anti-dilutive.

(16) Share-Based Compensation and Equity

Stock Option and Equity Plans

As of the end of 2019, we had five fixed stock option and equity plans in effect for associates and directors. This includes one plan from which we could issue grants, the Cerner Corporation 2011 Omnibus Equity Incentive Plan (the "Omnibus Plan"); and four plans from which no new grants are permitted, but some awards remain outstanding (Plans D, E, F, and G).

Awards under the Omnibus Plan may consist of stock options, stock appreciation rights, restricted stock, restricted stock units, performance shares, performance units, performance grants and bonus shares. At the end of 2019, 24.4 million shares remain available for awards. Stock options granted under the Omnibus Plan are exercisable at a price not less than fair market value on the date of grant. Stock options under the Omnibus Plan typically vest over a period of 4 or 5 years and are exercisable for periods of up to 10 years.

Stock Options

The fair market value of each stock option award granted in 2019 is estimated on the date of grant using the Black-Scholes-Merton ("BSM") pricing model. The pricing model requires the use of the following estimates and assumptions:

- Expected volatilities under the BSM model are based on an equal weighting of implied volatilities from traded options on our common shares and historical volatility.
- The expected term of stock options granted is the period of time for which an option is expected to be outstanding beginning on the grant date. Our calculation of expected term takes into account the contractual term of the option, as well as the effects of employees' historical exercise patterns; groups of associates (executives and non-executives) that have similar historical behavior are considered separately for valuation purposes.
- The risk-free rate is based on the zero-coupon U.S. Treasury bond with a term consistent with the expected term of the awards.

The weighted-average assumptions used to estimate the fair market value of stock options were as follows:

	For the Years Ended		
	2019	2018	2017
Expected volatility (%)	25.0%	27.0%	26.7%
Expected dividend rate (%)	1%	—	—
Expected term (yrs)	7	7	7
Risk-free rate (%)	2.4%	2.8%	2.1%

Stock option activity for 2019 was as follows:

(In thousands, except per share and term data)	Number of Shares	Weighted-Average Exercise Price (Per Share)	Aggregate Intrinsic Value	Weighted-Average Remaining Contractual Term (Yrs)
Outstanding at beginning of year	21,792	$ 52.31		
Granted	1,108	65.62		
Exercised	(6,221)	42.89		
Forfeited and expired	(1,263)	60.86		
Outstanding at end of year	15,416	56.36	$ 260,809	6.06
Exercisable at end of year	7,939	$ 52.16	$ 167,710	4.47

(In thousands, except for grant date fair values)	For the Years Ended		
	2019	2018	2017
Weighted-average grant date fair values	$ 17.51	$ 20.13	$ 20.50
Total intrinsic value of options exercised	$ 155,202	$ 74,530	$ 252,277
Cash received from exercise of stock options	258,036	91,349	76,705
Tax benefit realized upon exercise of stock options	36,629	17,233	85,657

As of the end of 2019, there was $98 million of total unrecognized compensation cost related to stock options granted under all plans. That cost is expected to be recognized over a weighted-average period of 2.67 years.

Non-vested Shares and Share Units

Non-vested shares and share units are valued at fair market value on the date of grant and will vest provided the recipient has continuously served on the Board of Directors through such vesting date or, in the case of an associate, provided that service and/or performance measures are attained. The expense associated with these grants is recognized over the period from the date of grant to the vesting date.

Non-vested share and share unit activity for 2019 was as follows:

(In thousands, except per share data)	Number of Shares	Weighted-Average Grant Date Fair Value Per Share
Outstanding at beginning of year	882	$ 62.82
Granted	2,349	66.49
Vested	(448)	67.00
Forfeited	(149)	64.31
Outstanding at end of year	2,634	$ 65.30

(In thousands, except for grant date fair values)	For the Years Ended 2019	2018	2017
Weighted average grant date fair values for shares granted during the year	$ 66.49	$ 59.34	$ 66.97
Total fair value of shares vested during the year	$ 30,558	$ 26,264	$ 11,050

As of the end of 2019, there was $128 million of total unrecognized compensation cost related to non-vested share and share unit awards granted under all plans. That cost is expected to be recognized over a weighted-average period of 2.11 years.

Associate Stock Purchase Plan

We established an Associate Stock Purchase Plan ("ASPP") in 2001, which qualifies under Section 423 of the Internal Revenue Code. Each individual employed by us and associates of our U.S. based subsidiaries, except as provided below, are eligible to participate in the ASPP ("Participants"). The following individuals are excluded from participation: (a) persons who, as of the beginning of a purchase period under the Plan, have been continuously employed by us or our domestic subsidiaries for less than two weeks; (b) persons who, as of the beginning of a purchase period, own directly or indirectly, or hold options or rights to acquire under any agreement or Company plan, an aggregate of 5% or more of the total combined voting power or value of all outstanding shares of all classes of Company common stock; and, (c) persons who are customarily employed by us for less than 20 hours per week or for less than five months in any calendar year. Participants may elect to make contributions from 1% to 20% of compensation to the ASPP, subject to annual limitations determined by the Internal Revenue Service. Participants may purchase Company common stock at a 15% discount on the last business day of the option period. The purchase of Company common stock is made through the ASPP on the open market and subsequently reissued to Participants. The difference between the open market purchase and the Participant's purchase price is recognized as compensation expense, as such difference is paid by Cerner, in cash.

Share-Based Compensation Cost

Our stock option and non-vested share and share unit awards qualify for equity classification. The costs of our ASPP, along with participant contributions, are recorded as a liability until open market purchases are completed. The amounts recognized in the consolidated statements of operations with respect to stock options, non-vested shares and share units and ASPP are as follows:

(In thousands)	For the Years Ended 2019	2018	2017
Stock option and non-vested share and share unit compensation expense	$ 103,641	$ 95,423	$ 83,019
Associate stock purchase plan expense	6,053	6,082	6,277
Amounts capitalized in software development costs, net of amortization	(410)	914	(327)
Amounts charged against earnings, before income tax benefit	$ 109,284	$ 102,419	$ 88,969
Amount of related income tax benefit recognized in earnings	$ 20,967	$ 21,371	$ 25,265

Preferred Stock

As of the end of 2019 and 2018, we had 1.0 million shares of authorized but unissued preferred stock, $0.01 par value.

Treasury Stock

Under our current share repurchase program, which was initially approved by our Board of Directors in May 2017 and most recently amended in December 2019, the Company is authorized to repurchase up to $3.70 billion of shares of our common stock, excluding transaction costs. The repurchases are to be effectuated in the open market, by block purchase, in privately negotiated transactions, or through other transactions managed by broker-dealers. No time limit was set for the completion of the program. During 2019, 2018, and 2017, we repurchased 18.8 million, 11.2 million, and 2.7 million shares for total consideration of $1.30 billion, $644 million, and $173 million, respectively, under the program. The shares were recorded as treasury stock and accounted for under the cost method. No repurchased shares have been retired. As of December 28, 2019, $1.68 billion remains available for repurchase under the program.

Dividends

On December 12, 2019, our Board of Directors declared a cash dividend of $0.18 per share on our issued and outstanding common stock, which was paid on January 9, 2020 to shareholders of record as of December 27, 2019. On September 10, 2019, our Board of Directors declared a cash dividend of $0.18 per share on our issued and outstanding common stock, which was paid on October 9, 2019 to shareholders of record as of September 25, 2019. On May 29, 2019, our Board of Directors declared a cash dividend of $0.18 per share on our issued and outstanding common stock, which was paid on July 26, 2019 to shareholders of record as of June 18, 2019. In connection with the declaration of such dividends, our non-vested shares and share units are entitled to dividend equivalents, which will be payable to the holder subject to, and upon vesting of, the underlying awards. Our outstanding stock options are not entitled to dividend or dividend equivalents. At December 28, 2019, our consolidated balance sheet included a liability for dividends payable of $56 million, which is included in other current liabilities.

Accumulated Other Comprehensive Loss, Net (AOCI)

The components of AOCI, net of tax, were as follows:

(In thousands)	Foreign currency translation adjustment and other	Unrealized loss on cash flow hedge	Unrealized holding gain (loss) on available-for-sale investments	Total
Balance at December 31, 2016	$ (109,827)	$ —	$ (338)	$ (110,165)
Other comprehensive income (loss) before reclassifications	37,463	—	(672)	36,791
Amounts reclassified from AOCI	—	—	(8)	(8)
Balance at December 30, 2017	(72,364)	—	(1,018)	(73,382)
Other comprehensive income (loss) before reclassifications	(30,575)	—	402	(30,173)
Amounts reclassified from AOCI	—	—	3	3
Balance at December 29, 2018	(102,939)	—	(613)	(103,552)
Other comprehensive income (loss) before reclassifications	(3,408)	(13,078)	901	(15,585)
Amounts reclassified from AOCI	—	500	(23)	477
Balance at December 28, 2019	$ (106,347)	$ (12,578)	$ 265	$ (118,660)

The effects on net earnings of amounts reclassified from AOCI were as follows:

(In thousands)		Years Ended		
AOCI Component	**Location**	**2019**	**2018**	**2017**
Unrealized loss on cash flow hedge	Other income, net	$ (624)	$ —	$ —
	Income taxes	124	—	—
	Net of tax	(500)	—	—
Unrealized holding gain (loss) on available-for-sale investments	Other income, net	29	(4)	12
	Income taxes	(6)	1	(4)
	Net of tax	23	(3)	8
Total amount reclassified, net of tax		$ (477)	$ (3)	$ 8

(17) Foundations Retirement Plan

The Cerner Corporation Foundations Retirement Plan (the "Plan") was established under Section 401(k) of the Internal Revenue Code. All associates age 18 and older and who are not a member of an excluded class are eligible to participate. Participants may elect to make pre-tax and Roth (post-tax) contributions from 1% to 80% of eligible compensation to the Plan, subject to annual limitations determined by the Internal Revenue Service. Participants may direct contributions into mutual funds, a stable value fund, a Company stock fund, or a self-directed brokerage account. The Plan has a first tier discretionary match that is made on behalf of participants in an amount equal to 33% of the first 6% of the participant's salary contribution. The Plan's first tier discretionary match expenses were $31 million, $31 million and $29 million for 2019, 2018 and 2017, respectively.

The Plan also provides for a second tier matching contribution that is purely discretionary, the payment of which will depend on overall Company performance and other conditions. If approved by the Compensation Committee, contributions by the Company will be tied to attainment of established financial metric goals, such as earnings per share for the year. Participants who defer 2% of their paid base salary, are actively employed as of the last day of the Plan year and have worked at least 92 consecutive calendar days with Cerner during such Plan year are eligible to receive the second tier discretionary match contribution, if any such second tier matching contribution is approved by the Compensation Committee. For the years ended 2019 and 2018, we expensed $28 million and $10 million, respectively, for the second tier discretionary distributions.

(18) Purchase Obligations

We have purchase commitments with various vendors, and minimum funding commitments under collaboration agreements through 2029. Aggregate future payments under these commitments are as follows:

(In thousands)	**Purchase Obligations**
2020	$ 151,950
2021	95,933
2022	34,501
2023	37,237
2024	30,462
2025 and thereafter	560,925
	$ 911,008

(19) Segment Reporting

We have two operating segments, Domestic and International (formerly referred to as Global). Revenues are derived primarily from the sale of clinical, financial and administrative information solutions and services. The cost of revenues includes the cost of third-party consulting services, computer hardware, devices and sublicensed software purchased from manufacturers for delivery to clients. It also includes the cost of hardware maintenance and sublicensed software support subcontracted to the manufacturers. Operating expenses incurred by the geographic business segments consist of sales and client service expenses including salaries of sales and client service personnel, expenses associated with our managed services business, marketing expenses, communications expenses and unreimbursed travel expenses. "Other" includes expenses that have not been allocated to the operating segments, such as software development, general and administrative expenses, certain organizational restructuring and other expense, share-based compensation expense, and certain amortization and depreciation. Performance of the segments is assessed at the operating earnings level by our chief operating decision maker, who is our Chief Executive Officer. Items such as interest, income taxes, capital expenditures and total assets are managed at the consolidated level and thus are not included in our operating segment disclosures. Accounting policies for each of the reportable segments are the same as those used on a consolidated basis.

The following table presents a summary of our operating segments and other expense for 2019, 2018 and 2017:

(In thousands)	Domestic	International	Other	Total
2019				
Revenues	$ 5,038,127	$ 654,471	$ —	$ 5,692,598
Costs of revenue	967,035	104,006	—	1,071,041
Operating expenses	2,398,422	276,914	1,345,552	4,020,888
Total costs and expenses	3,365,457	380,920	1,345,552	5,091,929
Operating earnings (loss)	$ 1,672,670	$ 273,551	$ (1,345,552)	$ 600,669

(In thousands)	Domestic	International	Other	Total
2018				
Revenues	$ 4,730,266	$ 636,059	$ —	$ 5,366,325
Costs of revenue	827,904	109,444	—	937,348
Operating expenses	2,164,465	321,116	1,168,611	3,654,192
Total costs and expenses	2,992,369	430,560	1,168,611	4,591,540
Operating earnings (loss)	$ 1,737,897	$ 205,499	$ (1,168,611)	$ 774,785

(In thousands)	Domestic	International	Other	Total
2017				
Revenues	$ 4,575,171	$ 567,101	$ —	$ 5,142,272
Costs of revenue	755,729	98,362	—	854,091
Operating expenses	1,998,544	264,196	1,064,970	3,327,710
Total costs and expenses	2,754,273	362,558	1,064,970	4,181,801
Operating earnings (loss)	$ 1,820,898	$ 204,543	$ (1,064,970)	$ 960,471

(20) Quarterly Results (unaudited)

Selected quarterly financial data for 2019 and 2018 is set forth below:

(In thousands, except per share data)	Revenues	Earnings Before Income Taxes	Net Earnings	Basic Earnings Per Share	Diluted Earnings Per Share
2019					
First Quarter	$ 1,389,877	$ 206,376	$ 166,219	$ 0.51	$ 0.51
Second Quarter[(a)]	1,431,061	154,123	126,969	0.40	0.39
Third Quarter[(a)(b)]	1,429,428	102,312	81,935	0.26	0.26
Fourth Quarter[(a)(b)]	1,442,232	191,701	154,331	0.49	0.49
Total	$ 5,692,598	$ 654,512	$ 529,454		

[(a)]Second through Fourth quarter results include pre-tax charges for employee separation costs of $41 million, $32 million and $13 million, respectively, as further described in Note (1).
[(b)]Third and Fourth quarter results include pre-tax charges for contract termination costs of $60 million and $6 million, respectively, as further described in Note (1).

(In thousands, except per share data)	Revenues	Earnings Before Income Taxes	Net Earnings	Basic Earnings Per Share	Diluted Earnings Per Share
2018					
First Quarter	$ 1,292,861	$ 200,079	$ 160,001	$ 0.48	$ 0.48
Second Quarter	1,367,727	214,884	169,357	0.51	0.51
Third Quarter	1,340,073	214,099	169,381	0.51	0.51
Fourth Quarter [(c)]	1,365,664	171,789	131,320	0.40	0.40
Total	$ 5,366,325	$ 800,851	$ 630,059		

(c) Fourth quarter results include a pre-tax charge of $45 million to provide an allowance against certain client receivables with Fujitsu, as further discussed in Note (12).

Exhibit 4.2

DESCRIPTION OF CAPITAL STOCK

The following is a brief description of the capital stock of Cerner Corporation, a Delaware corporation (the “Company,” “we,” “us,” or “our”). The brief description is based on our Third Restated Certificate of Incorporation (our “charter”), amended and restated bylaws (our “bylaws”), and provisions of applicable law. The following description does not purport to be complete and is subject to, and qualified in its entirety by, the full text of our charter and our bylaws, which we have previously filed with the SEC and are incorporated by reference herein.

GENERAL

The Company’s authorized capital stock consists of 500,000,000 shares of common stock, par value $0.01 per share, and 1,000,000 shares of preferred stock, par value $0.01 per share. As of December 28, 2019, an aggregate of 367,634,796 shares of common stock were issued, of which an aggregate of 310,911,250 shares were outstanding. No shares of preferred stock were issued and outstanding as of December 28, 2019.

COMMON STOCK

Voting Rights

The holders of our common stock are entitled to one vote per share on any matter to be voted upon by stockholders. The holders of a majority of the outstanding shares of stock entitled to vote at a meeting, present in person or represented by proxy, constitute a quorum at all stockholder meetings for the transaction of business, except as otherwise provided by law, our charter or our bylaws. Every decision of a majority in amount of stock of such quorum will be valid as a corporate act, except in the election of directors or in those specific instances in which a larger vote is required by law or by our charter or our bylaws. The holders of common stock are not entitled to cumulative voting rights with respect to the election of directors. Stockholders elect directors by the affirmative vote of a majority of the votes cast, in person or by proxy, by the holders of outstanding shares of stock entitled to vote for the election of directors; provided that if the number of nominees exceeds the number of directors to be elected at any time before the election, the stockholders will instead elect the directors by a plurality vote.

Dividends

The holders of our common stock are entitled to such dividends as our Board of Directors may declare from time to time from legally available funds, subject to limitations under Delaware law and the preferential rights of the holders of any outstanding shares of preferred stock.

Liquidation

Upon any voluntary or involuntary liquidation, dissolution or winding up of our affairs, the holders of our common stock shall be entitled to receive, ratably in proportion to the number of shares of common stock held by them respectively, all of the remaining assets of the Company after payment to creditors and subject to prior distribution rights granted to the holders of any outstanding shares of preferred stock.

No Preemptive or Similar Rights

Our common stock is not entitled to preemptive rights, conversion or other rights to subscribe for additional securities and there are no redemption or sinking fund provisions applicable to our common stock.

Fully Paid and Non-assessable

All of the outstanding shares of common stock are fully paid and non-assessable.

PREFERRED STOCK

Our Board of Directors is authorized, without any further action by our stockholders, but subject to the limitations imposed by the General Corporation Law of Delaware (the “DGCL”), to issue up to 1,000,000 shares of preferred stock in one or more series. Our Board of Directors may fix the rights, preferences and privileges of the preferred stock, along with any limitations or restrictions, including voting rights, dividend rights, conversion rights, redemption privileges, and liquidation preferences of each series of preferred stock. The preferred stock could have voting or conversion rights that could adversely affect the voting power or other rights of holders of our common stock. Also, the issuance of preferred stock could decrease the amount of earnings and assets available for distribution to holders of our common stock.

CERTAIN EFFECTS OF AUTHORIZED BUT UNISSUED STOCK

We may issue additional shares of common stock or preferred stock without stockholder approval, subject to applicable rules of the The Nasdaq Stock Market LLC and Delaware law, for a variety of corporate purposes, including future public or private offerings to raise capital, corporate acquisitions, and employee benefit plans and equity grants. The existence of unissued and unreserved common stock and preferred stock may enable us to issue shares to persons who are friendly to current management, which could discourage an attempt to obtain control of the Company by means of a proxy contest, tender offer, merger, or otherwise.

ANTI-TAKEOVER EFFECTS OF PROVISIONS OF OUR CHARTER AND BYLAWS

The following is a brief description of the provisions in our charter and bylaws that could have an effect of delaying, deferring, or preventing a change in control of the Company.

Classified Board

Our charter and bylaws provide that the number of the Board of Directors shall be divided into three classes. Stockholders elect the directors of each class for three-year terms upon the expiration of the current term of a respective class. Stockholders elect only one class of directors each year. The classified Board of Directors could have the effect of making the replacement of the Company's incumbent directors more time consuming and difficult. At least two annual meetings of stockholders are generally required to effect a change in a majority of our Board of Directors.

Director Vacancies and Removal

Our charter and bylaws provide that any vacancies on our Board of Directors and newly created directorships will be filled by the affirmative vote of a majority of the remaining directors, although less than a quorum, or by a sole remaining director. Our charter and bylaws provide that directors may be removed only for cause and only by the affirmative vote of the holders of 80% or more of the aggregate of all votes of all outstanding shares of capital stock entitled to vote on such removal.

Advance Notice for Stockholder Proposals and Nominations

Our bylaws contain provisions requiring advance notice be delivered to the Company of any business to be brought by a stockholder before an annual meeting and providing for procedures to be followed by stockholders in nominating persons for election to our Board of Directors, including stockholder nominees to be included in our proxy statement. A stockholder must give notice no later than the 90th day nor earlier than the 120th days before the one-year anniversary of the date on which we held our annual meeting of stockholders the previous year. The notice must contain the information required by our bylaws, and the stockholder(s) and nominee(s) must comply with the information and other requirements required by our bylaws.

Limits on Ability of Stockholders to Call a Special Meeting or Act by Written Consent

Our charter and bylaws provide that special meetings of the stockholders may be called only by the chairman of the Board of Directors, by the chief executive officer, by the president or by the Board of Directors pursuant to a resolution approved by a majority of the entire Board of Directors. Our charter and bylaws also eliminate the ability of stockholders to take action by written consent. These provisions may delay the ability of our stockholders to force consideration of a proposal.

No Cumulative Voting

The DGCL provides that stockholders are not entitled to the right to cumulate votes in the election of directors unless our charter provides otherwise. Our charter does not provide for cumulative voting for our directors. The absence of cumulative voting may make it more difficult for stockholders owning less than a majority of our common stock to elect any directors to our Board of Directors.

Approval of Business Combinations with Interested Stockholders

Our charter requires the affirmative vote of 80% or more of the aggregate of all votes of all outstanding shares of capital stock entitled to vote on the issue to approve certain transactions with any stockholder owning 5% or more of our outstanding shares of capital stock at the time of approval of the transactions (including any affiliates of such stockholder, an "Interested Stockholder"). The covered transactions include a merger or consolidation with an Interested Stockholder, any sale, lease, exchange or other disposition to an Interested Stockholder of our assets having an aggregate Fair Market Value (as defined in the charter) of $500,000 or more, the issuance or transfer of securities to an Interested Stockholder in exchange for cash, securities or other property having a Fair Market Value (as defined in the charter) of $500,000 or more, the adoption of any plan or proposal for liquidation or dissolution proposed by an Interested Stockholder, or any reclassification of securities that increases the voting power of the Interested Stockholder. The foregoing 80% stockholder approval requirement is not required in certain circumstances, including if the transaction has been approved by a majority of Disinterested Directors (as defined in our charter).

Supermajority Voting Requirements to Amend Our Charter and Bylaws

Our charter includes a number of supermajority voting provisions that could make it more difficult to change certain of the provisions described above. These provisions require the affirmative vote of 80% or more of the aggregate of all votes of all outstanding shares of capital stock entitled to vote on the issue in question to amend, alter repeal (or adopt, amend or alter provisions in conflict with) the provisions of our charter relating to the terms of our capital stock, the election and removal of directors, changes to our classified board structure, approval of business combinations with an Interested Stockholder, the right of stockholders to act by written consent or the ability of stockholders to call a special meeting. Our charter also provides that our bylaws may only be adopted, amended, altered or repealed by our board or by the affirmative vote of 80% or more of the aggregate of all votes of all outstanding shares of capital stock entitled to vote thereon.

LISTING

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

TRANSFER AGENT AND REGISTRAR

The transfer agent and registrar for our common stock is Computershare Trust Company, N.A.

Exhibit 10.7

SEPARATION AGREEMENT

This Separation Agreement ("Separation Agreement"), is made by and between Cerner Corporation (together with its subsidiaries and affiliates, "Cerner") and Michael R. Nill ("you" or "your" and, together with Cerner, the "parties").

RECITALS

WHEREAS, you are currently, and have been since May 15, 2011, the Executive Vice President and Chief Operating Officer of Cerner and have been employed by Cerner since November 18, 1996;

WHEREAS, you entered into a Cerner Associate Employment Agreement with Cerner dated November 18, 1996 (your "EA"), as amended by the Cerner Executive Severance Agreement dated September 11, 2017 (your "Severance Agreement" and together with your EA, your "Employment Agreement"), and a Mutual Arbitration Agreement with Cerner dated December 1, 2015 (your "Arbitration Agreement");

WHEREAS, you are departing from Cerner, and the parties have mutually agreed to the separation benefits described herein;

WHEREAS, your last day of employment for salary, cash awards under the Cerner Corporation 2018 Performance Compensation Plan ("CPP"), benefits, regular equity vesting and transition purposes will be January 10, 2020; and

WHEREAS, in consideration for the separation payments and acceleration of the vesting of outstanding equity-based compensation awards described herein, and other good and valuable consideration, the receipt and sufficiency of which you and Cerner hereby acknowledge, you agree to the terms contained herein and, as described below, agree to release Cerner and the Cerner Released Parties (as defined in this Separation Agreement) from matters arising out of or related to your employment with Cerner.

NOW, THEREFORE, in consideration of the mutual covenants, promises, and obligations set forth herein, the parties agree as follows:

1. **SEPARATION BENEFITS.** Subject to your acceptance and timely return of this Separation Agreement to Cerner, without revocation, Cerner agrees to the following:

   A. Your last day of employment for salary, CPP, benefits, reimbursement of expenses, regular equity vesting and transition purposes will be January 10, 2020, and Cerner will continue to pay your salary through January 10, 2020, on Cerner's regular paydays. As of January 10, 2020, you shall cease to be covered by Cerner's insider trading policy and shall cease to be covered by Cerner's stock ownership guidelines and you shall be free to trade any shares of Cerner stock that you own, subject to your compliance with insider trading and short-swing profit rules.

   B. Cerner will provide you with separation payments of $62,208.49, less applicable deductions required by law, on a biweekly basis on Cerner's regular paydays during the twenty-four (24) month period following January 10, 2020, commencing on the January 24, 2020 payday. Such biweekly separation payments are based upon (i) your annual base salary effective March 31, 2019 ($690,000); (ii) your annual target cash bonus effective March 31, 2019 ($911,000); plus (iii) the difference between the monthly COBRA continuation premium for you and your partner, spouse or dependents under Cerner's health, vision and dental plans in effect as of the date of your termination and the monthly amount you were paying for such coverage.

C. As of the Effective Date of this Separation Agreement, Cerner will, with respect to each of your outstanding equity awards as of the date hereof and granted by Cerner to you pursuant to an equity compensation plan approved by Cerner's shareholders and relating to Cerner common stock (each a "Cerner Equity Award") (i) fully vest each Cerner Equity Award that is an outstanding unvested stock option (and you shall have the earlier of one year from the Effective Date and the balance of the original option term to exercise such option); (ii) fully vest each Cerner Equity Award that is an outstanding unvested time-based Restricted Stock Unit ("RSU"); and (iii) fully vest each Cerner Equity Award that is an outstanding unvested Performance Share Unit ("PSU"), including the RSUs and PSUs granted to you on April 29, 2019, assuming a 100% of target level of achievement. Each of the grant instruments for any Cerner Equity Award the vesting or exercise of which is adjusted by this Paragraph 1.C. is hereby deemed amended by the parties upon the Effective Date of this Separation Agreement.

2. In the event of your death before the completion of the payout of any of the benefits described in Paragraph 1, Cerner will pay the remaining benefits described in Paragraph 1 in a lump sum to your designated Beneficiary separately communicated to Cerner provided that Beneficiary completes and delivers a Form W-9 to Cerner. You may revoke or change this Beneficiary designation at any time by delivering to Cerner a written document signed by you with the attestation of a notary stating that you are revoking or changing the designation, provided that such document is delivered while you are still alive and of sound mind. If your designated Beneficiary does not survive you or if your deaths are simultaneous, this paragraph and designation shall be void and of no effect, and any payments due under Paragraph 1 shall be made to your estate.

3. **YOUR RELEASE OF CLAIMS.** On behalf of yourself and your successors, assigns, agents, heirs and descendants, you hereby acquit, release and forever discharge Cerner and its affiliates and subsidiaries, and all of their successors, assigns, officers, directors, agents, servants, employees, shareholders, fiduciaries, attorneys and representatives, whether past or present for all of the foregoing (collectively, the **"Cerner Released Parties**") from any and all manner of claims, debts, damages, injuries, judgments, awards, executions, demands, liabilities, obligations, suits, actions and causes of action, whether known or unknown, fixed or contingent, accrued or to accrue, direct or indirect, and whether at law or in equity, which you may have against the Cerner Released Parties, including, but not limited to, those arising out of or by reason of your employment by Cerner, or with respect to your departure from employment with Cerner and/or its subsidiaries, or with respect to claims for expenses, salary, incentive payments or equity grants against Cerner.

Without in any way limiting the generality of the foregoing, you acknowledge and agree that you are hereby releasing and discharging Cerner and all other Cerner Released Parties from any and all manner of claims, debts, damages, injuries, judgments, awards, executions, demands, liabilities, obligations, suits, actions and causes of action that may be asserted under any local, state, federal, statutory or common law relating to discrimination in employment including, without limitation, discrimination relating to race, ethnicity, religion, sex, pregnancy, disability, equal pay, age, veteran status, national origin, creed, color, and retaliation, and including claims under Title VII of the Civil Rights Act of 1964, the Civil Rights Act of 1991, the Americans with Disabilities Act, the Equal Pay Act, the Age Discrimination in Employment Act, Family and Medical Leave Act, 42 U.S.C. Sections 1981, 1983 and 1985, the Employee Retirement Income Security Act ("ERISA"), Workmen's Compensation laws, Consolidated Omnibus Budget Reconciliation Act, the Worker Adjustment and Retraining Notification Act, Executive Order 11246, the Rehabilitation Act, veterans' laws, all federal, state and local laws related to libel, slander, defamation, invasion of privacy, breach of contract, outrageous conduct, intentional or negligent infliction of emotional distress, respondent superior, negligent hiring or retention, and all other laws and ordinances which are meant to protect workers in their employment relationships and under which you might have rights and claims.

A. **Includes Release of ADEA Claims.** You understand and agree that you are releasing Cerner and all other Cerner Released Parties from all rights and claims of discrimination relating to age, including all rights and claims under the Age Discrimination in Employment Act of 1967, as amended (hereinafter referred to as "ADEA").

B. Nothing in this Separation Agreement is intended to, or shall, interfere with your rights under federal, state, or local civil rights or employment discrimination laws to file or otherwise institute a charge of discrimination, to participate in a proceeding with any appropriate federal, state, or local government agency enforcing discrimination laws, or to cooperate with any such agency in its investigation, none of which shall constitute a breach of this letter agreement. You shall not, however, be entitled to any relief, recovery, or monies in connection with any such action or investigation brought against Cerner, regardless of who filed or initiated any such complaint, charge, or proceeding. Nothing in this Separation Agreement is intended to, or shall, interfere with your right to file a claim for unemployment benefits (if any), or to file a claim asserting any causes of action which by law you may not legally waive.

C. Nothing in this Separation Agreement is intended to, or shall, interfere with (1) your rights to indemnification under Cerner's bylaws (and Cerner agrees to keep in force sufficient directors and officers insurance to protect you against such potential liabilities for a period of three years from the Effective Date). (2) your rights to vested ERISA benefits; and (3) your rights under this Separation Agreement.

4. **CERNER'S RELEASE OF CLAIMS.** Cerner, its affiliates and subsidiaries and all of their successors and assigns (collectively, the **"Cerner Parties**") hereby acquit, release and forever discharge you and your successors, assigns, agents, heirs and descendants, from any and all manner of claims, debts, damages, injuries, judgments, awards, executions, demands, liabilities, obligations, suits, actions and causes of action that have accrued as of and are known to Cerner on your termination date, whether direct or indirect and whether at law or in equity, which the Cerner Parties may have against you arising out of your employment with Cerner. The Cerner Parties' release of claims does apply to any and all employment claims brought by Cerner associates or third parties, whether known or unknown to Cerner on your termination date. The Cerner Parties' release of claims does not apply to claims related to the enforcement of or your failure to comply with this Agreement or your violation of your noncompetition, confidentiality, and non-solicitation obligations.

5. **RETURN OF CERNER PROPERTY.** You acknowledge that you will return all Cerner-issued equipment, including, but not limited to, your security card/office key to the building(s) upon your January 10, 2020 termination date. Cerner agrees you will not be required to return your laptop, ipad and cell phone and you may retain those devices as personal property after your January 10, 2020 termination date; however, you agree that you will first work with Cerner to ensure that corporate data is appropriately transferred to Cerner information systems and wiped from the devices and to allow Cerner to preserve potentially relevant data for any pending legal matters. You further

acknowledge and agree that you will return all other Cerner property, manuals or other intellectual property, confidential information or materials containing trade secrets of Cerner in your possession and that no copies thereof will be retained by you or on your behalf by any third party after your January 10, 2020 termination date.

6. **OBLIGATIONS WITH RESPECT TO CONFIDENTIALITY.** You acknowledge and agree that all confidentiality obligations and covenants set forth in your Employment Agreement or any other employment agreement that you signed at the time of or during your employment by Cerner or any of its subsidiaries shall continue in full force and effect.

Nothing in this Separation Agreement shall (i) prohibit you from disclosing confidential information in connection with reporting possible violations of law or regulation to any governmental agency or entity or attorney in accordance with any whistleblower protection provisions of applicable law or regulation, including 18 USC 1833, or (ii) require notification or prior approval by Cerner of any reporting described in clause (i); provided, however, that any such disclosures must be made in accordance with the applicable law or regulation and in a manner that limits, to the furthest extent possible, disclosure of confidential information.

7. **NON-SOLICITATION.** In consideration for the separation payments to be provided under this Separation Agreement, you agree, subject to applicable state law, that for a period of two (2) years following the termination of your employment, you will not, directly or indirectly, on behalf of yourself or on behalf of any other person, entity, or organization, solicit for employment (i) any Cerner associate, or (ii) any employee of a Cerner client company with whom you have had personal interaction within the one year prior to your separation date. For purposes of this Paragraph 7, "solicit" means that you will not affirmatively initiate communications with (i) any Cerner associate, or (ii)any employee of a Cerner client company with whom you have had personal interaction within the one year prior to your separation date, for the purpose of inviting such associate or employee to apply for or consider employment with another person, entity, or organization. For the avoidance of doubt, this provision shall in no way prohibit job postings of general applicability, provided that they are not specifically targeted at (i) employees of Cerner, or (ii) employees of a Cerner client company with whom you have had personal interaction within the one year prior to your separation date (or from hiring an individual via such a job posting). You further agree that the obligations set forth herein are in lieu of the non-solicit obligation in your Employment Agreement

8. **COOPERATION.** You agree that you will cooperate with Cerner in a professional manner in the transition of your job duties, and in the defense of any legal matters about which you have material knowledge.

9. **CONSIDERATION PERIOD.** You acknowledge that you have twenty-one (21) days from the date you received this Separation Agreement in which to consider it, although you may sign this Separation Agreement earlier than 21 days if you so choose. You further understand that you have the right to revoke this Separation Agreement by delivering written notice to Cerner during the seven-day period after you sign it. This Separation Agreement shall become effective after the seven-day revocation period has expired assuming you do not revoke it, but in no event earlier than January 18, 2020 (the "**Effective Date**").

10. **NO FURTHER PAYMENTS.** You agree that your employment will terminate effective January 10, 2020, and that, after that date, Cerner will owe no additional compensation to you other than: (i) your final paycheck covering the period through January 10, 2020, (ii) any performance-based cash

incentive compensation earned but not yet paid as of January 10, 2020 (including, the Q4 2019 CPP bonus as described in Paragraph 10.B., below), and (iii) the separation benefits described in Paragraph 1.

A. You agree that amounts paid pursuant to this Separation Agreement shall be in full and final satisfaction of any amounts or other benefits that could be owed to you under any other agreement you may have entered into with Cerner or, except as required by law or specifically provided herein, any other Cerner benefit plan or arrangement, including but not limited to your Employment Agreement (including Paragraph 8 of that Employment Agreement), the Enhanced Severance Pay Plan or the Business Optimization Severance Pay Plan.

B. You will remain eligible to participate in the Cerner Corporation 2018 Performance Compensation Plan ("CPP") through the last day of the fourth fiscal quarter of 2019. Calculations and payments under the CPP for Q4 2019 shall be governed by the CPP and equal to the actual CPP metrics achieved or not achieved in that quarter. That amount will be paid to you in accordance with Cerner's regular 2019 CPP payment schedule. You acknowledge that you are not eligible for and will not receive any further payments under the CPP after Q4 2019.

11. **FORFEITURE AND REIMBURSEMENT.** By signing this Separation Agreement, you agree that the promises you have made in it are of a special nature and that any material breach or material violation by you of the terms of this Separation Agreement will result in immediate and irreparable harm to Cerner. If you are found by a Court or Arbitrator to have committed a material breach of any confidentiality, non-competition, non-solicitation or other material provision in this Separation Agreement or your Employment Agreement, (i) Cerner's obligation, if applicable, to deliver separation payments and benefits to you under this Separation Agreement will cease immediately, (ii) you will be obligated to reimburse Cerner for all separation payments already made to you under Paragraph 1.B., (iii) any outstanding Cerner Equity Award held by you will immediately be forfeited notwithstanding any contrary term or condition in any underlying grant instrument, and (iv) you will be obligated to return to Cerner all shares of Cerner common stock (or the proceeds from the sale of such shares if such shares have been sold) received by you under, or as a result of your exercise of, a Cerner Equity Award which was subject to accelerated vesting in accordance with Paragraph 1.C. Cerner will also be entitled to all other legal and equitable remedies available to it by law.

12. **NONADMISSION OF LIABILITY.** You understand and agree that neither this Separation Agreement nor any action taken hereunder is to be construed as an admission of liability by Cerner or any of the Cerner Released Parties.

13. **VOLUNTARY EXECUTION.** You acknowledge that you have read this Separation Agreement in its entirety, that you understand its contents, and that you have executed it voluntarily. You further acknowledge that you have consulted with your attorney prior to signing this Separation Agreement.

14. **COMPLIANCE WITH SECTION 409A.** Notwithstanding any other provision of this Separation Agreement, all payments provided hereunder shall be made in a manner that is intended to comply with Section 409A or an applicable exemption thereto, including the separation pay and short-term deferral exceptions. Any payment provided under this Separation Agreement which is required to be delayed for six months following your separation from service and on account of you being a "specified employee" of Cerner shall be so delayed. For purposes of Section 409A, each installment payment provided under this Separation Agreement shall be treated as a separate payment. Notwithstanding

the foregoing, Cerner makes no representations that the payments and benefits provided under this Separation Agreement comply with Section 409A, and in no event shall Cerner be liable for all or any portion of any taxes, penalties, interest, or other expenses that may be incurred by you on account of non-compliance with Section 409A.

15. **NOTICE.** All notices, requests, demands and other communications hereunder shall be deemed duly given if delivered by hand or if mailed by certified or registered mail or sent by express courier with postage or charges prepaid as follows:

If to Cerner:

Cerner Corporation
2800 Rockcreek Parkway
North Kansas City, MO 64117-2551
Attn: Chief Financial Officer
With copy to: General Counsel

If to you:

At the address on file with Cerner's HR department

With copy to:

Joseph S. Adams
Winston & Strawn
35 W. Wacker Drive
Chicago, IL 60601

or to any other address as either party may provide to the other in writing by notice given in accordance with this paragraph.

16. **NOTICE TO SUBSEQUENT EMPLOYER.** You agree to inform any potential new employer, prior to accepting such employment, of the existence of the non-competition, non-solicitation and confidentiality provisions contained in this Separation Agreement and your Employment Agreement.

17. **GOVERNING LAW.** This Separation Agreement shall be governed by and construed in accordance with the laws of the State of Missouri to the extent not governed or preempted by federal law.

18. **SEVERABILITY.** If any provision of this Separation Agreement is held to be unenforceable, this Separation Agreement will be deemed amended to the extent necessary to render the otherwise unenforceable provision-and the rest of this Separation Agreement-valid and enforceable. If an arbitrator (or court) declines to amend this Separation Agreement as provided in this paragraph, the invalidity or unenforceability of any provision of this Separation Agreement will not affect the validity or enforceability of the remaining provisions, which must be enforced as if the offending provision had not been included in this Separation Agreement.

19. **COMPLETE AGREEMENT.** This Separation Agreement constitutes the full, complete and entire agreement of the parties related to the separation benefits to which you are entitled. Without limitation,

the separation benefits and payments under this Separation Agreement supersede and replace any benefits or payments you might otherwise be eligible to receive under your Employment Agreement, the Cerner Enhanced Severance Pay Plan, any successor thereto, or any other broad-based Cerner severance plan or policy which otherwise would be applicable to you. However, the parties agree that your Employment Agreement (excluding any right you have to any severance payment or severance benefit thereunder), otherwise remains in full force and effect. For the avoidance of doubt, your Arbitration Agreement shall survive this Separation Agreement. In making this Separation Agreement, the parties rely wholly upon their own judgment, belief and knowledge and the advice of their respective counsel. All executed copies, whether signed in counterparts or otherwise, or duplicate originals, are equally admissible in evidence.

This Separation Agreement is executed as of this 10th day of January 2020.

/s/ Michael R. Nill

Michael R. Nill

Cerner Corporation

By: /s/ Tracy Platt

Tracy Platt

Executive Vice President and Chief Human Resources Officer

Exhibit 10.10

October 30, 2019

Jeffrey A. Townsend
4401 State Route 92 Highway
Smithville, MO 64089

Dear Jeff:

This letter shall serve to document the agreement between you and Cerner Corporation ("Cerner") with respect to your new employment arrangement with Cerner, effective November 1, 2019. This arrangement will be in effect through June 30, 2020, at which time it will be reviewed to mutually determine continued need and effectiveness. If extended by mutual agreement, it will continue to be reviewed thereafter at least semi-annually.

Beginning November 1, 2019:

1. You will transition to a new position as Executive Senior Advisor focusing primarily on completion of the transition of your current projects and responsibilities, and then taking on such advising or consulting projects as requested from time to time by the Cerner Chief Executive Officer. It is expected that you will perform a minimum of 60 hours of work for Cerner per fiscal quarter.

2. As a result of this modified level and scope of responsibility, your new base salary, effective November 1, 2019, will be $100,000 per year to be paid on Cerner's normal pay dates, less appropriate withholdings and payroll deductions. You will not be eligible to participate in the Cerner Corporation 2018 Performance Compensation Plan ("CPP") beyond Q3 2019. Any amounts earned, but not yet paid, under your CPP agreements for Q3 2019 will be paid in accordance with the terms of such agreements.

3. Given the limited scope of your time and services as Executive Senior Advisor, it is agreed that your outstanding Cerner stock options, performance-based restricted stock unit awards, and time-based restricted stock units that have not vested as of November 1, 2019 will be forfeited and cancelled as of November 1, 2019. Any outstanding Cerner stock options that have vested as of November 1, 2019, will remain outstanding and exercisable pursuant to your grant agreements and the terms of the Cerner Corporation 2011 Omnibus Equity Incentive Plan, as amended, as long as you remain employed by Cerner and, considering that you are retiring, for a period of 12 months from the date that your employment and role as Executive Senior Advisor terminates. Each of the unvested grant instruments for any outstanding equity awards granted by Cerner to you are hereby deemed amended by the parties to effect the forfeiture of such unvested equity effective as of November 1, 2019. Given the limited scope of your time and services as Executive Senior Advisor, you will not be eligible for future stock option or other equity grants.

4. This letter agreement amends, supplements and is in addition to the terms and conditions set forth in the Employment Agreement you signed with Cerner effective October 30, 1989, as amended (collectively, your "Employment Agreement"). The terms and conditions of your Employment Agreement and your Cerner Mutual Arbitration Agreement dated November 24, 2015 shall remain in full force and effect, except to the extent modified hereby. Your Cerner Executive Severance Agreement dated effective as of September 11, 2017, shall be terminated and of no further force or effect as of November 1, 2019. To the extent any terms of this letter agreement conflict with the terms of your Employment Agreement, this letter agreement shall govern.

5. Subject to any premium adjustments based on your part-time status, your eligibility, coverage and benefits under Cerner's group health plan, dental plan, and vision plan will continue as of November 1, 2019. You will receive a notification in Workday with details regarding any changes in premiums.

6. Eligibility, continued coverage and benefits under other Cerner benefits plans (e.g., associate stock purchase, flexible spending account, group life, long term care, disability, accidental death, etc.) are governed solely by the terms of those respective plans. Although you might have certain conversion rights, as a part-time associate you will generally not be eligible for such other benefit plans effective November 1, 2019.

We are very appreciative of the years of dedicated service and contributions you have made to Cerner and look forward to you continuing to provide valuable advise and counseling to Cerner under this modified employment arrangement. If you are in agreement with the terms of the letter agreement, please execute both copies, returning one to me for Cerner's records, and keeping one for your personal records.

Sincerely,

/s/ Tracy Platt
Tracy Platt
Executive Vice President and Chief Human Resources Officer

Agreed and Acknowledged:

/s/ Jeffrey A. Townsend	10/30/19
Jeffrey A. Townsend	Date

CERNER EXECUTIVE SEVERANCE AGREEMENT

This Cerner Executive Severance Agreement (this “Executive Severance Agreement”), effective as of September 11, 2017 (the “Effective Date”), is a supplement to and amendment of the employment agreement dated November 30, 2012 between Donald D. Trigg (“you”/“your”) and Cerner Corporation, a Delaware corporation (“Cerner”).

RECITALS

A. You are the Senior Vice President and President, Cerner Health Ventures of Cerner and have been employed by Cerner since November 30, 2012. You have been the Senior Vice President and President, Cerner Health Ventures of Cerner since December 29, 2013.

B. You have entered into an employment agreement with Cerner dated November 30, 2012 (your “Employment Agreement”) and a mutual arbitration agreement with Cerner dated January 15, 2016.

C. You and Cerner wish to amend your Employment Agreement by adding contractual severance terms as set forth in this Executive Severance Agreement.

D. In consideration for your continuing employment with Cerner, the restricted stock granted to you on September 1, 2017, the potential severance payments and potential acceleration of the vesting of outstanding equity incentive awards described herein, the potential benefits to you in the event of a Change in Control, and other good and valuable consideration, the receipt and sufficiency of which you and Cerner hereby acknowledge, you and Cerner hereby agree to the following supplemental terms and conditions to your Employment Agreement.

E. Definitions of capitalized terms used but not otherwise defined herein can be found in Appendix A.

AGREEMENT

In consideration of the mutual covenants, promises, and obligations set forth herein, the parties agree to amend and supplement your Employment Agreement as follows:

1. PARAGRAPH 2 MODIFICATION. Paragraph 2 of your Employment Agreement is deleted in its entirety and replaced with the following:

2. EMPLOYMENT RELATIONSHIP; SEVERANCE AND BENEFITS.

A. Type. To the extent permitted by law, your employment relationship with Cerner is “at will,” which means that you may resign from Cerner at any time, for any reason or for no reason at all, and without advance notice (except as described below). It also means that Cerner may terminate your employment at any time - for any legally permitted reason or for no reason at all and without advance notice, subject to Cerner’s potential obligations to you under Paragraph 2.C below.

B. Resignation and Termination.

1. Termination by Cerner. Cerner may terminate your employment (i) at any time with or without Cause, or (ii) upon your Disability. Your employment with Cerner shall be deemed automatically terminated upon your death. Upon a termination of your employment by Cerner with Cause, due to your death or on account of Disability (each an "Ineligible Severance Event"), Cerner shall pay you within thirty (30) days following your last day of employment (x) any accrued but unpaid base salary, (y) any owed reimbursements for unreimbursed business expenses properly incurred by you prior to your termination date, which shall be subject to and paid in accordance with Cerner's expense reimbursement policy; and (z) such employee benefits (including equity compensation or cash bonuses earned as of the termination date but not yet paid), if any, to which you may be entitled under Cerner's employee benefit plans as of your termination date; provided that, in no event shall you be entitled to any payments in the nature of any other severance or termination payments (such as under Cerner's Enhanced Severance Pay Plan). Those amounts described in this Paragraph 2.B.1 (x), (y) and (z) are referred to herein collectively as the "Accrued Amounts." Payment upon termination of your employment by Cerner for any reason other than an Ineligible Severance Event is covered by Paragraph 2.C.

2. Termination by You. You may resign from your employment with Cerner at any time upon written notice to Cerner of your intention to resign from employment. Any resignation notice must be submitted to Cerner at least thirty (30) days prior to your intended last day of employment. Cerner, however, reserves the right either to accelerate your last day of employment or to allow your intended last day of employment to stand. If you resign with fewer than thirty (30) days' notice, or if you actually leave Cerner's employ prior to expiration of the notice period without the permission of Cerner, then you agree that (to the extent permitted by law) no Accrued Amounts from the date you submitted your resignation notice to your last day of employment will be owed or paid to you by Cerner. All other Accrued Amounts will be paid. You may also terminate your employment hereunder upon written notice to Cerner in the event of a Constructive Termination (before a Change in Control) or for Good Reason (after a Change in Control) and, subject to you satisfying your obligations under Paragraph 2.C.3 (Severance Agreement and Release), be entitled to certain severance and benefit compensation as provided in Paragraph 2.C.
You agree to report to Cerner the identity of your new employer (if any) and the nature of your proposed duties for that employer.

C. Severance and Benefits.

1. Non-Change in Control - Termination by Cerner for other than an Ineligible Severance Event or Resignation following Constructive Termination. Subject to you satisfying your obligations under Paragraph 2.C.3. (Severance Agreement and Release), if, prior to a Change in Control or at any time after twelve (12) months following a Change in Control, (i) Cerner terminates your employment other than in connection with an Ineligible Severance Event or (ii) you resign from employment following a Constructive Termination, Cerner will within sixty (60) days (or later if required by Code Section 409A) of your termination of employment:

a. Pay you your Accrued Amounts; and

b. Commence severance payments to you equal to the sum of (i) two (2) year's base salary (based on your annual base salary at the time of your termination), plus (ii) two (2) times the average annual cash bonus you received from Cerner during the three (3) years preceding the termination of your employment, less (iii) normal tax and payroll deductions. Such severance pay will be payable pro rata during the twenty-four (24) month severance term on Cerner's regular paydays; and

c. Commence payments to you having an aggregate value equal to twenty-four (24) times the difference between the monthly COBRA continuation premium cost to cover you and your dependents (to the extent covered under Cerner's health, vision and dental the plans on the date of your termination of employment) under Cerner's health, vision and dental plans in effect as of the date of your termination and the monthly amount you were paying for such coverage at the effective date of your termination. Such payments will be payable pro rata during the twenty-four (24) month severance term on Cerner's regular paydays. Notwithstanding the foregoing, if Cerner making payments under this Paragraph 2.C.1.c would violate the nondiscrimination rules applicable to non-grandfathered plans under the Affordable Care Act or result in the imposition of penalties under the Affordable Care Act, the parties agree to reform this Paragraph 2.C.1.c in a manner as is necessary to comply with the Affordable Care Act; and

d. With respect to outstanding equity awards, fully vest and, if applicable pay or deliver immediately, or a later date in conformity with Code Section 409A, any shares or other property relating to any equity incentive awards granted to you under any Cerner equity incentive plans after June 1, 2005. For purposes of this Paragraph 2.C.1.d, any performance-based award shall become vested or settled assuming an "at-target" level of goal achievement had been attained.

2. Change in Control - Termination by Cerner for other than an Ineligible Severance Event or Resignation for Good Reason. Subject to you satisfying your obligations under Paragraph 2.C.3 (Severance Agreement and Release), if there is a Change in Control of Cerner and within twelve (12) months following the date such Change in Control becomes effective Cerner terminates your employment for any reason other than on account of an Ineligible Severance Event or you resign from employment with Good Reason, then Cerner will, within sixty (60) days (or later if required by Code Section 409A) of your termination of employment:

a. Pay you your Accrued Amounts;

b. Commence severance payments to you equal to the sum of (i) two (2) years' base salary (based on your annual base salary at the time of your termination or resignation), plus (ii) two (2) times the average annual cash bonus you received from Cerner during the three (3) years preceding the termination or resignation of your employment, less (iii) normal tax and payroll deductions.

Such severance pay will be payable in lump sum within sixty (60) days of the effective date of the termination of your employment;

c. Commence payments to you having an aggregate value equal to twenty-four (24) times the difference between the monthly COBRA continuation premium cost to cover you and your dependents (to the extent covered under Cerner's health, vision and dental plans on the date of your termination of employment) under Cerner's health, vision and dental plans in effect as of the date of your termination and the monthly amount you were paying for such coverage at the effective date of your termination. Such payments will be payable pro rata during the twenty-four (24) month severance term on Cerner's regular paydays. Notwithstanding the foregoing, if Cerner's making payments under this Paragraph 2.C.2.c would violate the nondiscrimination rules applicable to non-grandfathered plans under the Affordable Care Act or result in the imposition of penalties under the Affordable Care Act, the parties agree to reform this Paragraph 2.C.2.c in a manner as is necessary to comply with the Affordable Care Act; and

d. Fully vest all outstanding unvested equity incentive awards granted to you under any Cerner equity incentive plans after June 1, 2005. For purposes of this Paragraph 2.C.2.d, any performance-based award shall become vested or settled assuming an "at-target" level of goal achievement had been attained.

3. Severance Agreement and Release. As a condition to your receiving severance in accordance with this Paragraph 2.C, upon your resignation or the termination of your employment, you agree to promptly execute and not revoke a written severance agreement, which release will be provided to you within ten (10) days of your termination date, containing normal and customary provisions, including but not limited to, a release releasing Cerner from any claims against Cerner related to your employment with Cerner that you might have at the time of or following the termination of your employment, and reasonable and customary representations and warranties.

4. Forfeiture and Reimbursement. Further, notwithstanding anything to the contrary in this Executive Severance Agreement, if you breach any confidentiality, non-competition or other material provision in your Employment Agreement following the termination of your employment with Cerner, Cerner's obligation, if applicable, to deliver severance payments and benefits to you under this Paragraph 2.C, and the vesting of any equity incentive awards described in this Paragraph 2.C, will cease immediately, you will reimburse Cerner the amount of severance payments delivered to you by Cerner prior to such breach by you, and you will forfeit to Cerner all equity incentive awards (or the proceeds of exercised awards) that vested based on or after such termination of your employment and prior to your breach.

5. ERISA Claims Review Procedures. To the extent any severance payments described in this Paragraph 2.C are covered by the Employee Retirement Income Security Act of 1974, as amended, Claims Review Procedures are available from Cerner.

6. <u>Compliance with Section 409A</u>.

a. <u>General Compliance</u>. This Executive Severance Agreement and any severance payments contemplated to be made hereunder is intended to comply with Section 409A or an exemption thereunder and shall be construed and administered in accordance with Section 409A. Notwithstanding any other provision of this Executive Severance Agreement, payments provided under this Executive Severance Agreement may only be made upon an event and in a manner that complies with Section 409A or an applicable exemption. Any payments under this Executive Severance Agreement that may be excluded from Section 409A either as separation pay due to an involuntary separation from service or as a short-term deferral shall be excluded from Section 409A to the maximum extent possible. For purposes of Section 409A, each installment payment provided under this Executive Severance Agreement shall be treated as a separate payment. Any payments to be made under this Executive Severance Agreement upon a termination of employment shall only be made upon a "separation from service" under Section 409A. Notwithstanding the foregoing, Cerner makes no representations that the payments and benefits provided under this Executive Severance Agreement comply with Section 409A, and in no event shall Cerner be liable for all or any portion of any taxes, penalties, interest, or other expenses that may be incurred by you on account of non-compliance with Section 409A.

b. <u>Specified Employees</u>. Notwithstanding any other provision of this Executive Severance Agreement, if any payment or benefit provided to you in connection with your termination of employment is determined to constitute "nonqualified deferred compensation" within the meaning of Section 409A and you are determined to be a "specified employee" as defined in Section 409A(a)(2)(b)(i), then such payment or benefit shall not be paid until the first payroll date to occur following the six-month anniversary of the your termination date or, if earlier, on your death (the "Specified Employee Payment Date"). The aggregate of any payments that would otherwise have been paid before the Specified Employee Payment Date shall be paid to you in a lump sum on the Specified Employee Payment Date and thereafter, any remaining payments shall be paid without delay in accordance with their original schedule.

c. <u>Reimbursements</u>. To the extent required by Section 409A, each reimbursement or in-kind benefit provided under this Executive Severance Agreement shall be provided in accordance with the following:

i. the amount of expenses eligible for reimbursement, or in-kind benefits provided, during each calendar year cannot affect the expenses eligible for reimbursement, or in-kind benefits to be provided, in any other calendar year;

ii. any reimbursement of an eligible expense shall be paid to you on or before the last day of the calendar year following the calendar year in which the expense was incurred; and

iii. any right to reimbursements or in-kind benefits under this Executive Severance Agreement shall not be subject to liquidation or exchange for another benefit.

D. Partial Accelerated Vesting upon a Change in Control. In connection with a Change in Control, 50% of each outstanding and unvested equity incentive award granted to you under any Cerner equity incentive plan after June 1, 2005 and prior to the date of the Change in Control becomes effective will become vested on the date the Change in Control becomes effective. The remaining 50% of each such outstanding equity incentive award that has not yet vested will continue to vest according to its vesting schedule (unless your employment is terminated for any reason other than in connection with an Ineligible Severance Event or you resign for Good Reason within twelve (12) months following the date the Change in Control becomes effective, in which case 100% of such award will become vested as provided above in Paragraph 2.C.2; or in the event your employment is terminated for any reason other than in connection with an Ineligible Severance Event or a Constructive Termination at any time after twelve (12) months following a Change in Control, in which case 100% of such award will become vested as provided above in Paragraph 2.C.1). For purposes of this Paragraph 2.D, any performance-based award which becomes 50% vested upon a Change in Control shall mean that an "at-target" level of goal achievement had been attained with respect to 50% of the award.

E. Modified 280G Carve-Back. *Notwithstanding anything contained in this Executive Severance Agreement to the contrary, if on an after-tax basis the aggregate payments and benefits paid pursuant to Paragraph 2.C.2 or Paragraph 2.D would be larger if the portion of such payments and benefits constituting "parachute payments" under Code Section 280G were reduced by the minimum amount necessary to avoid the imposition of the excise tax under Code Section 4999, then such payments and benefits shall be reduced by the minimum amount necessary to avoid such excise tax. Any such reduction shall occur in a manner that maximizes your economic position. In applying this principle, the reduction shall be made in a manner consistent with the requirements of Section 409A, and where two economically equivalent amounts are subject to reduction but payable at different times, such amounts shall be reduced on a pro rata basis but not below zero. Any determination required under this Paragraph 2.E shall be made in writing in good faith by an accounting firm selected by Cerner, which is reasonably acceptable to you (the "Accountants"). Cerner and you shall provide the Accountants with such information and documents as the Accountants may reasonably request in order to make a determination under this Paragraph 2.E. Cerner shall be responsible for all fees and expenses of the Accountants.*

F. 409(a) Modifications. Notwithstanding anything to the contrary herein, Cerner may modify your Employment Agreement and this Executive Severance Agreement from time to time without your consent if Cerner's legal counsel deems doing so to be advisable to comply with Section 409A of the Code and you agree that any such modifications shall be binding upon you.

2. PARAGRAPH 3 MODIFICATION. The following is added to Paragraph 3 of your Employment Agreement:

Nothing in this paragraph (i) prohibits you from using or disclosing Confidential Information in connection with reporting possible violations of law or regulation to any governmental agency or entity or attorney in accordance with any whistleblower protection provisions of applicable law or regulation including 18 U.S.C. § 1833 or (ii) requires notification or prior approval by Cerner of any reporting described in clause (i). However, any disclosure must be made in accordance with the applicable law or regulation and in a manner that limits-to the furthest extent possible-disclosure of Confidential Information.

3. ENTIRE AGREEMENT AND PRIOR AGREEMENTS.
We agree that your Employment Agreement, as amended by this Executive Severance Agreement, otherwise remains in full force and effect. This Executive Severance Agreement represents your entire agreement with Cerner concerning the subject matter hereof and cancels, terminates and supersedes any of your previous oral or written understandings or agreements with Cerner or with any director, officer or representative of Cerner with respect to the subject matter hereof. Without limitation, the severance benefits and payments eligible to be provided under this Executive Severance Agreement supersede and replace any benefits or payments you might otherwise be eligible to receive under your Employment Agreement, the Cerner Enhanced Severance Pay Plan, any successor thereto, or any other broad-based Cerner severance plan or policy which otherwise would be applicable to you.

This Cerner Executive Severance Agreement is executed as of this 11 day of September, 2017.

/s/ Donald D. Trigg
Donald D. Trigg

Cerner Corporation

By: /s/ Julia M. Wilson
Julia M. Wilson
Executive Vice President and Chief People Officer

APPENDIX A

DEFINITION OF TERMS

CAUSE means your material breach of your Employment Agreement, fraud against Cerner, misappropriation of Cerner's assets, dishonesty, embezzlement from Cerner, theft from Cerner, material neglect of your duties and responsibilities hereunder, your arrest and indictment for a crime involving drug abuse, violence, dishonesty or theft, your taking any action or omitting to take any action that results in a violation of the Sarbanes-Oxley Act of 2002, or any related statutes, laws or regulations or material breach of Cerner's policies.

CHANGE IN CONTROL means:

(i) The acquisition by any individual, entity or group (a "Person") within the meaning of Section 12(d)(3) or 13(d)(2) of the Securities Exchange Act of 1934, as amended (the "Exchange Act"), of beneficial ownership (within the meaning of Rule 13d-3 promulgated under the Exchange Act) of 35% or more of either: (A) the then outstanding shares of common stock of Cerner (the "Outstanding Cerner Common Stock"), or (B) the combined voting power of the then outstanding voting securities of Cerner entitled to vote generally in the election of directors (the "Outstanding Cerner Voting Securities"); provided, however, that for purposes of this subsection (i), the following acquisitions shall not constitute a Change in Control: (X) any acquisition directly from Cerner, (Y) any acquisition by Cerner, or (Z) any acquisition by any employee benefit plan (or related trust) sponsored or maintained by Cerner or any corporation controlled by Cerner; or

(ii) Individuals who, as of the date hereof, constitute the Cerner Board (the "Incumbent Board") cease for any reason to constitute at least a majority of the Board; provided, however, that any individual becoming a director subsequent to the date hereof whose election, or nomination for election by Cerner's shareholders, was approved by a vote of at least a majority of the directors then comprising the Incumbent Board shall be considered as though such individual were a member of the Incumbent Board, but excluding, for this purpose, any such individual whose initial assumption of office occurs as a result of an actual or threatened election contest with respect to the election or removal of directors or other actual or threatened solicitation of proxies or consents by or on behalf of a Person other than the Board; or

(iii) Consummation of a reorganization, merger or consolidation or sale or other disposition of all or substantially all of the assets of Cerner (a "Business Combination"), in each case, unless, following such Business Combination, (A), all or substantially all of the individuals and entities who were the beneficial owners, respectively, of the Outstanding Cerner Common Stock and Outstanding Cerner Voting Securities immediately prior to such Business Combination beneficially own, directly or indirectly, more than 50% of, respectively, the then outstanding shares of common stock and the combined voting power of the then outstanding voting securities entitled to vote generally in the election of directors, as the case may be, of Cerner resulting from such Business Combination (including, without limitation, a corporation which as a result of such transaction owns Cerner or all or substantially all of Cerner's assets either directly or through one or more subsidiaries) in substantially the same proportions as their ownership, immediately prior to such Business Combination of the Outstanding Cerner Common Stock and Outstanding Cerner Voting Securities, as the case may be, (B) no Person (excluding any employee benefit plan (or related trust) of Cerner or such corporation resulting from such Business Combination) beneficially owns, directly or indirectly, 35% or more of, respectively, the then outstanding shares of common stock of Cerner resulting from such Business Combination or the combined voting power of the then outstanding voting securities of such corporation except to the extent that such ownership existed prior to the Business Combination, and (C) at least a majority of the members of the Board of Directors of Cerner resulting from such Business Combination were members of the Incumbent Board at the time of the execution of the initial agreement, or of the action of the board, providing for such Business Combination; or

(iv) Approval by the shareholders of Cerner of a complete liquidation or dissolution of Cerner.

CODE means the Internal Revenue Code of 1986, as from time to time amended.

CONSTRUCTIVE TERMINATION means the occurrence of any of the following without your consent: (1) a material, adverse change in your authority, position, duties, or responsibilities (other than temporarily while you are physically or mentally incapacitated or as required by applicable law) or reporting structure such that you no longer report to the Chief Executive Officer or Board of Directors, (2) a material reduction in your base salary or target bonus opportunity, (3) a relocation of the principal location at which you are required to perform your duties to more than twenty-five (25) miles from the Kansas City metropolitan area and which is adverse to you, or (4) any other action or inaction that constitutes a material breach by Cerner of your Employment Agreement. You cannot terminate your employment on account of a Constructive Termination unless you have provided written notice to Cerner of the existence of the circumstances providing grounds for termination on account of a Constructive Termination within thirty (30) days of the initial existence of such grounds and Cerner has had at least thirty (30) days from the date on which such notice is provided to cure such circumstances. If you do not terminate your employment on account of a Constructive Termination within ninety (90) days after the first occurrence of the applicable grounds, then you will be deemed to have waived your right to terminate on account of a Constructive Termination with respect to such grounds.

DISABILITY means a physical or mental illness, as determined by an accredited physician, which causes you to be unable to perform your duties hereunder for ninety (90) consecutive days, or for an aggregate of ninety (90) days during any period of twelve (12) consecutive months.

GOOD REASON means the occurrence of any of the following, without your consent: (1) a material, adverse change in your authority, duties, position or responsibilities (other than temporarily while you are physically or mentally incapacitated or as required by applicable law) or reporting structure such that you no longer report to the Chief Executive Officer or the Board of Directors, (2) a material reduction in your base salary or target bonus opportunity, (3) a relocation of the principal location at which you are required to perform your duties to more than twenty-five (25) miles from the Kansas City metropolitan area and which is adverse to you, or (4) any other action or inaction that constitutes a material breach by Cerner of your Employment Agreement. You cannot terminate your employment on account of a Good Reason unless you have provided written notice to Cerner of the existence of the circumstances providing grounds for termination on account of a Good Reason within thirty (30) days of the initial existence of such grounds and Cerner has had at least thirty (30) days from the date on which such notice is provided to cure such circumstances. If you do not terminate your employment on account of a Good Reason within ninety (90) days after the first occurrence of the applicable grounds, then you will be deemed to have waived your right to terminate on account of a Good Reason with respect to such grounds.

CERNER ASSOCIATE EMPLOYMENT AGREEMENT

This Cerner Associate Employment Agreement describes the formal employment relationship between __Donald Trigg___ and Cerner Corporation, a Delaware corporation. This Agreement is effective on the 30 day of November, 2012.

1. OFFER LETTER. At the time you accepted employment with Cerner, you received an offer letter confirming the specifics of Cerner's offer of employment to you; the provisions of that offer letter represent the initial conditions of your Cerner employment. The provisions of this Agreement represent additional conditions of your Cerner employment. Except as provided in this Agreement (including as provided in Attachment IV, which is incorporated by reference into this Agreement and your offer letter from Cerner for all purposes), Cerner reserves the right to modify at any time the conditions of your employment.

2. EMPLOYMENT RELATIONSHIP.

A. Formation. By signing this Agreement, you represent that every material fact contained in your resume, application for employment and other related documentation is true and accurate. Misrepresentation of a material fact and falsification of such documentation are grounds for immediate discharge. You further represent and agree you are not engaged and will not engage in other employment activities or extracurricular activities that would detract from or conflict with your ability to carry out your duties at Cerner. All employment or other paid or unpaid positions/activities/extracurricular activities outside of Cerner that could potentially detract from or conflict with your ability to carry out your duties at Cerner must be cleared in advance by Cerner pursuant to Cerner's Conflicts of Interest Policy.

B. Type. To the extent permitted by law, your employment relationship with Cerner is "at will", which means that you may resign from Cerner at any time, for any reason, or for no reason at all, and without advance notice (except as described below). It also means that Cerner may terminate your employment at any time, for any legally permitted reason, or for no reason at all, and without advance notice.

C. Resignation and Termination. You agree: (i) to give Cerner written notice of your intention to resign from employment at least ten (10) business days, not including vacation days, prior to the last day you intend to work at Cerner, unless otherwise agreed upon by you and your manager; (ii) to participate in an exit interview; (iii) to report to Cerner the identity and the nature of your proposed duties of your new employer (if any); and (iv) to promptly execute a Termination Statement in the form of Attachment II.

If you are a full-time Associate and Cerner either (i) terminates your employment without Cause and provides less than ten (10) business days notice of such termination, or (ii) accelerates your requested termination date to a date less than ten (10) business days from your notice of voluntary resignation, Cerner will pay you in conjunction with such termination the equivalent of two (2) weeks base salary (exclusive of commissions, advances against commissions, bonus and other non-salary compensation and Associate benefits) less any base salary compensation paid to you for the time you work from the notice of termination or resignation through your actual termination date.

In the event your termination occurs during a period associated with a bonus or incentive compensation plan, any final payments to you as a result of your participation in such plan will be determined by the terms of the plan.

Pursuant to the terms of Cerner's published policies, as may be amended from time to time, Cerner may pay or reimburse you for certain reasonable costs associated with: (i) any relocation required by Cerner, or (ii) Other Assistance Programs in which Cerner provides assistance. In the event that Cerner pays or reimburses you for any relocation costs or costs associated with Other Assistance Programs, you agree to repay such sums to Cerner in accordance with the terms of the policy in effect at the time of the reimbursement or other payment. You further agree that Cerner may, at its discretion, deduct from your paycheck(s) and any other amounts owed to you by Cerner, any such sums required to be repaid under this provision and that you will repay Cerner any outstanding balance owed within thirty (30) days of your employment termination. Regardless of the duration stated herein, nothing contained in this provision shall create employment for a definite term or otherwise modify the parties "at will" relationship set forth in section 2.8. of this Agreement.

3. AGREEMENT NOT TO DISCLOSE OR TO USE CONFIDENTIAL INFORMATION. You understand that the business of Cerner and the nature of your employment may require you to *have* access to Confidential Information of and about Cerner, Cerner solutions, and Clients and Suppliers. You agree that you will forever maintain the confidentiality of Confidential Information. You will never disclose Confidential Information except to persons who have both the right and need to know it, and then only for the purpose and in the course of performing Cerner duties and in accordance with Cerner policies. You will also never use Confidential Information nor remove from Cerner any records containing Confidential Information except for the sole purpose of conducting business on behalf of Cerner and in accordance with Cerner's policies. In the event your employment with Cerner terminates (voluntarily or involuntarily), you will promptly deliver to Cerner all Confidential Information, including any Confidential Information on any laptop,

computer, mobile phone or other communication equipment used by you to conduct Cerner business during your employment with Cerner.

You further and specifically agree to abide by Cerner's internal security and privacy policies as well as all client security and privacy policies that are *relevant* to your position. As an Associate of a health care information technology provider, you may have access to confidential patient information, which may be protected by international, federal, state and/or local laws. You agree to maintain the confidentiality of all such confidential patient information, including but not limited to health, medical, financial or personal information, in any form, and you agree not to use any such information in any manner other than as expressly permitted by all applicable rules and regulations.

4. WORK PRODUCT. With respect to Work Product that you develop, author, conceive or reduce to practice, in whole or in part while employed at Cerner, you agree to keep accurate, complete and timely records of such Work Product, and will promptly disclose and fully describe such Work Product in writing to Cerner. You further agree to maintain all information respecting any Work Product as Confidential Information and shall not disclose such information to any party outside of Cerner except to persons who have both the right and need to know it, and then only for the purpose and in the course of performing Cerner duties.

You hereby assign and transfer to Cerner, without further consideration, your entire right, title and interest in and to all such Work Product including *any* patents, copyrights, trade secrets, trademarks and other intellectual property rights in the same. If for any reason any Work Product would not be considered a work made for hire under applicable law, you hereby assign and transfer to Cerner, the entire right, title and interest in and to the Work Product and all intellectual property rights in the Work Product. You hereby waive any and all moral rights and similar rights of copyright holders in other countries, including but not limited to rights of attribution and integrity or equivalent right, which you would otherwise have in any Work Product.

You agree to execute promptly at Cerner's expense, a written assignment of title to Cerner, and all letters (and applications for letters) of patent, copyright, trademark or other intellectual property right, in all countries, for any Work Product assigned by this Agreement. You also agree to assist Cerner or its nominee in every reasonable way, both during and after your time of employment at Cerner, in vesting and defending title to the Work Product in and for Cerner, in any and all countries, including the obtainment and preservation of patents, copyrights, trade secrets, trademarks and other intellectual property rights.

This section does not apply to your solutions and ideas which do not relate directly to the business of Cerner or to Cerner's actual or demonstrably anticipated research or development, and which are developed entirely on your own time.

5. PRIOR INVENTIONS. Any and all patented and unpatented inventions, new solutions and ideas which you made prior to your employment by Cerner are excluded from the scope of this Agreement and are documented on Attachment III, Inventory of Prior Inventions.

6. NON-COMPETITION AND NON-SOLICITATION. You agree that both during your employment by Cerner and for a period of two (2) years after the voluntary or involuntary termination of your employment with Cerner:

A. You will tell any prospective new employer, prior to accepting employment that this Employment Agreement exists.

B. If you have worked for Cerner in a sales capacity, you will not provide services to any Conflicting Organization in connection with the marketing, sale or promotion of any Conflicting Solution to any person or organization upon whom you called or whose account you supervised on behalf of Cerner any time during the last three (3) years of your employment by Cerner.

C. If you have worked for Cerner in a consulting or other non-sales capacity during the last three years of your employment by Cerner, you will not provide services directly or indirectly related to your employment at Cerner to any Conflicting Organization in the United States or in any country in which Cerner has a business interest. However, you may accept employment with a large Conflicting Organization whose business is diversified, and with a portion of its business that is not a Conflicting Organization, provided that Cerner, prior to your acceptance of such employment, shall receive separate written assurances satisfactory to Cerner from such Conflicting Organization and from you that you will not render services directly or indirectly in connection with any Conflicting Solution.

D. Notwithstanding the foregoing, nothing contained in this section 6 shall prohibit you (after your termination of employment with Cerner) from taking a position with a general consulting organization whose only Conflicting Solution is the provision of consulting services to the health care industry, so long as you personally do not thereby provide or assist in providing consulting services to a Client with respect to any Conflicting Solution.

E. You agree not, on behalf of yourself or on behalf of any other person, entity, or organization, to employ, solicit for employment, or otherwise seek to employ or retain any Cerner Associate, or, any employee of a Cerner Client company, or in any way assist or facilitate any such employment, solicitation or retention effort.

You agree that both during your employment with Cerner and after termination of your employment with Cerner you will never make recklessly or maliciously false accusations or remarks in any form, including written, oral, or electronic form, for the purpose of disparaging Cerner's solutions or services.

7. PUBLICITY RELEASE. You consent to the use of your name, voice and picture (including but not limited to use in still photographs, videotape and film formats, and both during and after your period of employment at Cerner) for advertising, promotional, public relations, and other business purposes (including its and their use in web sites, online communication forums, newspapers,

brochures, magazines, journals and films or videotapes) by Cerner and Cerner Clients.

8. CERNER PROPERTY. When physical Cerner Property is formally issued to you, you will acknowledge receipt of it when requested to do so and will take all reasonable precautions and actions necessary to safeguard and maintain it in normal operating condition; you will notify Cerner immediately of any damage or loss. If your employment with Cerner terminates (for any reason), you will immediately return to Cerner all Cerner Property issued, delivered, accessed or which otherwise belongs to Cerner. You understand that Cerner's vacation policy states that upon termination, for whatever reason, vacation pay will be paid out, if paid out at all, in accordance with the policy only after Cerner has received all Cerner Property issued to you or then in your possession. You agree to reimburse Cerner for any attorneys' fees and other collection charges incurred by Cerner in the event it becomes necessary to file a replevin or other legal action to recover the Cerner Property from you.

9. CERNER POLICIES. You agree that your employment is subject to the policies and procedures of Cerner as amended from time to time and that you will comply with and assist in the vigorous enforcement of all policies, practices and procedures. You understand that violation of such policies, practices and procedures may result in termination of your employment.

10. PRIOR EMPLOYMENT RELATIONSHIPS AND OBLIGATIONS. By accepting employment with Cerner, you represent to Cerner that you are not subject to any noncompetition or confidentiality agreements that your employment and activities at Cerner would violate. You also represent and agree that you will not disclose to Cerner, or induce Cerner to use, any proprietary, confidential or trade secret information belonging to any previous employer or to others.

11. REMEDIES. By signing this Agreement, you agree that the promises you have made in it are of a special nature, and that any breach, violation or evasion by you of the terms of this Agreement will result in immediate and irreparable harm to Cerner. It will also cause damage to Cerner in amounts difficult to ascertain. Accordingly, Cerner shall be entitled to the remedies of injunction and specific performance, as well as to all other legal and equitable remedies which may be available to Cerner.

12. INDEMNIFICATION. You agree to indemnify and hold Cerner harmless from and against any damages, liability, actions, suits or other claims arising out of your breach of this Agreement.

13. GOVERNING LAW AND JURISDICTION. This Agreement will be governed by, construed, interpreted, and its validity determined, under the laws of the State of Missouri, without regard to its conflict of law principles. You and Cerner each irrevocably and unconditionally submit to the nonexclusive jurisdiction of any Missouri state court or federal court of the United States of America sitting in Kansas City, Missouri and any appellate court from any thereof, in any action or proceeding arising out of or relating to this Agreement.

14. SEVERABILITY. If any provision of this Agreement is held to be unenforceable, this Agreement shall be deemed amended to the extent necessary to render the otherwise unenforceable provision, and the rest of this Agreement, valid and enforceable. If a court declines to amend this Agreement as provided herein, the invalidity or unenforceability of any provision of this Agreement shall not affect the validity or enforceability of the remaining provisions, which shall be enforced as if the offending provision had not been included in this Agreement.

15. ENTIRE AGREEMENT AND PRIOR AGREEMENTS. You hereby acknowledge receipt of a signed counterpart of this Agreement and acknowledge that it is your entire agreement with Cerner concerning the subject matter. This Agreement cancels, terminates, and supersedes any of your previous oral or written understandings or agreements with Cerner or with any officer or representative of Cerner with respect to your employment with Cerner.

16. SUCCESSORS. This Agreement shall be binding upon Cerner's successors and assigns. This Agreement shall also be binding upon your heirs, spouse, assigns and legal representatives. You agree and understand that, should Cerner be acquired by, merge with or otherwise combine with another corporation or business entity, the surviving entity will have all rights to enforce the terms of this Agreement as if it were Cerner itself enforcing the Agreement.

17. SURVIVING PROVISIONS. Notwithstanding the termination of the employment relationship underlying this Agreement, the rights and obligations set forth in this Agreement with respect to both parties shall *survive* termination as necessary to permit the intent of the provisions to be carried out.

This Employment Agreement is executed this 30 day of Nov, 2012

Associate

/s/ Donald D. Trigg

Associate Signature

Donald D. Trigg 8553

Printed Name Associate #

Cerner Corporation

/s/ Robert G. Higginbotham

DIrector, Human Resources

APPENDIX A
DEFINITION OF TERMS

ASSOCIATE means a Cerner employee.

CAUSE includes, without limitation, your dishonesty, illegal conduct or breach of Cerner's policies or this Agreement.

CERNER CORPORATION and CERNER mean Cerner Corporation, the Delaware corporation. The terms also cover all of Cerner Corporation's parent, subsidiary and affiliate corporations and business enterprises, both presently existing and subsequently created or acquired. Such affiliate corporation may be directly or indirectly controlled by Cerner or related to Cerner by equity ownership.

CERNER PROPERTY means the various items of Cerner property and equipment assigned to you to help you carry out your Cerner responsibilities, including but not limited to keys, credit cards, access cards, Cerner Confidential Information, laptops, computer related and other office equipment, mobile telephone, pagers and/or other computer or communication devices.

CLIENT means any actual or potential customer or licensee of Cerner.

CONFIDENTIAL INFORMATION means Cerner, Client and Supplier trade secrets, and proprietary information, Cerner, Cerner Associate, Client, and Supplier information which is not generally known, and is proprietary or confidential to Cerner Corporation or to Cerner Associates, Clients or Suppliers. It includes, but is not limited to, research, design, development, installation, purchasing, accounting, marketing, selling, servicing, finance, business systems, business practices, documentation, methodology, procedures, manuals (both internal and user), program listings, computer software in source code, object or other form, working papers, Client and Supplier lists, marketing and sales materials not otherwise available to the general public, sales activity information, computer programs and software, compensation plans, your personal compensation or performance evaluations (specifically, no Associate may disclose Cerner compensation structures or bonus programs with Conflicting Organizations, in addition, Associates in supervisory or managerial roles may not disclose their personal compensation or their performance evaluations with anyone other than their manager or with Cerner Human Resources), patient information and other client-related data, and all other non-public information of Cerner and its Associates, Clients and Suppliers. CONFIDENTIAL INFORMATION shall not include any information that has been voluntarily disclosed to the public by Cerner (except where such public disclosure has been made by you without authorization) or that has been independently developed and disclosed by others, or that otherwise enters the public domain through lawful means.

CONFLICTING ORGANIZATION means any person or organization engaged (or about to become engaged) in research, development, installation, marketing, selling, or servicing with respect to a Conflicting Solution.

CONFLICTING SOLUTION means any solution, product, process or service which is the same as, similar to, or competes with any Cerner solution, product, process or service with which you worked during the last three years of your employment by Cerner, or about which you have acquired Confidential Information.

OTHER ASSISTANCE PROGRAMS means programs in which Cerner may pay or reimburse you for certain reasonable costs incurred by you which may also provide for Cerner’s recovery of such amounts as specified in the policies of such Other Assistance Programs, as may be amended from time to time. Other Assistance Programs include, but are not limited to: tuition assistance, relocation assistance, specialty external training, and immigration assistance. Cerner reserves the right to establish future assistance programs which shall be considered as Other Assistance Programs for purposes of section 2.C. of this Agreement.

SUPPLIER means any actual or potential licensor, vendor, supplier, contractor, agent, consultant or other purveyor of Cerner solutions, products, processes or services.

WORK PRODUCT means discoveries, inventions, computer programs, improvements, data, works of authorship, designs, methods, ideas, solutions and other work product (whether or not they are described in writing, reduced to practice, patentable or copyrightable) which results from any work performed by you for Cerner, or involves the use of any Cerner equipment, supplies, facilities or Confidential Information, or relate directly to the business of Cerner, or relate to Cerner's actual or demonstrably anticipated research or development.

APPENDIX B

SUMMARY OF ATTACHMENTS

The following documents, if noted, are incorporated as attachments to this Employment Agreement.

Included	Attachment	Description
X	I	Original Offer Letter
X	II	Termination Statement
	III	Inventory of Prior Inventions
X	IV	Additional Conditions of Employment of Donald Trigg with Cerner Corporation

ATTACHMENT II

TERMINATION STATEMENT
CONTINUING OBLIGATIONS TO CERNER
(Execute Upon Termination of Employment Relationship)

I represent that I have complied with and will continue to comply with all of the provisions of the Cerner Associate Employment Agreement entered into between Cerner Corporation and me on the _______ day of ___________, 20____, ("Employment Agreement") including without limitation, compliance with the following:

1. Confidentiality: I have not improperly disclosed or otherwise misused any Confidential Information as defined in my Employment Agreement. I understand that upon my termination of employment with Cerner, I am not permitted to take or utilize any Cerner Confidential Information acquired by me in the course of my employment with Cerner and that I will forever maintain the confidentiality of the Confidential Information as defined in the Employment Agreement.

   I certify that as of my termination date, I have returned and/or destroyed (at Cerner's direction} all Confidential Information, which was previously in my possession.

2. Non-competition: I understand and agree to honor my contractual obligations with respect to non-competition, as specifically set forth in my Employment Agreement under section 6 of my Employment Agreement. If I have accepted employment with a Conflicting Organization or if I am pursuing employment with a Conflicting Organization, I have disclosed the noncompete terms found in section 6 to the Conflicting Organization and I have disclosed the name of the Conflicting Organization and my new job responsibilities to Cerner as required under section 2.C.

3. Non-solicitation: I understand and agree to honor my contractual obligations, as specifically set forth in my Employment Agreement, not, on behalf of myself or others, to employ, solicit for employment or otherwise seek to employ or retain any Cerner Associate, or any employee of a Cerner client company, or in any way assist or facilitate any such employment, solicitation or retention effort.

4. Work Product: I understand and agree to honor my contractual obligations to disclose to Cerner all Work Product developed, authored, conceived or reduced to practice, in whole or in part, by me as covered by my Employment Agreement and to honor the other terms and conditions set forth in section 4.

5. Cerner Property: I do not have in my possession, nor have I taken with me or failed to return, any Cerner Property as defined in my Employment Agreement. Without limiting other recovery options, failure to return such Cerner Property will result in any vacation pay that is due to me under the terms of Cerner's vacation policy to be withheld until the return to Cerner of all such Cerner Property.

6. Surviving Terms: I understand that, with regard to all provisions of my Employment Agreement relating to, without limitation, Confidential Information, non-competition, non-solicitation and Work Product, shall not cease as of this termination but shall continue in full force and effect in perpetuity or as otherwise indicated within my Employment Agreement.

____
Associate Signature Printed Name & Associate #

____
Date Termination Date

ATTACHMENT IV

ADDITIONAL CONDITIONS OF EMPLOYMENT
OF DONAL TRIGG WITH CERNER

1. This Attachment IV is incorporated and made a part of the Employment Agreement between Donald Trigg and Cerner Corporation ("Cerner") effective on the_ day of 2012 (the "Agreement"). Capitalized terms used in this Attachment IV have the same definition as when used in the Agreement unless otherwise indicated below. The terms "you" and "your" and similar terms shall refer to Donald Trigg.

2. The terms of this Attachment IV shall be controlling in the event of any conflict or inconsistency between the terms of this Attachment IV, on the one hand, and the terms of the Agreement, the offer letter provided to you by Cerner, or the Cerner Enhanced Severance Pay Plan (as amended and restated on January 1, 2008) (such severance plan, the "Current Severance Plan"), on the other hand.

3. You are considered an "Eligible Associate" for purposes of the Current Severance Plan, and you shall be eligible for "Severance Benefits" (as defined in the Current Severance Plan) ("Severance Benefits") in accordance with the terms of the Current Severance Plan as modified by this Attachment IV. For purposes of computing your level of Severance Benefits, you shall be credited with seven (7) additional "Years of Service" (as defined in the Current Severance Plan), representing your prior service with Cerner prior to the date you commence employment under the Agreement. Such service crediting shall be in addition to your Years of Service credited under the Current Severance Plan attributable to your service under the Agreement. The Current Severance Plan may be amended or terminated at any time in Cerner's sole discretion. In the event of any such amendment or termination, you will be treated no less favorably than any other Eligible Associate under the plan.

4. Notwithstanding the non-competition provisions of Section 6 of the Agreement, in the event of your termination of employment with Cerner other than for cause, Cerner will work with you in good faith as you seek future employment and will make reasonable efforts not to prohibit you from accepting employment with a Conflicting Organization so long as you do not, in any way, breach your nondisclosure obligations under Section 3 of the Agreement.

5. So long as your performance is satisfactory and/or you are not rated as Needs Development during any annual review cycle, your initial base salary may be increased but not decreased (without your consent and agreement) during the first 24 months of your employment with Cerner.

6. You will be granted the equity grants summarized in the table under "Equity" set forth in your offer letter and such equity grants will vest in accordance with the applicable schedule. Cerner has provided you with copies of the form grant instruments which govern such equity grants.

This Attachment IV to Employment Agreement is executed this 30 day of Nov, 2012.

Associate

/s/ Donald D. Trigg
Associate Signature

Donald D. Trigg 8553
Printed Name Associate #

Cerner Corporation

/s/ Robert G. Higginbotham
DIrector, Human Resources

Exhibit 21

SUBSIDIARIES OF REGISTRANT

Name	State/Country of Incorporation
1. AbleVets LLC	Virginia
2. Cerner Belgium	Belgium
3. Cerner Campus Redevelopment Corporation	Missouri
4. Cerner Canada Limited LLC	Delaware
5. Cerner Canada ULC	Canada
6. Cerner Capital, Inc.	Delaware
7. Cerner Chile Limitada	Chile
8. Cerner Chouteau Data Center, Inc.	Delaware
9. Cerner Corporation PTY Limited	New South Wales (Australia)
10. Cerner Deutschland GmbH	Germany
11. Cerner Egypt L.L.C	Egypt
12. Cerner Finland Oy	Finland
13. Cerner France SAS	France
14. Cerner Galt, Inc.	Delaware
15. Cerner Global Holdings B.V.	Netherlands
16. Cerner Government Services, Inc.	Delaware
17. Cerner Healthcare Sales India Private Limited	India
18. Cerner Healthcare Solutions, Inc.	Delaware
19. Cerner Healthcare Solutions India Private Limited	India
20. Cerner Health Connections, Inc.	Delaware
21. Cerner Health Services, Inc.	Delaware
22. Cerner Health Services Deutschland GmbH	Germany
23. Cerner Iberia, S.L.U.	Spain
24. Cerner Innovation, Inc.	Delaware
25. Cerner International, Inc.	Delaware
26. Cerner Ireland Limited	Ireland
27. Cerner Legal, Quality & Strategy, Inc.	Delaware
28. Cerner Limited	United Kingdom
29. Cerner Lingologix, Inc.	Delaware
30. Cerner (Malaysia) SDN BHD	Malaysia
31. Cerner Math, Inc.	Delaware
32. Cerner México, S. de R. L. de C.V.	Mexico
33. Cerner Middle East FZ-LLC	Emirate of Dubai, UAE
34. Cerner Middle East, Ltd.	Cayman Islands
35. Cerner Multum, Inc.	Delaware
36. Cerner Nederland B.V.	Netherlands
37. Cerner Norge AS	Norway
38. Cerner Österreich GmbH	Austria
39. Cerner Portugal Unipessoal, Lda.	Portugal
40. Cerner Properties, Inc.	Delaware
41. Cerner Property Development, Inc.	Delaware
42. Cerner RevWorks, LLC	Delaware
43. Cerner România S.R.L.	Romania
44. Cerner Singapore Limited LLC	Delaware
45. Cerner Soluções para a Saúde Ltda.	Brazil
46. Cerner State & Local Government Services, Inc.	Delaware
47. Cerner Sverige AB	Sweden
48. Cerner Universal Revenue Cycle Management, LLC	Delaware
49. The Health Exchange, Inc.	Missouri

Exhibit 23

Consent of Independent Registered Public Accounting Firm

The Board of Directors
Cerner Corporation:

We consent to the incorporation by reference in the Registration Statements (No. 333-232827, No. 333-206272, No. 333-180016, No. 333-174568, No. 333-125492, No. 333-75308, No. 333-70170, No. 333-40156, No. 333-93379, No. 333-77029, No. 33-56868, No. 33-20155, No. 333-24909, No. 333-24899, No. 33-55082, No. 33-39777, No. 33-63226, No. 33-41580, No. 33-39776, and No. 33-15156) on Form S-8 and (No. 333-72024 and No. 333-40156) on Form S-4 of Cerner Corporation of our reports dated February 10, 2020, with respect to the consolidated balance sheets of Cerner Corporation and subsidiaries as of December 28, 2019 and December 29, 2018, and the related consolidated statements of operations, comprehensive income, cash flows, and changes in shareholders' equity for each of the years in the three-year period ended December 28, 2019, and the related notes (collectively, the "consolidated financial statements"), and the effectiveness of internal control over financial reporting as of December 28, 2019, which reports appear in the 2019 Annual Report on Form 10-K of Cerner Corporation.

Our report dated February 10, 2020 on the consolidated financial statements refers to the Company's adoption of Accounting Standard Update 2016-02, Leases (Topic 842) in fiscal year 2019, and Accounting Standards Update 2014-09 Revenue from Contracts with Customers (Topic 606) in fiscal year 2018.

/s/ KPMG LLP
Kansas City, Missouri
February 10, 2020

Exhibit 31.1

CERTIFICATION

I, Brent Shafer, certify that:

1. I have reviewed this annual report on Form 10-K for the year ended December 28, 2019 of Cerner Corporation;

2. Based on my knowledge, this report does not contain any untrue statement of a material fact or omit to state a material fact necessary to make the statements made, in light of the circumstances under which such statements were made, not misleading with respect to the period covered by this report;

3. Based on my knowledge, the financial statements, and other financial information included in this report, fairly present in all material respects the financial condition, results of operations and cash flows of the registrant as of, and for, the periods presented in this report;

4. The registrant's other certifying officer and I are responsible for establishing and maintaining disclosure controls and procedures (as defined in Exchange Act Rules 13a-15(e) and 15d-15(e)) and internal control over financial reporting (as defined in Exchange Act Rules 13a-15(f) and 15d-15(f)) for the registrant and have:

a) designed such disclosure controls and procedures, or caused such disclosure controls and procedures to be designed under our supervision, to ensure that material information relating to the registrant, including its consolidated subsidiaries, is made known to us by others within those entities, particularly during the period in which this report is being prepared;

b) designed such internal control over financial reporting, or caused such internal control over financial reporting to be designed under our supervision, to provide reasonable assurance regarding the reliability of financial reporting and the preparation of financial statements for external purposes in accordance with generally accepted accounting principles;

c) evaluated the effectiveness of the registrant's disclosure controls and procedures and presented in this report our conclusions about the effectiveness of the disclosure controls and procedures, as of the end of the period covered by this report based on such evaluation; and

d) disclosed in this report any change in the registrant's internal control over financial reporting that occurred during the registrant's most recent fiscal quarter (the registrant's fourth fiscal quarter in the case of an annual report) that has materially affected, or is reasonably likely to materially affect, the registrant's internal control over financial reporting; and

5. The registrant's other certifying officer and I have disclosed, based on our most recent evaluation of internal control over financial reporting, to the registrant's auditors and the audit committee of the registrant's board of directors (or persons performing the equivalent functions):

a) all significant deficiencies and material weaknesses in the design or operation of internal control over financial reporting which are reasonably likely to adversely affect the registrant's ability to record, process, summarize and report financial information; and

b) any fraud, whether or not material, that involves management or other employees who have a significant role in the registrant's internal control over financial reporting.

Date: February 10, 2020

/s/ Brent Shafer
Brent Shafer
Chief Executive Officer
(Principal Executive Officer)

Exhibit 31.2

CERTIFICATION

I, Marc G. Naughton, certify that:

1. I have reviewed this annual report on Form 10-K for the year ended December 28, 2019 of Cerner Corporation;

2. Based on my knowledge, this report does not contain any untrue statement of a material fact or omit to state a material fact necessary to make the statements made, in light of the circumstances under which such statements were made, not misleading with respect to the period covered by this report;

3. Based on my knowledge, the financial statements, and other financial information included in this report, fairly present in all material respects the financial condition, results of operations and cash flows of the registrant as of, and for, the periods presented in this report;

4. The registrant's other certifying officer and I are responsible for establishing and maintaining disclosure controls and procedures (as defined in Exchange Act Rules 13a-15(e) and 15d-15(e)) and internal control over financial reporting (as defined in Exchange Act Rules 13a-15(f) and 15d-15(f)) for the registrant and have:

a) designed such disclosure controls and procedures, or caused such disclosure controls and procedures to be designed under our supervision, to ensure that material information relating to the registrant, including its consolidated subsidiaries, is made known to us by others within those entities, particularly during the period in which this report is being prepared;

b) designed such internal control over financial reporting, or caused such internal control over financial reporting to be designed under our supervision, to provide reasonable assurance regarding the reliability of financial reporting and the preparation of financial statements for external purposes in accordance with generally accepted accounting principles;

c) evaluated the effectiveness of the registrant's disclosure controls and procedures and presented in this report our conclusions about the effectiveness of the disclosure controls and procedures, as of the end of the period covered by this report based on such evaluation; and

d) disclosed in this report any change in the registrant's internal control over financial reporting that occurred during the registrant's most recent fiscal quarter (the registrant's fourth fiscal quarter in the case of an annual report) that has materially affected, or is reasonably likely to materially affect, the registrant's internal control over financial reporting; and

5. The registrant's other certifying officer and I have disclosed, based on our most recent evaluation of internal control over financial reporting, to the registrant's auditors and the audit committee of the registrant's board of directors (or persons performing the equivalent functions):

a) all significant deficiencies and material weaknesses in the design or operation of internal control over financial reporting which are reasonably likely to adversely affect the registrant's ability to record, process, summarize and report financial information; and

b) any fraud, whether or not material, that involves management or other employees who have a significant role in the registrant's internal control over financial reporting.

Date: February 10, 2020

/s/ Marc G. Naughton
Marc G. Naughton
Chief Financial Officer
(Principal Financial Officer)

Exhibit 32.1

**CERTIFICATION FURNISHED 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 filing of the Annual Report on Form 10-K for the fiscal year ended December 28, 2019 (the "Report") by Cerner Corporation (the "Company"), the undersigned Chief Executive Officer of the Company hereby certifies pursuant to 18 U.S.C. Section 1350, as adopted pursuant to Section 906 of the Sarbanes-Oxley Act of 2002, that, to my knowledge:

1. The Report fully complies with the requirements of Section 13(a) or Section 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/ Brent Shafer
Brent Shafer, Chief Executive Officer
(Principal Executive Officer)
Date: February 10, 2020

Exhibit 32.2

CERTIFICATION FURNISHED 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 filing of the Annual Report on Form 10-K for the fiscal year ended December 28, 2019 (the "Report") by Cerner Corporation (the "Company"), the undersigned Chief Financial Officer of the Company hereby certifies pursuant to 18 U.S.C. Section 1350, as adopted pursuant to Section 906 of the Sarbanes-Oxley Act of 2002, that, to my knowledge:

1. The Report fully complies with the requirements of Section 13(a) or Section 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/ Marc G. Naughton

Marc G. Naughton, Executive Vice President
and Chief Financial Officer
(Principal Financial Officer)
Date: February 10, 2020