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

FORM 10-K

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

Commission File Number 001-38267

RIBBON COMMUNICATIONS INC.

(Exact name of Registrant as specified in its charter)

DELAWARE

(State or other jurisdiction of
incorporation or organization)

82-1669692

(I.R.S. Employer Identification No.)

4 Technology Park Drive, Westford, Massachusetts 01886
(Address of principal executive offices, including zip code)

(978) 614-8100

(Registrant's telephone number, including area code)
Securities registered pursuant to Section 12(b) of the Act:

Title of each class

Name of each exchange on which registered

Common Stock, par value \$0.0001

The Nasdaq Global Select Market

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

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

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

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

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

Indicate by check mark if disclosure of delinquent filers pursuant to Item 405 of Regulation S-K (§229.405 of this chapter) is not contained herein, and will not be contained, to the best of the registrant's knowledge, in definitive proxy or information statements incorporated by reference in Part III of this Form 10-K or any amendment to this Form 10-K.

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

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

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

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

The aggregate market value of the common stock held by non-affiliates of Ribbon Communications Inc. was approximately \$363,563,000 based on the closing price for its common stock on The Nasdaq Global Select Market on June 29, 2018. As of February 25, 2019, the Registrant had 107,270,854 shares of common stock, \$0.0001 par value, outstanding.

DOCUMENTS INCORPORATED BY REFERENCE

Portions of the definitive Proxy Statement to be delivered to stockholders in connection with the Registrant's 2019 Annual Meeting of Stockholders are incorporated by reference into Part III of this report.

RIBBON COMMUNICATIONS INC.
FORM 10-K
YEAR ENDED DECEMBER 31, 2018
TABLE OF CONTENTS

<u>Item</u>	<u>Page</u>
Cautionary Note Regarding Forward-Looking Statements	3
Presentation of Information	3
Glossary of Certain Industry Terms	4
<u>Part I</u>	
1. Business	7
1A. Risk Factors	17
1B. Unresolved Staff Comments	37
2. Properties	38
3. Legal Proceedings	39
4. Mine Safety Disclosures	40
<u>Part II</u>	
5. Market for Registrant's Common Equity, Related Stockholder Matters and Issuer Purchases of Equity Securities	41
6. Selected Financial Data	43
7. Management's Discussion and Analysis of Financial Condition and Results of Operations	45
7A. Quantitative and Qualitative Disclosures About Market Risk	65
8. Financial Statements and Supplementary Data	66
9. Changes in and Disagreements with Accountants on Accounting and Financial Disclosure	119
9A. Controls and Procedures	119
9B. Other Information	122
<u>Part III</u>	
10. Directors, Executive Officers and Corporate Governance	122
11. Executive Compensation	122
12. Security Ownership of Certain Beneficial Owners and Management and Related Stockholder Matters	122
13. Certain Relationships and Related Transactions, and Director Independence	122
14. Principal Accounting Fees and Services	122
<u>Part IV</u>	
15. Exhibits, Financial Statement Schedules	123
16. Form 10-K Summary	123
Exhibit Index	124
Signatures	127

Cautionary Note Regarding Forward-Looking Statements

This Annual Report on Form 10-K contains "forward-looking statements" within the meaning of the U.S. Private Securities Litigation Reform Act of 1995, which are subject to a number of risks and uncertainties. All statements other than statements of historical facts contained in this Annual Report on Form 10-K, including statements regarding our future results of operations and financial position, anticipated restructuring and integration-related expenses, business strategy, plans and objectives of management for future operations and plans for future product development and manufacturing are forward-looking statements. Without limiting the foregoing, the words "anticipates", "believes", "could", "estimates", "expects", "intends", "may", "plans", "seeks" and other similar language, whether in the negative or affirmative, are intended to identify forward-looking statements, although not all forward looking statements contain these identifying words. Forward-looking statements are based on our current expectations and assumptions regarding our business, the economy and other future conditions. Because forward-looking statements relate to the future, they are subject to inherent uncertainties, risks and changes in circumstances that are difficult to predict. These statements involve known and unknown risks, uncertainties and other important factors that may cause our actual results, performance or achievements to be materially different from any future results, performance or achievements expressed or implied by the forward-looking statements. We therefore caution you against relying on any of these forward-looking statements. Important factors that could cause actual results to differ materially from those in these forward-looking statements are discussed in Item 1A., "Risk Factors" of Part I and Items 7 and 7A., "Management's Discussion and Analysis of Financial Condition and Results of Operations" and "Quantitative and Qualitative Disclosures About Market Risk," respectively, of Part II of this Annual Report on Form 10-K. Also, any forward-looking statement made by us in this Annual Report on Form 10-K speaks only as of the date on which this Annual Report on Form 10-K was first filed. Factors or events that could cause our actual results to differ may emerge from time to time, and it is not possible for us to predict all of them. We undertake no obligation to publicly update any forward-looking statement, whether as a result of new information, future developments or otherwise, except as may be required by law.

Presentation of Information

Effective October 27, 2017, we completed the merger (the "Merger") of Sonus Networks, Inc. ("Sonus"), GENBAND Holdings Company, GENBAND, Inc. and GENBAND II, Inc. (collectively, "GENBAND").

Unless the context otherwise requires, references in this Annual Report on Form 10-K to "Ribbon," "Ribbon Communications," "Company," "we," "us" and "our" and "the Company" refer to (i) Sonus Networks, Inc. and its subsidiaries prior to the Merger and (ii) Ribbon Communications Inc. and its subsidiaries upon completion of the Merger, as applicable.

GLOSSARY OF CERTAIN INDUSTRY TERMS

The industry terms defined below are used throughout this Annual Report on Form 10-K for the year ended December 31, 2018 (this “10-K”).

API (application programming interface): A set of subroutine definitions, protocols, and tools for building application software. In general terms, it is a set of clearly defined methods of communication between various software components.

Big Data: The use of data analytics and/or predictive analytics to extract value from large data sets. Analysis of large data sets may expose new correlations regarding business trends, infrastructure weaknesses and other related information.

CCaaS (Contact Center as a Service): A cloud-based delivery model that allows organizations to implement customer contact applications.

CPaaS (Communications Platform as a Service): A cloud-based delivery model that allows organizations to add real-time communication capabilities such as voice, video and messaging to business applications by deploying application program interfaces.

CPU (central processing unit): The electronic circuitry within a computer that carries out the instructions of a computer program by performing the basic arithmetic, logical, control and input/output operations specified by the instructions.

Diameter: A next generation industry-standard protocol used to exchange authentication, authorization and accounting information in LTE and IMS networks.

DSC (diameter signaling controller): A device that helps communications service providers overcome Diameter signaling performance, scalability and interoperability challenges in LTE and IMS networks. Diameter is a next-generation industry-standard protocol used to exchange authentication, authorization and accounting information in LTE and IMS networks.

DSP (digital signal processing): The use of digital processing, such as by computers or more specialized digital signal processors, to perform a wide variety of signal processing operations. The signals processed in this manner are a sequence of numbers that represent samples of a continuous variable in a domain such as time, space, or frequency.

Edge: Appliances and/or software implemented on business customer premises that provides communications security and other capabilities for voice and data packet functions.

GPU (graphical processing unit): A specialized electronic circuit designed to rapidly manipulate and alter memory to accelerate the creation of images in a frame buffer intended for output to a display device.

HUC (hosted unified communications): A user-centric UC that supports traditional SIP-based endpoints as well as collaboration and video UC from PCs, Macs, and mobile devices.

IMS (IP multimedia [sub]system): An architectural framework for delivering IP multimedia services.

IP (Internet Protocol): A set of rules governing the format of data sent over the Internet or other network.

IP-PBX: SIP-based PBX.

ISP: Internet service provider.

LTE (long term evolution): A standard for high-speed wireless communication for mobile devices and data terminals for smooth and efficient transition toward more advanced leading-edge technologies to increase the capacity and speed of wireless data networks. Often used to refer to wireless broadband or mobile network technologies.

MSO (multi-system operator): An operator of multiple cable or direct-broadcast satellite television systems.

Network Edge Orchestration: Network Edge Orchestration uses intelligent edge solutions to monitor networks in real time, forwarding relevant information to a centralized management environment in the cloud. This model enables a service provider or an enterprise IT organization to proactively manage trends as well as react to issues or outages.

NFV (network function virtualization): A network architecture concept that uses the technologies of IT virtualization to virtualize entire classes of network node functions into building blocks that may connect, or chain together, to create communication services.

OTT (Over-the-Top): A media distribution practice that allows a streaming content provider to sell audio, video, and other media services directly to the consumer over the internet via streaming media as a standalone product, bypassing telecommunications, cable or broadcast television service providers that traditionally act as a controller or distributor of such content.

PBX (private branch exchange): A telephone system within an enterprise that switches calls between enterprise users on local lines while allowing all users to share a certain number of external phone lines.

PLMN (public land mobile network): A network that is established and operated by an administration or by a recognized operating agency for the specific purpose of providing land mobile telecommunications services to the public.

PSTN (public switched telephone network): The aggregate of the world's circuit-switched telephone networks that are operated by national, regional, or local telephony operators, providing infrastructure and services for public telecommunication.

RTC (real-time communications): A term used to refer to live telecommunications that occur without transmission delays. RTC is nearly instant with minimal latency. RTC data and messages are not stored between transmission and reception. RTC is generally a peer-to-peer, rather than broadcasting or multicasting, transmission.

SBC (session border controller): A device regularly deployed in VoIP networks to exert control over the signaling and the media streams involved in setting up, conducting, and tearing down telephone calls or other interactive media communications.

SDK: Software development kit.

SDN (software-defined networking): An umbrella term encompassing several kinds of network technology aimed at making the network as agile and flexible as the virtualized server and storage infrastructure of the modern data center.

SD-WAN (software-defined - wide area network): SD-WAN is a specific application of software-defined networking (SDN) technology applied to WAN connections such as broadband internet, 4G, LTE or MPLS. It connects enterprise networks including branch offices and data centers over large geographic distances.

SIP (session initiation protocol): A communications protocol for signaling and controlling multimedia communication sessions in applications of Internet telephony for voice and video calls, in private IP telephone systems, as well as in instant messaging over IP networks.

SMB: Small-medium business.

SMS (short message service): A text messaging service component of most telephone, World Wide Web, and mobile device systems, using standardized communication protocols to enable mobile devices to exchange short text messages.

SOHO: Small office and home office.

SSP: Standalone selling price.

STaaS (SIP Trunking as a Service): A VoIP technology and streaming media service based on SIP by which Internet telephony service providers deliver telephone services and UC to customers equipped with IP-PBX and UC facilities.

TDM (time-division multiplexing): A method of putting multiple data streams in a single signal by separating the signal into many segments, each having a very short duration. Each individual data stream is reassembled at the receiving end based on the timing.

TPE: Third-party evidence of selling price.

UC (unified communications): A business term describing the integration of enterprise communication services such as instant messaging (chat), presence information, voice (including IP telephony), mobility features (including extension mobility and single number reach), audio, web & video conferencing, fixed-mobile convergence, desktop sharing, data sharing (including web connected electronic interactive whiteboards), call control and speech recognition with non-real-time communication services such as unified messaging (integrated voicemail, e-mail, SMS and fax).

UCaaS (unified communications as a service): The provision of business communications and phone system (PBX) services along with collaboration tools such as screen sharing and conferencing via a cloud-based pricing and delivery model.

VAR (value added reseller): A company that adds features or services to an existing product, then resells it (usually to end-users) as an integrated product or complete turn-key solution.

VMC (virtualized mobile core): A software platform enabling standard-based Wi-Fi Calling, LTE calling and VoLTE services for mobile network operators and mobile virtual network operators.

VNF (virtual network function): Responsible for handling specific network functions that run in one or more virtual machines on top of the appliance networking infrastructure, which can include routers, switches, servers, cloud computing systems and more.

VoIP (Voice over Internet Protocol): A methodology and group of technologies for the delivery of voice communications and multimedia sessions over IP networks, such as the Internet.

VoLTE (Voice over LTE): A standard for high-speed wireless communication for mobile phones and data terminals over a 4G LTE access network, rather than 2G or 3G connections.

VoWifi (Voice over Wifi): A complementary technology to VoLTE that utilizes IMS technology to provide the routing telephone calls and faxes over an existing data network rather than over the traditional PSTN.

VSOE (vendor-specific objective evidence of selling price): A method of revenue recognition allowed by U.S. GAAP that enables companies to recognize revenue on specific items on a multi-item sale based on evidence specific to a company that the product has been delivered.

Web-Scale: Historically, the term was associated with the massive cloud architectures developed by Facebook, Google and Amazon. The term has since evolved to reflect a company's adoption of private, efficient and scalable cloud environments that support flexibility, resiliency and on-demand infrastructure.

PART I

Item 1. Business

Overview

We are a leading provider of next generation ("NextGen") software solutions to telecommunications, wireless and cable service providers and enterprises across industry verticals. With over 1,000 customers around the globe, including some of the largest telecommunications service providers and enterprises in the world, we enable service providers and enterprises to modernize their communications networks through software and provide secure RTC solutions to their customers and employees. By securing and enabling reliable and scalable IP networks, we help service providers and enterprises adopt the next generation of software-based virtualized and cloud communications technologies for service providers to drive new, incremental revenue, while protecting their existing revenue streams. Our software solutions provide a secure way for our customers to connect and leverage multivendor, multiprotocol communications systems and applications across their networks and the cloud, around the world and in a rapidly changing ecosystem of IP-enabled devices, such as smartphones and tablets. In addition, our software solutions secure cloud-based delivery of UC solutions - both for service providers transforming to a cloud-based network and for enterprises using cloud-based UC. We sell our software solutions through both direct sales and indirect channels globally, leveraging the assistance of resellers, and we provide ongoing support to our customers through a global services team with experience in design, deployment and maintenance of some of the world's largest software IP networks.

We completed our acquisition of Edgewater Networks, Inc. ("Edgewater"), a market leader in Network Edge Orchestration for the distributed enterprise and UC market, in August 2018 (the "Edgewater Acquisition"), making us a software market leader in enterprise Session Border Controllers and allowing us to extend Edgewater software solutions internationally while expanding our cloud offerings and entering the SD-WAN market.

We completed our Merger with GENBAND, a global leader in NextGen software-enabled real-time communications solutions, in October 2017. Because of the Merger, we believe we improved our position to enable network transformations to IP and to cloud-based networks for service providers and enterprise customers worldwide, with a broader and deeper sales footprint, increased ability to invest in growth, more efficient and effective research and development, and a comprehensive RTC product offering.

Industry Background

Traditional TDM-based voice and data solutions are being supplanted by alternative NextGen IP-based networks and RTC software applications are being offered from the cloud in conjunction with the network and enterprise edge. Given this shift, today's telecommunications service providers and enterprises are faced with two separate but related challenges: how to upgrade their aging and costly communications infrastructure, and how to implement new and innovative NextGen software, IP and cloud-based communications capabilities. Service providers in particular must address these challenges while at the same time responding to competition in the form of new web-scale communication providers, such as Microsoft Corp., Google LLC and Amazon.com, Inc.

To address these challenges, service providers and enterprises are modernizing their communications networks, network functions and communications applications from legacy environments to new environments using NextGen IP software, NFV, the cloud and the edge to take advantage of the many benefits that these technologies offer with an end goal of providing better and more productive communications experiences for their customers and employees.

Telecommunications Service Providers: Network Modernization

One of the most significant capital costs for telecommunications service providers has been and continues to be their infrastructure. In order to leverage past capital investments and deliver existing and new services, service providers must consolidate their infrastructure from costly, legacy infrastructures, such as the PSTN and the PLMN, into more efficient and flexible IP- and software-based network models, which are capable of driving revenue growth. Migrating from the PSTN to IP reduces real estate, power and operating costs. IP software networks allow the consolidation of voice, video and data within a single IP-based networking infrastructure over broadband and wireless access and enables new communications services, such as SIP Trunking and Hosted UCs. Similarly, modernizing mobile networks to the IMS-based 4G LTE and VoLTE networks enables mobile service providers to offer better and more efficient mobile communications experiences to end users. As consumers and businesses continue to demand more engaging and productive communications, we believe network

modernization is and will continue to be essential to service providers' ability to compete effectively in the market for telecommunications services. As such, key market drivers include:

Modernization of Networks to IP

Communication trends have been shifting for the past several years. What was once an industry built on voice communications from central office switches and PBXs on the enterprise premise is now being replaced by the use of social networks, OTT service providers, mobile applications, and hosted service providers. Consumers are increasingly turning to OTT applications (i.e., WhatsApp, Apple's Facetime and iMessaging, or Amazon's Alexa). This shift has created an enhanced experience for consumers, heightened expectations for future products and services, and expanded related addressable markets.

Network modernization to IP NextGen software-based systems enables service providers to add modern communications service offers that blend traditional voice messaging capabilities with contemporary features, such as video messaging, visual voicemail, mobile messaging and e-mail integration, and an accelerated time-to-market for differentiated messaging services. Network infrastructures are also undergoing a transformation to IP and the cloud, migrating from hardware-centric appliances to software solutions for voice interconnect and wide area networking.

Enterprises, large and small, are re-architecting business processes and undergoing a digital transformation, building their own virtualized software solutions in the cloud or moving their IT applications entirely to public cloud applications, and adding RTC and collaboration to their customer service solutions. These new offerings improve customer service and create an e-commerce experience that blends online applications with the in-store environment, creating a seamless experience for customers.

As a result of these evolving communications environments, the complexity of network operations is also increasing significantly, requiring sophisticated NextGen software solutions based on machine learning and analytics to provide reliable network operations.

Secure Real-time Communications

The evolution by telecommunications service providers to IP NextGen software-based RTC exposes them to new security threats, as the "walled" protection offered by their voice network infrastructures no longer exists with SIP and data-based networks. With SIP-based systems, RTC applications such as voice, video and messaging become data applications, and without appropriate security measures in place, these networks are left open to security breaches and hacks. Additionally, the move to SIP has seen an increase in fraud in service provider networks in the form of robo-dialing and toll fraud schemes.

Given these threats, there is a need for sophisticated software security solutions to protect IP-based communications networks. Service providers have relied upon the software capabilities of SBCs, which are deployed within their networks and are designed to provide robust security as well as simplify interoperability, routing and other functions as a protection measure. By its nature, the SBC controlling software is application-aware and therefore can provide sophisticated data to software-based analytics platforms to detect and thwart security breaches. In conjunction with SBCs, big data analytics and machine learning solutions can enforce a network-wide security perimeter. We believe securing networks against threats is most effective when secure software solutions are deployed within networks into existing RTC investments and combined with network-wide approaches for secure RTC.

Edge Orchestration

As service providers deliver Hosted and Cloud UC services to enterprises, they need to be able to provide those services to the enterprise via the internet and IP infrastructure and must do so with service assurance, security and reliability in a cost-effective manner. Hybrid cloud and edge orchestration software offerings enable service providers to manage enterprise edge devices remotely from their cloud or network and provide the service in a cost-effective and reliable manner. Such solutions minimize service downtime and expensive visits to enterprise customer sites via truck rolls to work on the edge devices on the enterprise customer premise.

Network Function Virtualization

In addition to shifting from traditional TDM-based voice and data networks to secure IP NextGen software networks, telecommunications service providers are increasingly moving toward NFV in order to offer new services quickly to their customers, reduce costs and compete with Web-Scale companies. NFV provides a new way to design, deploy and manage networking services by decoupling network software functions from proprietary appliances so they may run in software. This

transformation enables better use of network infrastructure, creates agility, delivers rapid and elastic scaling, and enables faster time to market. Software-enabled VNFs can be deployed on generic computing platforms, hosted in private and public clouds, located in data centers, within other network elements or on computer platforms on end user premises.

Cloud and “as a Service” Models

As software communications applications are deployed in the cloud, telecommunications service providers gain the ability to offer a new class of business models commonly referred to “as a Service” solutions. These offerings include:

CPaaS: CPaaS is a cloud-based software platform that enables developers to add RTC features, such as voice, data, video, and messaging, in their own applications without requiring backend infrastructure and interfaces. CPaaS provides software developers the flexibility to “drag and drop” these features into their native applications or within web sites through simple APIs and SDKs. With CPaaS, enterprises can quickly build applications that tie RTC and their social channels to their business workflows and customer engagements. This software technology has not only moved real time communications off service provider networks, but also has greatly simplified the development and deployment of RTC capabilities.

UCaaS: Deploying NextGen UC software within the cloud helps enterprises provide flexibility and scalability for core business tasks. UCaaS features include enterprise messaging, presence technology, online meetings, team collaboration, telephony and video conferencing in lieu of traditional voice solutions, such as PBXs or carrier-based Centrex. UCaaS is also another offering for improving customer engagements and experiences.

STaaS: SIP software trunking enables service providers to bundle voice and data over a single converged IP connection and brings converged connectivity to the enterprise, creating a more economical offering than can be achieved with separate voice and data connections. STaaS delivers NextGen IP software connectivity to customers equipped with IP-PBX and UC facilities. With STaaS, customers have the flexibility to manage their own SIP trunks through simple and reliable software interfaces.

Enterprises: Network Modernization and Digital Transformation

Today’s enterprises, including multi-national corporations, SMBs and government institutions, are undergoing not only a network modernization but also a digital business transformation. The focus is shifting from person-to-person communications to contextual collaboration and omni-channel customer experiences. Within this context, enterprises need a secure, scalable and innovative NextGen software alternative to proprietary PBX and UC products. As part of their digital transformation, enterprises have adopted the cloud, open interfaces, mobile, Big Data, and analytics. Seeing the advantages and cost savings from the cloud, enterprises are migrating their communications solutions to this same environment, thereby enabling connections between business processes, communications, and collaboration.

Network Modernization

Enterprises undergoing network modernization are focused on moving from TDM-based PBXs to SIP trunking and NextGen UC software and collaboration systems while ensuring interoperability during the transformation process. In addition, enterprises in certain industries will often be subject to specific requirements or standards before a network transformation is completed. For example, governments may require Joint Interoperability Test Command (“JITC”) certification for secure deployments, and healthcare providers may need to achieve HIPAA certification.

When modernizing a network with software, the ability to interwork modern applications, such as Microsoft’s Skype for Business, with legacy analog endpoints on premises becomes essential. Additionally, software capabilities of SBCs are vital in providing interworking and survivability options. SBCs play a crucial role in securing the modern network and for NextGen UC software, which is a top priority for any enterprise. Edge SBC software devices can also play an important role in providing SD-WAN capabilities for small and distributed enterprises. Due to the growing open nature of communications environments in the enterprise, the complexity of network operations is also increasing significantly, requiring sophisticated software solutions based on machine learning and analytics to provide reliable network operations.

Digital Transformation

Successful enterprises today are focused on innovating their core product offerings and building a strategic advantage to reach and empower their customers. As technologies evolve and new mobile applications and connected devices proliferate, enterprises must adapt and innovate their communications solutions to create a “connected” experience anywhere, anytime, on any device. As part of this process, businesses are increasingly deploying “as a Service” offerings from the cloud (from either a service provider or a web-scale provider). UCaaS and CPaaS create a single software communications platform that changes

the way enterprises deliver services and interact with customers. CPaaS software enables enterprises to quickly build applications that tie real time communications and their social channels to their business processes while UCaaS software delivers the underlying UC capabilities to ensure end users have the features and functionality required to enable reliable and scalable end-to-end communications.

Our Solutions, Products and Services

Ribbon Solutions

Ribbon provides secure NextGen RTC software-enabled appliances and cloud solutions for service providers and enterprises. Ribbon's software communications solutions are widely deployed at over 1,000 customers globally; provide high scale, reliability and performance; and are deployable from the public, private and hybrid cloud, in-network or on the enterprise premise and edge. As of December 31, 2018, our software solutions, which are a combination of our software products and services, for service providers and enterprises included the following:



Ribbon service provider software solutions enable fixed and wireless service providers, cable providers (or MSOs), ISPs and interconnect service providers to modernize their networks, quickly capitalize on growing market segments and introduce differentiating products, applications and services for their business and consumer customers. Ribbon's service provider network modernization software solutions include fixed network transformation, wireless network evolution (mobility), secure network interconnects, network functions virtualization, cloud communications as a Service, and communications security and edge orchestration solutions, enabling secure and innovative business and consumer communications services offerings. Ribbon software solutions help service providers connect people to each other wherever they happen to be, addressing the growing demands of today's consumers and businesses for secure RTC.

Ribbon's enterprise software solutions allow enterprises to securely connect to SIP trunks and modernize their unified and cloud communications networks. Modernization solutions range from Intelligent Edge, legacy Nortel PBX evolution, securing UC and contact centers, migrating to Microsoft Skype for Business and Teams with Direct Routing, and providing session management, security and cloud communications software solutions to enable highly productive communications experiences for employees and customers using the web, mobile and fixed endpoints. Ribbon provides secure communications software solutions for the federal government vertical and has JITC certified solutions. Ribbon also provides RTC software solutions to other industry verticals, including higher education, finance and healthcare. Ribbon has significant experience and expertise in securing SIP communications with a portfolio of SBC software solutions and has deployed thousands of SBC software installations across different industry verticals. Our Intelligent Edge software solutions simplify UC deployments and enable SD-WAN for small and distributed enterprises. Our Microsoft Skype for Business and Teams software solutions secure those communications environments and assist in the migration of enterprise customers to those environments.

Ribbon Products

Ribbon software products enable service providers to take new services to market quickly and with scale and carrier class reliability, allowing such providers to compete effectively in the marketplace, and enable enterprises to make their employee and customer engagement experiences richer and more productive.

Ribbon's software product lines enabling network transformation, mobile network evolution and interconnect solutions include Ribbon's call session controllers, media gateways, signaling, policy and routing software and a market leading portfolio of SBCs intelligent edge software products, all of which are mechanisms through which operators and enterprises deploy our secure RTC software solutions. Ribbon's NextGen UC software solutions are enabled by the Ribbon Application Server, Client and Intelligent Messaging products, and are a software platform for business and residential multimedia communications across fixed, mobile, cable, and enterprise markets. Our software product portfolio facilitates the securing of SIP-based UC sessions in the enterprise core and edge networks, and the migration of legacy PBX-based enterprise communications networks (such as the Nortel PBX installed base) across different market verticals. Our software product portfolio includes element management and network management software to enable customers to configure, monitor and manage the solutions they purchase from us.

The software product portfolio also includes native mobile client products that allow service providers to enable Wi-Fi and LTE Calling services for their subscribers without the considerable cost of investing in, implementing and maintaining, a full VoLTE IMS network.

The Company's Cloud Communications "as a Service" portfolio, which includes CPaaS, UCaaS and STaaS offerings, is based on Kandy Cloud, which is a cloud-based RTC software platform that enables service providers, independent software vendors, systems integrators and enterprises to rapidly create and deploy high value embedded communications services for their customers. Utilizing Ribbon's communications technology, which is offered as a part of a white-label solution service, service providers may connect their networks to Kandy Cloud CPaaS via SIP trunks and APIs. The Kandy Cloud software platform provides APIs and SDKs for developers to build embedded communications applications. Kandy Cloud helps service providers grow revenue with quick to deploy, pre-packaged applications called Kandy Wrappers. Kandy Wrappers are fully functional software applications that can be delivered standalone or inserted into an enterprise website or into an enterprise application to endow it with embedded RTC capabilities. Kandy Cloud also delivers a suite of UCaaS solutions, such as Cloud PBX, Cloud Contact Center and Cloud Collaboration.

Ribbon Global Services

Our global services organization is responsible for all aspects of implementation and support of our solutions and products. Key portfolio components include solution and business consulting, system integration, deployment, and managed care services. Our technical support group provides constant support to keep customers' software operating at peak performance. Support services include managing software updates, appliance maintenance, appliance spare services and managed spares programs, and emergency assistance during disaster recovery.

With a local presence in over twenty countries on five continents, Ribbon Global Services provides both a U.S. presence and a global presence with complete coverage to help drive our customers' success.

The Ribbon Global Services team provides our customers with the following:

A full-service portfolio including deployment and integration, testing and verification, migration, operational support, monitoring and managed services;

End-to-end project management and accountability via highly experienced program managers who follow a consistent, disciplined methodology;

Knowledgeable and experienced technical resources with in-depth skills and expertise on IP communications software solutions and network modernization;

Consistent execution in the design, deployment and support of the world's largest and most advanced software networks; and

Award winning, around-the-clock technical support services with dedicated technical support centers around the globe, including the United States, Canada, Mexico, United Kingdom, Spain, Germany, Czech Republic, Australia, Japan, Malaysia, Taiwan, China (Hong Kong) and India.

Our Strategy

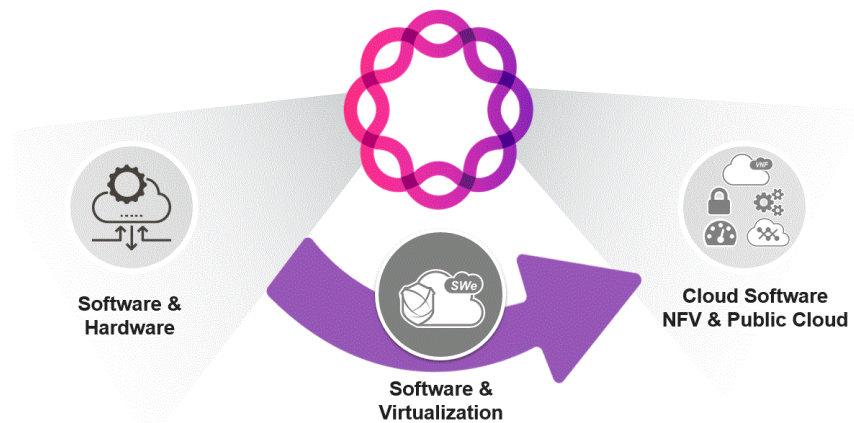
Ribbon is a leader in enabling network modernization through NextGen software and we plan to continue to invest in our software solutions platform approach to increase our global reach and scale. We aim to enable service providers and

enterprises to significantly expand their software-enabled RTC environments to provide better, more agile end customer experiences that contain their operational and capital expenditure costs. By doing so, we believe we will sustain our industry-leading position and succeed in our market. Our customers are key to the success of our business and our business model is focused on aligning with our customers through direct engagement, service and support as well as through our channel partners. This model allows us to target our sales and research and software development efforts based on the needs of our customers and we believe it is critical to our success.

Key elements of Ribbon's strategy include:

Selectively Invest in our Core Software Products and Solutions. In order to service our customers and support their key priorities and growth, we must strategically invest in research and development. We are committed to balancing our research and software development investments between existing software products and solutions and new growth-oriented product initiatives. In 2018, greater than 95% of our research and development investment was directed at software. In addition, we are focused on investing in products and solutions that will be profitable. We intend to continue to sunset certain less significant product offerings that are not aligned with our strategic direction and are not meaningful contributors to our profitability. We believe this will allow us to more effectively and efficiently deploy capital to our growth areas. Through targeted research and software development investments in core software products and solutions that will align with our strategy for growth, we are committed to helping our customers migrate their networks to software and virtualized and cloud environments.

Build on Growing our Customer Footprint and Global Reach. Ribbon has over 1,000 customers globally, in all of the major regions with many of the largest telecommunications service providers and enterprises in the world. This footprint allows us to sell additional software products and services from the Ribbon portfolio to that deployed base of existing customers and provides us with the opportunity to sell new software products and services to that customer base. We also continue to look for opportunities to expand our portfolio footprint and global reach to further diversify our customer base.



Disciplined Expansion into New Markets and New Solutions for Growth. We believe that a disciplined approach to targeting new markets is critical to growing our business. As such, we have taken actions to expand our software portfolio and offerings to our customers. We have expanded our investments in the enterprise market and have increased our revenue from enterprise customers. We are investing in growth initiatives focused on cloud communications and RTC security both for service providers and enterprises. Similarly, given our significant experience with securing IP network borders in the core and the edge with our SBC software, and the increasing importance of security in today's networks and communications, we are working on expanding our role in securing RTC with new software portfolio offerings.

Selectively Pursue Strategic Relationships, Alliances and Acquisitions. The ecosystem in which we operate is continually evolving and expanding. Accordingly, we continue to pursue strategic relationships, alliances and acquisitions that align our business with our customers' strategic goals and objectives as well as our own strategic goals for further extending our footprint, reach, scale and growth in the business.

Competitive Differentiation

In addition to our scale and global presence, we believe there are several factors that set us apart and allow us to compete effectively with comparable peers in terms of scope, size and scale.

Installed Base. Ribbon has a large, global deployed base of Nortel-, Sonus- and GENBAND-branded software products, including softswitches and media gateways in global service provider and enterprise networks supporting over 30 million switched access lines. These products are highly integrated into our customers' network environments and require specialized tools and intellectual property from Ribbon to consolidate and modernize those environments to newer IP software-based services with optimal capital expenditure investments. Similarly, our large, global deployed base of SBCs at service providers' networks and in enterprises offers Ribbon a unique platform for upgrading and cross-selling software products into that installed base.

Strong Technology in Virtualization. Ribbon has extensive network virtualization software products and technology as part of our overall portfolio and have deployed these software products to help our customers in the modernization of their networks to software-based virtualization and the cloud. A significant portion of our overall portfolio has software and virtualized offerings that can co-exist with appliance-based software products.

Security Experience and Technology. Our SBC and edge software, deployments and expertise are market leading. Ribbon has been in the SBC software market for over fifteen years, yielding us a strong advantage from which to launch additional security offerings into the market. We believe our SBC software products are unmatched in the market on reliability, performance and functionality at scale.

Media Processing, Transcoding and Signaling Technology Expertise. We have extensive experience in deploying mobile VoLTE and fixed network software solutions. Our voice media transcoding software technology that is supported by CPU, GPU or DSP options is industry leading. Our mobile network evolution software solutions are deployed in large-scale 4G VoLTE networks supporting over 250 million subscribers in total.

Intellectual Property

Intellectual property is fundamental to our business and our success, and we depend upon our ability to develop, maintain and protect our technology. We have defended, and intend to vigorously defend when necessary, our intellectual property from infringement. Therefore, we seek to safeguard our investments in technology and rely on a combination of United States and foreign patent, trademark, trade secret and copyright law and contractual restrictions to protect the proprietary aspects of our technology and to defend us against claims from others. Our general policy has been to seek to patent those patentable inventions that we plan to incorporate in our products or that we expect will be valuable otherwise. We have a program to file applications for and obtain patents, copyrights and trademarks in the United States and in specific foreign countries where we believe filing for such protection is appropriate.

As of December 31, 2018, we held patents and had pending patent applications both in the United States and abroad as follows: in the name of Sonus Networks, Inc., 239 United States patents with expiration dates ranging from May 2019 through May 2037, 33 patent applications pending in the United States, 50 foreign patents with expiration dates ranging from May 2020 through April 2030, and one patent application pending abroad; in the name of GENBAND US LLC, 326 United States patents with expiration dates ranging from June 2019 through April 2037, 59 patent applications pending in the United States, 219 foreign patents with expiration dates ranging from October 2019 through April 2035, and 51 patent applications pending abroad; and in the name of Edgewater Networks, Inc., six United States patents with expiration dates ranging from October 2022 through March 2035 and six patent applications pending in the United States.

Furthermore, as of December 31, 2018, we had 37 registered trademarks in the United States, as follows: 19 in the name of GENBAND US LLC, including GENBAND, GENBAND with design, G9, G9 with design, KANDY and BUSINESSCALL; 12 in the name of Sonus Networks, Inc., including SONUS, the SONUS logo and NETSCORE; two in the name of Network Equipment Technologies, Inc., including NET (and design); four in the name of Quintum Technologies, LLC, including TENOR; and five in the name of Edgewater Networks, including Edgewater and Edgeview. We also had 28 pending trademark applications in the United States in the name of Sonus Networks, Inc., including Ribbon and the Ribbon Logo as of December 31, 2018.

In addition to the protections described above, we seek to safeguard our intellectual property by:

Employing measures to safeguard against the unauthorized use or disclosure of the source and object code for our software, documentation and other written materials, and seeking protection of such materials under copyright and trade secret laws;

Licensing our software pursuant to signed license agreements, which impose restrictions on others' ability to use our software; and

Seeking to limit disclosure of our intellectual property by requiring employees and consultants with access to our proprietary information to execute confidentiality agreements.

We have incorporated third-party licensed technology into certain of our current products. From time to time, we may be required to license additional technology from third parties to develop new products or to enhance existing products. Based on experience and standard industry practice, we believe that licenses to use third-party technology generally can be obtained on commercially reasonable terms. Nonetheless, there can be no assurance that necessary third-party licenses will be available or continue to be available to us on commercially reasonable terms. As a result, the inability to maintain, license or re-license any third-party licenses required in our current products, or to obtain any new third-party licenses to develop new products and enhance existing products could require us to obtain substitute technology of lower quality or performance standards or at greater cost. This could delay or prevent us from making these products or enhancements, any of which could seriously harm our business, financial condition and operating results.

Please see generally the risks that are discussed in Item 1A. "Risk Factors" for risks related to our intellectual property.

Our Customers

We have over 1,000 customers globally. Our customers are located around the world in over 50 countries and include many of the leading global telecommunications service providers and enterprises. Service providers use our products to provide secure software-enabled RTC for the service providers (in the case of interconnects), enterprises and consumers they serve. Enterprises use our products to provide software-enabled RTC for their employees (including remote workers) as well as provide secure communications networks for their customer-facing components, such as contact centers.

Our global service provider customers include fixed-line, wireless, cable, internet and interconnect service providers. Our enterprise customers include businesses of all sizes, ranging from SOHO, SMB, and large and distributed enterprises across various industry verticals with a concentration in the federal government, healthcare and education sectors. We sell to customers via a direct sales team as well as through indirect channels that include VARs, system integrators and service providers. Independent software vendors also partner with Ribbon to source our software solutions and market them through their sales channels.

In both the years ended December 31, 2018 and 2017, approximately 17% of our revenue was derived from sales to one customer, Verizon Communications Inc., a service provider that provides interconnect, fixed line and mobile communications services. Verizon is transforming its TDM network from an appliance-centric network to a SIP and NFV based network, and Ribbon is playing a key role in this transformation. Our top five customers represented approximately 38% of our revenue in the year ended December 31, 2018 and approximately 41% of our revenue in the year ended December 31, 2017.

Competitive Conditions

Competition in the telecommunications market remains fierce. The market is shifting from a market dominated by a few large telecommunications legacy hardware equipment companies, such as Ericsson LM Telephone Company, Huawei Technologies Co. Ltd., and Nokia Corporation, to a market that is characterized by software, including network virtualization, migration to the cloud, and open interfaces. We believe this shift creates opportunities for us as well as our direct competitors in telecommunications and networking, including:

Network transformation: Mid-size vendors of networking and telecommunications equipment and specialty vendors, including AudioCodes Ltd., Dialogic Inc., Mavenir Systems, Inc., Metaswitch Networks Corporation, Oracle Corporation (Session Border Controller) and ADTRAN, Inc.;

Enterprise and cloud solutions: Microsoft, 8x8, Inc., Avaya Inc., Bandwidth Inc., Cisco Inc. (with Broadsoft, Inc.), Mitel Networks Corporation (with ShoreTel, Inc.), Plivo Inc., RingCentral, Inc., Twilio Inc., Telestax Inc., Fuze, Inc., Genesys and Vonage Holdings Corp. (with Nexmo, Inc. and Tokbox Inc.); and

Security and analytics: SecureLogix Corporation, RedShift Networks Corporation, Empirix Inc. and Oracle Corporation.

Other smaller private and public companies are also focusing on similar market opportunities. Mergers among any of the above companies or other competitors, as well as additional competitors with significant financial resources entering our markets, could further intensify competition. Mergers between service providers may also increase competition, as these reduce the number of customers and channels for products and solutions.

To compete effectively, we must deliver innovative software solutions that provide extremely high reliability and quality; deploy and scale easily and efficiently; interoperate with existing network infrastructures and multivendor solutions; provide effective network management; are accompanied by comprehensive customer support and professional services; provide a cost-effective and space-efficient solution for enterprises and service providers; meet price competition from low cost equipment providers; and offer solutions that are timely for the market and support where the industry is heading.

Although we believe we compete favorably because our software solutions are widely deployed, highly scalable and cost-effective for our customers, some of our competitors include products in their portfolios that we do not provide and may be able to devote greater resources to the development, promotion, sale and support of their products. In addition, some of our competitors have more extensive customer bases and broader customer relationships than we have, including relationships with our potential customers and established relationships with distribution partners.

Please see generally the risks that are discussed in Item 1A, "Risk Factors" for risks related to our customers and the competitive landscape in which we operate.

Sales and Marketing

We sell our software products, solutions and services to our customers with a direct internal sales force and also indirectly via channels and partnerships globally, leveraging the assistance of service provider channels and VARs such as Verizon Communications Inc. and Hawaiian Telecom, and distributors such as Westcon Group Inc., Ingram Micro, BlackBox and Arrow S3. Our channel partner programs are designed to serve particular markets and provide our customers with opportunities to purchase our products in combination with related services and products. For example, Ribbon is a Microsoft Gold Communications Partner and helps enterprises optimize Skype for Business (and Teams) deployments by securing those communications.

As a primary supplier of software solutions to Tier 1 service providers (a service provider that can reach every other network on the Internet without purchasing IP transit), we require a strong worldwide presence. We have an established sales presence throughout North America, Europe, Asia/Pacific, the Middle East, Africa and Central/South America. We also have a dedicated direct sales team focused on the enterprise, industry verticals and federal government sector in the United States.

Our marketing team is focused on promoting company brand awareness, increasing our software solutions, product, technology and services differentiation and awareness via webinars, company web sites, advertising and digital outreach, as well as generating qualified sales leads. We promote thought leadership on technology and our solutions within the industry by participating in and speaking at industry events and conferences and via social network campaigns and blogs. Our marketing team also provides briefings to industry analysts on a regular basis and at major industry events, communicates with the media in connection with noteworthy public announcements and supports our investor relations department on quarterly conference calls and regular investor updates.

Please see generally the risks that are discussed in Item 1A. "Risk Factors" for risks related to our sales strategy.

Manufacturing

A number of our software products are deployed on appliances. Where our products contain an appliance element, we utilize contract manufacturers to source and assemble these components. Our contract manufacturers provide comprehensive manufacturing services, including assembly and testing of our products and procurement of component materials on our behalf. We believe that outsourcing the manufacturing of any necessary appliance enables us to preserve working capital, allows for greater flexibility in meeting changes in demand and enables us to be more responsive in delivering diverse product offerings to our customers. As of December 31, 2018, we outsourced the manufacturing of our appliance products to four manufacturers, two upon which we primarily rely. However, we are currently in the process of transitioning our manufacturing to a single contract manufacturer. We and our contract manufacturers purchase several key components of our appliance products, including commercial digital signal processors, from single or limited sources. We purchase these components on a purchase order basis.

Our purchases of direct materials and components for manufacture of approximately \$75 million in 2018 (approximately \$64 million excluding the effects of the Edgewater Acquisition) increased compared with approximately \$38 million in 2017 due to the inclusion of the GENBAND business since October 27, 2017 and Edgewater business since August 3, 2018 in our consolidated results. Going forward, we expect our overall trend of a reduction in direct material purchases to continue as the software richness within our products increases while the remaining appliance content declines.

Please see generally the risks that are discussed in Item 1A. “Risk Factors” for risks related to our manufacturing operations and use of contract manufacturers.

Research and Development

We believe that strong software product development capabilities are essential to our strategy of enhancing our core technology, developing additional security and network modernization features and maintaining comprehensive software and service offerings. Our research and development process leverages innovative technology in response to market data and customer feedback. As part of this process, we regularly review research and software development investments in our products and balance them against market demand.

We have assembled a team of highly skilled engineers with significant transcoding, UC application and networking industry experience. Our engineers have deep experience in software design and development. Our engineering effort is focused on NextGen UC, NFV, security and cloud-based architecture software product development.

As of December 31, 2018, we maintained research and development offices in Massachusetts, California, Illinois, Texas, New Jersey and North Carolina in the United States, as well as Canada, India and the United Kingdom.

Seasonality

We have experienced quarterly fluctuations in customer activity due to seasonal considerations. We typically experience increases in order volume in the fourth quarter due to greater spending on operating and capital expenditures by our service provider customers. We typically experience reductions in order volume toward the beginning of the calendar year, when our service provider customers are finalizing their annual budgets, which may result in lower revenue in the first quarter. These seasonal effects may vary and do not always correlate to our operating results. Accordingly, they should not be considered a reliable indicator of our future operating results.

Backlog

We sell products and services pursuant to purchase orders issued under master agreements that provide standard terms and conditions that govern the general commercial terms and conditions of the sale. These agreements typically do not obligate customers to purchase any minimum or guaranteed quantities, nor do they generally require upfront cash deposits. At any given time, we have orders for products that have not yet been shipped and for services (including our customer support obligations) that have not yet been performed. We also have orders relating to products that have been delivered and services that have been performed but have not yet been accepted by the customer under the applicable purchase terms. We include both of these situations in our calculation of backlog.

A backlogged order may not result in revenue in the quarter in which it was booked, and the actual revenue recognized in a quarter may not equal the total amount of related backlog. In addition, although we believe that the backlog orders are firm, purchase orders may be canceled by the customer prior to shipment without significant penalty. Therefore, we do not believe that our backlog, as of any particular date, is necessarily indicative of actual revenue for any future period.

We have begun to derive, and expect to continue to derive, a greater percentage of our revenue from the enterprise market and through sales channels where speed of fulfillment is essential to winning business. Consequently, we expect to earn a lower relative percentage of our total business from large service provider orders that are delivered over multiple quarters and years and that our backlog going forward will diminish both as a comparable metric to prior periods and as a relative percentage of total revenue (both service provider and enterprise). Our backlog was approximately \$340 million at December 31, 2018 and approximately \$370 million at December 31, 2017. Our prior period amount has been conformed to our current period presentation following the adoption of Accounting Standards Codification 606, *Revenue from Contracts with Customers* and no longer includes purchase orders where product delivery is not expected within twelve months.

Our Employees

At December 31, 2018, we had a total of 2,245 employees, comprised of 1,386 employees located in the Americas, 257 employees located in the Middle East, Africa and Europe and 602 employees located in the Asia Pacific region. Certain of our employees are represented by collective bargaining agreements, primarily in Europe. We believe our relationships with our employees are good.

Segment Information

We operate in a single segment. Operating segments are identified as components of an enterprise about which separate discrete financial information is available for evaluation by the chief operating decision maker in making decisions regarding resource allocation and assessing performance. To date, our chief operating decision maker has made such decisions and assessed performance at the company level, as one segment. Our chief operating decision maker is our President and Chief Executive Officer.

Our Company History

We were organized as a Delaware corporation on May 19, 2017, initially under the name Solstice Sapphire Investments, Inc., for the purpose of effecting the merger of Sonus and GENBAND. The Merger occurred on October 27, 2017. Upon completion of the Merger, Sonus and GENBAND became wholly-owned subsidiaries of Solstice Sapphire Investments, Inc., which concurrently changed its name to Sonus Networks, Inc. On November 28, 2017, Sonus Networks, Inc. changed its name to Ribbon Communications Inc. Ribbon succeeded to and continues to operate, directly or indirectly, the then existing businesses of Sonus and GENBAND.

Additional Information

Our annual reports on Form 10-K, quarterly reports on Form 10-Q, current reports on Form 8-K and amendments to those reports filed with or furnished to the United States Securities and Exchange Commission (the "SEC"), are available free of charge through the SEC's Internet site (<http://www.sec.gov>) or our Internet site (<http://www.ribboncommunications.com>) as soon as reasonably practicable after we electronically file such material with, or furnish it to, the SEC.

Item 1A. Risk Factors

Our business faces significant risks and uncertainties. Certain important factors may have a material adverse effect on our business prospects, financial condition and results of operations, and they should be carefully considered. Accordingly, in evaluating our business, we encourage you to consider the following discussion of risk factors in its entirety in addition to other information contained in or incorporated by reference into this Annual Report on Form 10-K and our other public filings with the Securities and Exchange Commission ("SEC"). Other events that we do not currently anticipate or that we currently deem immaterial may also affect our business, prospects, financial condition and results of operations.

Risks Related to the Sonus-GENBAND Merger

While we continue to integrate any remaining separate processes, policies, procedures, operations, technologies and systems, it is possible that such remaining integration activities may not be successful, and therefore, any remaining anticipated benefits and cost savings of the Sonus-GENBAND merger may not be realized, which could have a material adverse effect on our results of operations and financial condition.

Effective October 27, 2017, we completed the merger (the "Merger") of Sonus Networks, Inc. ("Sonus"), GENBAND Holdings Company, GENBAND, Inc., and GENBAND II, Inc. (collectively, "GENBAND").

While we continue to integrate any remaining separate processes, policies, procedures, operations, technologies and systems, it is possible that the integration process could still result in the loss of key employees, higher than expected costs, diversion of management attention, the disruption of our ongoing businesses or inconsistencies in standards, controls, procedures and policies that adversely affect the combined company's ability to maintain relationships with customers, vendors and employees or to achieve the anticipated benefits and cost savings of the Merger. If we experience difficulties with the integration process or are unable to successfully combine the businesses of Sonus and GENBAND in an efficient and effective manner, the anticipated benefits and cost savings of the Merger may not be realized fully or at all, or may take longer to realize than anticipated. An inability to realize the full extent of the anticipated benefits of the Merger, as well as any delays encountered in

the integration process, could have an adverse effect upon our revenue, level of expenses and operating results, which may adversely affect the value of our common stock.

In addition, Sonus and GENBAND incurred, and we expect to continue to incur, significant costs in connection with integrating the operations of the two companies. These include implementing integration plans, including facilities and systems consolidation costs and employment-related costs. We may incur additional and unforeseen expenses during the integration process. Payment of these costs and expenses may adversely affect our liquidity, and the actual cost savings of the Merger could be less than expected and may take longer to achieve than anticipated or may not be realized at all.

We entered into a stockholders' agreement with certain GENBAND stockholders in connection with the consummation of the Merger, which provided them with certain rights that may differ from the rights of our other stockholders. Such GENBAND stockholders may decide to sell their shares in bulk or from time to time, which timing we cannot control.

On October 27, 2017, in connection with the consummation of the Merger, we entered into a principal stockholders' agreement (the "Stockholders Agreement") with Heritage PE (OEP) II, L.P. and Heritage PE (OEP) III, L.P. (collectively with any successor entities, the "OEP Stockholders"), principal stockholders of GENBAND prior to the Merger. The Stockholders Agreement sets forth certain arrangements and contains various provisions relating to board representation, standstill restrictions and transfer restrictions as further described therein, including the right of the OEP Stockholders to designate up to five directors for nomination to our nine-member board of directors, subject to the OEP Stockholders maintaining certain levels of beneficial ownership of our common stock. Therefore, the OEP Stockholders will be able to exert significant influence over matters requiring board approval, and our stockholders other than the OEP Stockholders will have limited or no ability to influence the outcome of certain key transactions. The interests of the parties to the Stockholders Agreement may differ from those of other holders of our common stock.

The OEP Stockholders own 46.7% of our common stock as of January 31, 2019, and may decide to sell their shares in bulk or from time to time, which timing we cannot control. The sale of their shares may increase the volatility of our stock price, and our stock price could decline as a result.

Risks Related to our Business and Industry

Our quarterly revenue and operating results are unpredictable and may fluctuate significantly from quarter to quarter, which could adversely affect our business, results of operations and the trading price of our common stock.

Our revenue and operating results may vary significantly from quarter to quarter due to a number of factors, many of which are outside of our control and any of which may cause our stock price to fluctuate. The primary factors that may affect our revenue and operating results include, but are not limited to, the following:

- consolidation within the telecommunications industry, including acquisitions of or by our customers;
- general economic conditions in our markets, both domestic and international, as well as the level of discretionary IT spending;
- competitive conditions in our markets, including the effects of new entrants, consolidation, technological innovation and substantial price discounting;
- fluctuation in demand for our products and services, and the timing and size of customer orders;
- fluctuations in foreign exchange rates;
- cancellation or deferral of existing customer orders or the renegotiation of existing contractual commitments;
- mix of product configurations sold;
- length and variability of the sales cycle for our products;
- application of complex revenue recognition accounting rules to our customer arrangements;
- timing of revenue recognition;
- changes in our pricing policies, the pricing policies of our competitors and the prices of the components of our products;
- market acceptance of new products, product enhancements and services that we offer;
- the quality and level of our execution of our business strategy and operating plan, and the effectiveness of our sales and marketing programs;
- new product announcements, introductions and enhancements by us or our competitors, which could result in deferrals of customer orders;
- our ability to develop, introduce, ship and successfully deliver new products and product enhancements that meet customer requirements in a timely manner;
- our reliance on contract manufacturers for the production and shipment of our appliance products;

- our or our contract manufacturers' ability to obtain sufficient supplies of sole or limited source components or materials;
- our ability to attain and maintain production volumes and quality levels for our products;
- variability and unpredictability in the rate of growth in the markets in which we compete;
- costs related to mergers, acquisitions and divestitures; and
- corporate restructurings.

Equipment purchases by communications service providers and enterprises continue to be unpredictable. As with other telecommunications product suppliers, we typically recognize a portion of our revenue in a given quarter from sales booked and shipped in the last weeks of that quarter. As a result, delays in customer orders may result in delays in shipments and recognition of revenue beyond the end of a given quarter. Additionally, we rely on the revenue provided by certain large customers. It can be difficult for us to predict the timing of receipt of major customer orders, and we are unable to control their timing decisions. In the past, we have experienced significant variability in the spending patterns and purchasing practices of our large customers on a quarterly and annual basis, and we expect that this variability will continue. Consequently, our quarterly operating results are difficult to predict even in the short term and a delay in an anticipated sale past the end of a particular quarter may negatively impact our results of operations for that quarter, or in some cases, that year. Therefore, we believe that quarter-to-quarter comparisons of our operating results are not a good indication of our future performance. If our revenue or operating results fall below the expectations of investors or securities analysts or below any guidance we may provide to the market, the price of our common stock could decline substantially. Such a stock price decline could also occur even if we meet our publicly stated revenue and/or earnings guidance.

A significant portion of our operating expenses is fixed in the short term. If revenue for a particular quarter is below expectations, we may not be able to reduce costs and expenses proportionally for that quarter. Any such revenue shortfall would, therefore, have a significant effect on our operating results for that quarter.

We have incurred net losses and may incur additional net losses.

We incurred net losses in fiscal years 2018, 2017 and 2016. We may incur additional net losses in future quarters and years. Our revenue may not grow, and we may never generate sufficient revenue to sustain profitability. Any failure by us to achieve, sustain or increase profitability on a consistent basis could cause the value of our common stock to decline.

If we fail to compete successfully against telecommunications equipment and networking companies, our ability to increase our revenue and achieve profitability will be impaired.

Competition in the telecommunications market is intense. The market is shifting from a market dominated by a few large incumbent telecommunications equipment companies, such as Ericsson LM Telephone Company, Huawei Technologies Co. Ltd. and Nokia Corporation, to a market with competitors that are characterized by network virtualization, migration to the cloud, and open interfaces. We believe this shift creates opportunities for us, as well as our direct competitors in telecommunications and networking, including:

- Within the network transformation space, mid-size vendors of networking and telecommunications equipment and specialty vendors, including AudioCodes Ltd., Dialogic Inc., Mavenir Systems, Inc., Metaswitch Networks Corporation, Oracle Corporation (Session Border Controller), and ADTRAN, Inc.;
- Within the enterprise and cloud solutions space, 8x8, Inc., Avaya Inc., Bandwidth Inc., Cisco Inc. (with Broadsoft, Inc.), Mitel Networks Corporation (with ShoreTel, Inc.), Plivo Inc., RingCentral, Inc., Twilio Inc., Telestax Inc., Fuze, Inc., Genesys and Vonage Holdings Corp. (with Nexmo, Inc. and Tokbox Inc.); and
- Within the audio and video security and analytics space, SecureLogix Corporation, RedShift Networks Corporation, Empirix Inc. and Oracle Corporation.

Mergers among any of these or other competitors could strengthen their ability to compete against us, and additional competitors with significant financial resources entering our markets could further intensify competition.

Many of our current and potential competitors have significantly greater selling and marketing, technical, manufacturing, financial and other resources than we have. Further, some of our competitors sell significant amounts of other products to our current and prospective customers and have the ability to offer lower prices to win business. Our competitors' broad product portfolios, coupled with already existing relationships, may cause our customers to buy our competitors' products or harm our ability to attract new customers.

To compete effectively, we must deliver innovative products that:

- provide extremely high reliability and quality;
- deploy and scale easily and efficiently;
- interoperate with existing network infrastructures and multivendor solutions;
- provide effective network management;
- are accompanied by comprehensive customer support and professional services;
- provide a cost-effective and space-efficient solution for enterprises and service providers;
- meet price competition from low cost equipment providers; and
- offer solutions that are timely for the market and support where the industry is heading.

If we are unable to compete successfully against our current and future competitors, we could experience price reductions, order cancellations and loss of customers and revenue, and our operating results could be adversely affected.

We will not be successful if we do not grow our customer base or if we are unable to generate recurring business from our existing customers.

We rely on certain key customers, and our future success will depend on our ability to generate recurring business from our existing customers and to attract additional customers beyond our current customer base. One customer, Verizon Communications Inc., contributed 17% of our revenue in both 2018 and 2017, and one customer, AT&T Inc., contributed 12% of our revenue in 2016. In addition, our top five customers contributed approximately 38% of our revenue in 2018 and approximately 41% of our revenue in 2017. Factors that may affect our ability to grow our customer base include but are not limited to the following:

- economic conditions that discourage potential new customers from making the capital investments required to adopt new technologies;
- deterioration in the general financial condition of service providers and enterprises, or their ability to raise capital or access lending sources;
- new product introductions by our competitors; and
- the development of our channel partner program.

Due to the nature of certain of our product offerings, the per-order revenue from orders placed by the majority of our new customers is generally lower than the per-order revenue generated from our historical customer orders. If we are unable to expand our customer base, we will be forced to rely on generating recurring revenue from existing customers, which may not be successful. We expect that, for the foreseeable future, the majority of our revenue will continue to depend on sales of our products to a limited number of existing customers or sales to customers with lower per-order revenue than those generated from our historical sales. Factors that may affect our ability to generate recurring revenue from our existing customers include but are not limited to the following:

- customer willingness to implement our products;
- pricing pressures due to the commoditization of our products;
- the timing of industry transitions to new network technologies;
- acquisitions of or by our customers;
- delays or difficulties that we may incur in completing the development and introduction of our planned products or product enhancements;
- failure of our products to perform as expected; and
- difficulties we may incur in meeting customers' delivery requirements or with software development, appliance design, manufacturing or marketing of our products and/or services.

The loss of any significant customer, or any substantial reduction in purchase orders or deferral of purchasing decisions from these customers, could materially adversely affect our results of operations and financial condition.

Third parties may terminate or alter existing contracts or relationships with us.

Third parties, including customers, suppliers, vendors, landlords, licensors and other business partners, with whom either, or both, Sonus and GENBAND had relationships, may terminate or otherwise reduce the scope of their relationship with us. Any such disruptions could cause us to suffer a loss of potential future revenue and/or lose rights that are material to our business.

Consolidation in the telecommunications industry could harm our business.

The telecommunications industry, including many of our customers, has experienced consolidation, including, in the carrier space:

- the pending merger between T-Mobile US, Inc. and Sprint Corporation (announced in April 2018);
- the acquisition of Hawaiian Telecom, Inc. by Cincinnati Bell Inc. in July 2018;
- the acquisition of Level 3 Communications Inc. by CenturyLink Inc. in November 2017;
- the acquisition of XO Communications, LLC by Verizon Communications Inc. in February 2017; and
- the acquisition of Time Warner Cable Inc. and Bright House Networks, LLC by Charter Communications, Inc. in May 2016.

Further, consolidation has occurred in the vendor space, including:

- the acquisition of Spoken Communications Inc. by Avaya Holdings Corp. in March 2018;
- the acquisition of Broadsoft, Inc. by Cisco Systems, Inc. in February 2018;
- the acquisition of ShoreTel Inc. by Mitel Networks Corporation in September 2017;
- the combination of Mitel Mobility, Inc., Xura, Inc. and Ranzure Networks, Inc. and re-branding as Mavenir Systems, Inc., by Siris Capital Group LLC, a private equity investment firm, in December 2016;
- the acquisition of Alcatel-Lucent S.A. by Nokia Corporation in November 2016;
- the acquisition of Polycom, Inc. by Siris Capital Group LLC, in September 2016;
- the acquisition of Nexmo, Inc. by Vonage Holdings Corp. in June 2016;
- the acquisition of Tropo Inc. by Cisco Systems, Inc. in May 2015;
- the acquisition of Aruba Networks, Inc. by HP Inc. in May 2015;
- the acquisition of Riverbed Technology, Inc. by Thoma Bravo, LLC, a private equity investment firm, in April 2015;
- the acquisition of Dialogic Inc. by Novacap TMT IV, L.P. in 2014; and
- the acquisitions of Acme Packet, Inc. and Tekelec, Inc. by Oracle Corporation in 2013.

We expect this trend to continue. Consolidation among our customers may cause delays or reductions in capital expenditure plans by such customers and/or increased competitive pricing pressures as the number of available customers declines and the relative bargaining power of customers increases in relation to suppliers. Any of these factors could materially adversely affect our business.

Restructuring activities could adversely affect our ability to execute our business strategy.

We recorded net restructuring expense of \$29.2 million in the aggregate in 2018, 2017 and 2016, comprised of \$26.7 million for severance and related costs and \$2.5 million related to facilities. We expect to record approximately \$5 million of additional restructuring expense in 2019.

Our current restructuring and any future restructuring, should it become necessary for us to continue to restructure our business due to worldwide market conditions or other factors that reduce the demand for our products and services, could adversely affect our ability to execute our business strategy in a number of ways, including through:

- loss of key employees;
- diversion of management's attention from normal daily operations of the business;
- diminished ability to respond to customer requirements related to both products and services;
- decrease in cash and profits related to severance payments and facility termination costs;
- disruption of our engineering and manufacturing processes, which could adversely affect our ability to introduce new products and to deliver products both on a timely basis and in accordance with the highest quality standards; and/or
- reduced ability to execute effectively internal administrative processes, including the implementation of key information technology programs.

There can be no assurance that any restructuring actions we have taken in the past, or may take in the future, will improve our financial condition or results of operations.

We are exposed to the credit risk of some of our customers and to credit exposures in fragile financial markets, which could result in material losses.

Due to our reliance on significant customers, we are dependent on the continued financial strength of our customers. If one or more of our significant customers experience financial difficulties, it could result in uncollectable accounts receivable and our loss of significant customers and anticipated revenue.

Most of our sales are on an open credit basis, with typical payment terms of 30 to 90 days. We evaluate and monitor individual customer payment capability in granting such open credit arrangements, seeking to limit such open credit to amounts we believe our customers can pay and maintain reserves that we believe are adequate to cover exposure to doubtful accounts. However, there can be no assurance that our open credit customers will pay the amounts they owe to us or that the reserves we maintain will be adequate to cover such credit exposure. Our sales derived through our distributors, in particular, represent sources of increased credit risk as distributors tend to have more limited financial resources than other resellers and end-user customers.

Our customers' failure to pay and/or our failure to maintain sufficient reserves could have a material adverse effect on our results of operations and financial condition. Additionally, in the event that turmoil in the credit markets makes it more difficult for some customers to obtain financing, those customers' ability to pay could be adversely impacted, which in turn could have a material adverse impact on our business, results of operations and financial condition.

Disruptions to, or our failure to effectively develop relationships with and manage, distributors, resellers, system integrators and other channel partners, and the processes and procedures that support them, could adversely affect our ability to generate revenue from the sale of our products and services.

We continue to enhance our sales strategy, which we expect will include more partner sales engagements to resell our products and services through authorized distributors, VARs, system integrators and other channel partners. Our future success is dependent upon establishing and maintaining successful relationships with a variety of distributors, VARs, system integrators and other channel partners. We may also need to pursue strategic partnerships with vendors that have broader technology or product offerings in order to compete with end-to-end solution providers. In addition, many of the enterprise markets we are pursuing require a broad network of resale partners in order to achieve effective distribution.

Many of our distribution and channel partners sell competitive products and services, and the loss of, or reduction in sales by, these partners could materially reduce our revenue. Our sales through channel partners typically involve the use of our products as components of a larger solution being implemented by systems integrators. In these instances, the purchase and sale of our products are dependent on the channel partners, who typically control the timing, prioritization and implementation of projects. Project delays, changes in priority or solution re-design decisions by the systems integrator can adversely affect our product sales. If we fail to maintain relationships with our distribution, VAR and systems integration partners, fail to develop new relationships with other partners in new markets, fail to manage, train or provide incentives to our existing partners effectively, or if these partners are not successful in their sales efforts, sales of our products and services may decrease and our operating results could suffer. Moreover, if we do not have adequate personnel, experience and resources to manage the relationships with our partners and to fulfill our responsibilities under such arrangements, any such shortcomings could have a material adverse impact on our business and results of operations.

In addition, we recognize some of our revenue based on a drop-ship model using information provided by our partners. If those partners provide us with inaccurate or untimely information, the amount or timing of our revenue could be adversely affected. We may also be impacted by financial failure of our partners, which could result in our inability to collect accounts receivable in full, and thereby materially adversely affect our results of operations and financial condition.

If our strategic plan, including our research and development of innovative new products and the improvement of existing products, is not aligned with our customers' investments in the evolution of their networks, or if our products and services do not meet customers' demands, customers may not buy our products or use our services.

Success in our industry requires large investments in technology and creates exposure to rapid technological and market changes. We spend a significant amount of time, money and resources both developing new technology, products and solutions and acquiring new businesses or business assets. Our strategic plan includes a significant shift in our investments from mature technologies that previously generated significant revenue for us toward certain next-generation technologies, as well as working with channel partners to sell our products. Our choices of specific technologies to pursue, and those to de-emphasize, may prove to be inconsistent with our customers' investment spending. Moreover, if we invest in the development of technologies, products and solutions that do not function as expected, are not adopted by the industry, are not ready in time, are not accepted by our customers as quickly as anticipated or at all, mature more quickly than we anticipated or are not successful in the marketplace, our sales and earnings may suffer and, as a result, our stock price could decline.

In order for us to be successful, our technologies, products and solutions must be accepted by relevant standardization bodies and by the industry as a whole. To achieve market acceptance for our products, we must effectively anticipate, and adapt in a timely manner to, customer requirements and offer products and services that meet changing customer demands. Prospective

customers may require product features and capabilities that our current products do not have. The introduction of new or enhanced products also requires that we carefully manage the transition from older products in order to minimize disruption in customer ordering patterns and ensure that adequate supplies of new products can be delivered to meet anticipated customer demand. If we fail to develop products and offer services that satisfy customer requirements or if we fail to effectively manage the transition from older products, our ability to create or increase demand for our products and services could be seriously harmed, we may lose current and prospective customers and our results of operations and financial condition could be materially adversely affected.

If our products do not interoperate with our customers' existing networks, we may not retain current customers or attract new customers.

Many of our customers will require that our products be designed to interface with their existing networks, each of which may have different specifications. Issues caused by an unanticipated lack of interoperability may result in significant warranty, support and repair costs, divert the attention of our engineering personnel from our appliance and software development efforts and cause significant customer relations problems. If our products do not interoperate with those of our customers' networks, installations could be delayed or orders for our products could be canceled, which would seriously harm our gross margins and result in loss of revenue or customers.

We believe the telecommunications industry is in the early stages of a major architectural shift to the virtualization of networks. If the architectural shift does not occur, if it does not occur at the pace we predict, or if the products and services we have developed are not attractive to our customers after such shift takes place, our revenue could decline.

We believe the telecommunications industry is in the early stages of transitioning to the virtualization of networks, and we are developing products and services that we believe will be attractive to our customers and potential customers who make that shift. While we anticipate that the industry shift to a software-centric cloud-based architecture is likely to happen, fundamental changes like this often take time to accelerate. In addition, our customers may adapt to such changes at varying rates. As our customers take time to determine their future network architectures, we may encounter delayed timing of orders, deferred purchasing decisions and reduced expenditures by our customers. These longer decision cycles and reduced expenditures may negatively impact our revenue or make it difficult for us to accurately predict our revenue, either of which could materially adversely affect our results of operations and cause our stock price to decline.

Virtualization of our product portfolio could slow our revenue growth.

Virtualization of our product portfolio could slow our revenue growth as we move away from appliance products and increasingly focus on software-based products. Historically, we have produced highly complex products that incorporate appliances with embedded software components. As we virtualize our product portfolio, we expect our margins to improve due to decreased costs tied to production and sales of our appliance products, including costs related to our reliance on third-party contract manufacturers, interruptions or delays in the supply of appliance components from such third-party sources, and existing appliance support services. While we expect our margins to improve as a result of such reductions in cost, our revenue may decline as a result of the decreases in sales of appliance products, many of which have generated higher revenue on a per-unit basis than certain of our software products.

If the market for our voice infrastructure products continues to significantly decline and if our Security and Application products sales do not accelerate as quickly as we anticipate, our operating results could suffer.

In 2018, the macro-environment for our media gateway trunking and softswitch business continued to face significant declining revenue. Our customers are consolidating, which is both delaying and curtailing their capital spending. Even though we continue to transform our company from a media gateway trunking business to a Security and Applications Business (comprised of Session Border Controllers, Kandy and Unified Communications servers), a portion of our current revenue remains dependent upon the commercial success of our voice infrastructure products, which we believe will also remain true for the foreseeable future. If the market for these products declines more than anticipated and if our Security and Application products sales do not accelerate as quickly as we anticipate, our operating results could suffer.

The market for some of our products depends on the availability and demand for other vendors' products.

Some of our products, particularly those addressing the Unified Communications market, are designed to function with other vendors' products. In these cases, demand for our products is dependent upon the availability, demand for, and sales of the other vendors' products, as well as the degree to which our products successfully interoperate with the other vendors' products and add value to the solution being provided to the customer. If the other vendors change the design of their products, delay the

issuance of new releases, fail to adequately market their products, or are otherwise unsuccessful in building a market for their products, the demand for our products will be adversely affected, which could adversely affect our business, results of operations and financial condition.

Failure by our strategic partners or by us in integrating products provided by our strategic partners could harm our business.

Our solutions include the integration of products supplied by strategic partners, who offer complementary products and services. We rely on these strategic partners in the timely and successful deployment of our solutions to our customers. If the products provided by these partners have defects or do not operate as expected, if the services provided by these partners are not completed in a timely manner, if our partners have organizational or supply issues, or if we do not effectively integrate and support products supplied by these strategic partners, then we may have difficulty with the deployment of our solutions that may result in:

- loss of, or delay in, revenue;
- increased service, support and warranty costs and a diversion of development resources; and
- network performance penalties.

In addition to cooperating with our strategic partners on specific customer projects, we also may compete in some areas with these same partners. If these strategic partners fail to perform or choose not to cooperate with us on certain projects, in addition to the effects described above, we could experience:

- loss of customers and market share; and
- failure to attract new customers or achieve market acceptance for our products.

Our large customers have substantial negotiating leverage, and they may require that we agree to terms and conditions that may have an adverse effect on our business.

Large communications service providers have substantial purchasing power and leverage in negotiating contractual arrangements with us. These customers may, among other things, require us to develop additional features, require penalties for failure to deliver such features, require us to partner with a certain reseller before purchasing our products and/or seek discounted product and/or service pricing. As we sell more products to this class of customer, we may be required to agree to terms and conditions that are less favorable to us, which may affect the timing of revenue recognition, amount of deferred revenue or product and service margins and may adversely affect our financial position and cash flows in certain reporting periods.

We depend upon contract manufacturers. If our contract manufacturers fail to perform, or if we change or consolidate manufacturers, we may fail to meet the demands of our customers and damage our customer relationships, which could materially adversely affect our business.

While we currently work with four contract manufacturers, we primarily rely upon two large global manufacturers to assemble our products according to our specifications and to fulfill orders on a timely basis. Reliance on a third-party manufacturer involves a number of risks, including a lack of control over the manufacturing process, inventory management and the potential absence or unavailability of adequate capacity. As we do not have the internal manufacturing capabilities to meet our customers' demands, any difficulties or failures to perform by our contract manufacturers could cause delays in customer product shipments, which could negatively affect our relationships with customers and result in delayed revenue.

In addition, any future changes to or consolidations of our current contract manufacturers could lead to material shortages or delays in the supply of our products. Qualifying a new contract manufacturer to commence commercial scale production or consolidating to a reduced number of contract manufacturers are expensive and time-consuming activities and could result in a significant delay in the supply of our products, which could negatively affect our relationships with customers and result in delayed revenue.

We and our contract manufacturers rely on single or limited sources for supply of some components of our products and if we fail to adequately predict our manufacturing requirements or if our supply of any of these components is disrupted, we will be unable to ship our products in a timely manner, or at all.

We and our contract manufacturers currently purchase several key components of our products, including commercial digital signal processors, from single or limited sources. Depending upon the component, there may or may not be alternative sources

of substitutes. We purchase these components on a purchase order basis. If we overestimate our component and finished goods requirements, we could have excess inventory, which would increase our costs. If we underestimate our requirements, we may not have an adequate supply, which could interrupt manufacturing of our products and result in delays in shipments and revenue. Additionally, if any of our contract manufacturers underestimates our requirements, it may not have an adequate supply, which could interrupt manufacturing of our products and result in delays in shipments and revenue. If any of our sole or limited source suppliers experiences capacity constraints, work stoppages or other reductions or disruptions in output, it may not be able to meet, or may choose not to meet, our delivery schedules. Moreover, we have agreed to compensate our contract manufacturers in the event of termination or cancellation of orders, discontinuance of product or excess material.

We currently do not have long-term supply contracts with our component suppliers and they are not required to supply us with components for any specified periods, in any specified quantities or at any set price, except as may be specified in a particular purchase order. In the event of a disruption or delay in supply or our inability to obtain components, we may not be able to develop an alternate source in a timely manner or at favorable prices, or at all. While we regularly monitor our inventory of supplies, a failure to find acceptable alternative sources could hurt our ability to deliver high-quality products to our customers and negatively affect our operating margins.

Reliance on our suppliers exposes us to potential supplier production difficulties, quality variations and unforeseen price increases. Our customers rely upon our ability to meet committed delivery dates, and any disruption in the supply of key components would seriously adversely affect our ability to meet these dates and could result in loss of customers, harm to our ability to attract new customers, or legal action by our customers. Defense-expedited orders from the U.S. federal government, which by law receive priority, can also interrupt scheduled shipments to our other customers. Additionally, any unforeseen increases in the prices of components could reduce our profitability or force us to increase our prices, which could result in a loss of customers or harm our ability to attract new customers and could have a material adverse effect on our results of operations.

Our customer contracts also generally allow customers to reschedule delivery dates or cancel orders within certain time frames before shipment without penalty and outside those time frames with a penalty. Because of these and other factors, there are risks of excess or inadequate inventory that could negatively affect our expenses and results of operations.

If we are unable to obtain necessary licenses or on-going maintenance and support of third-party technology at acceptable prices, on acceptable terms, or at all, it could harm our operating results or business.

We have incorporated third-party licensed technology, including open source software, into our current products. From time to time, we may be required to license additional technology from third parties to develop new products or product enhancements. Third-party licenses and on-going maintenance and support may not be available or continue to be available to us on commercially reasonable terms or may be available to us but only at significantly escalated pricing. Additionally, we may not be able to replace the functionality provided by third-party software currently offered with our products if that software becomes obsolete, defective or incompatible with future versions of our products or is not adequately maintained or updated. If we are unable to maintain or re-license any third-party licenses required in our current products or obtain any new third-party licenses to develop new products and product enhancements, or in the case of any defects in these third-party software products, we could be required to obtain substitute technology of lower quality or performance standards or at greater cost, and we may be delayed or prevented from making these products or enhancements, any of which could seriously harm our sales and the competitiveness of our products unless and until we can secure an alternative source. Such alternate sources may not provide us with the same functionality as that currently provided to us.

The appliance products that we purchase from our third-party vendors have life cycles, and some of those products have reached the end of their life cycles. If we are unable to correctly estimate future requirements for these products, it could harm our operating results or business.

Some of the appliance products that we purchase from our third-party vendors have reached the end of their life cycles. It may be difficult for us to maintain appropriate levels of the discontinued appliances to adequately ensure that we do not have a shortage or surplus of inventory of these products. If we do not correctly forecast the demand for such appliances, we could have excess inventory and may need to write off the costs related to such purchases. The write-off of surplus inventory could materially adversely affect our operating results. However, if we underestimate our forecast and our customers place orders to purchase more products than are available, we may not have sufficient inventory to support their needs. If we are unable to provide our customers with enough of these products, it could make it difficult to retain certain customers, which could have a material and adverse effect on our business.

Because our larger scale products are sophisticated and designed to be deployed in complex networks around the world, they may have errors or defects that we find only after full deployment. These defects, and any failure to establish a support infrastructure and maintain required support levels, could seriously harm our business.

Our larger scale products are sophisticated and are designed to be deployed in large and complex networks around the world. Because of the nature of our products, they can only be fully tested when substantially deployed in these networks. Some of our customers may discover errors or defects in the software or appliances, or the products may not operate as expected only after full deployment. As we continue to expand our distribution channel through distributors and resellers, we will need to rely on and support their service and support organizations. If we are unable to fix errors or other performance problems that may be identified after full deployment of our products, we could experience:

- loss of, or delay in, revenue or increased expense;
- loss of customers and market share;
- failure to attract new customers or achieve market acceptance for our products;
- increased service, support and warranty costs and a diversion of development resources; and/or
- costly and time-consuming legal actions by our customers.

Our customers expect us to establish a support infrastructure and maintain demanding support standards to ensure that their networks maintain high levels of availability and performance. To continue to support our customers with these larger scale products, our support organization will need to provide service and support at a high level throughout the world. If we are unable to provide the expected level of support and service to our customers, we could experience:

- loss of customers and market share;
- failure to attract new customers in new markets and geographies;
- increased service, support and warranty costs and a diversion of development resources; and/or
- network performance penalties.

Any errors or defects in our products, and any failure to establish a support infrastructure and maintain required support levels, could materially adversely affect our business and results of operations.

Disruptions to, or our failure to effectively develop, manage and maintain our government customer relationships could adversely affect our ability to generate revenue from the sales of our products to these customers. Further, such government sales are subject to potential delays and cutbacks, may require specific testing efforts, or impose significant compliance obligations.

A portion of our total revenue from product sales comes from contracts with U.S. federal government agencies, none of which currently contemplates long-term purchase commitments. Disruptions to, or our failure to effectively develop, manage and maintain our government customer relationships, could adversely affect our ability to generate revenue from the sales to such customers. Governments routinely investigate and audit government contractors' administrative processes, and any unfavorable audit could result in the government refusing to continue buying our products and services, a reduction of revenue or fines or civil or criminal liability if the audit uncovers improper or illegal activities, which could materially adversely impact our operating results.

Furthermore, a majority of our government sales involve products that have or will soon reach the end of their life cycles, and such government sales for these older products have declined substantially in recent periods. Sales of our newer products to governmental agencies for broad deployment may not develop quickly, if at all, or be sufficient to offset future declines in sales of these legacy products. Additionally, spending by government customers fluctuates based on budget allocations and the timely passage of the annual federal budget.

Among the factors that could impact federal government spending and which would reduce our federal government contracting and subcontracting business are a significant decline in, or reappropriation of, spending by the federal government, changes as a result of the current presidential administration, changes, delays or cancellations of federal government programs or requirements, the adoption of new laws or regulations that affect companies that provide services to the federal government, federal government shutdowns or other delays in the government appropriations process, changes in the political climate, including with regard to the funding for products we provide, delays in the payment of our invoices by government payment offices, and general economic conditions. The loss or significant curtailment of any government contracts or subcontracts, whether due to our performance or due to interruptions or changes in governmental funding for such contracts or subcontracts, could have a material adverse effect on our business, results of operations and financial condition.

Further, sales to government customers may require specific testing efforts or impose significant compliance or certification obligations. For example, the Department of Defense ("DOD") has issued specific requirements for IP networking products for features and interoperability. In order for a vendor's product to be used to connect to the DOD network, that product must pass a series of significant tests and be certified by the Joint Interoperability Test Command ("JITC"). Certain of our products are already certified by JITC. However, if we are unable to obtain JITC certification as needed, our DOD sales, and hence our revenue and results of operations, may suffer.

If we fail to realize the anticipated benefits from any recent acquisitions, such as our acquisition of Edgewater Networks, Inc. ("Edgewater") in August 2018 (the "Edgewater Acquisition"), on a timely basis, or at all, our business and financial condition may be adversely affected.

We may fail to realize the anticipated benefits from any recent acquisitions, including the Edgewater Acquisition, on a timely basis, or at all, for a variety of reasons, including but not limited to the following:

- problems or delays in assimilating or transitioning to us the acquired assets, operations, systems, processes, controls, technologies, products or personnel;
- loss of acquired customer accounts;
- unanticipated costs associated with the acquisitions;
- failure to identify in the due diligence process or assess the magnitude of certain liabilities we assumed in the acquisitions, which could result in unexpected litigation or regulatory exposure, unfavorable accounting treatment, unexpected increases in taxes due, significant issues with product quality or development or other adverse effects on our business or results of operations;
- multiple or overlapping product lines as a result of the acquisitions that are offered, priced and supported differently, which could cause customer confusion and delays;
- higher than anticipated costs in continuing support and development of acquired products and services;
- diversion of management's attention from our core business and the challenges of managing larger and more widespread operations from the acquisitions;
- adverse effects on existing business relationships of any of the acquired businesses with their respective suppliers, licensors, contract manufacturers, customers, distributors, resellers and industry experts;
- significant impairment, exit and/or restructuring charges if the products or technologies acquired in the acquisitions do not meet our sales expectations or are unsuccessful;
- insufficient revenue to offset increased expenses associated with the acquisitions;
- risks associated with entering markets in which we have no or limited prior experience;
- potential loss of the employees we acquired in the acquisitions or our own employees; and/or
- failure to properly integrate internal controls and financial systems of the combined companies.

If we are unable to successfully manage these issues, the anticipated benefits and efficiencies of our recent acquisitions may not be realized fully or at all, or may take longer to realize than expected, and our ability to compete and our results of operations may be adversely affected.

Any future investments, mergers or acquisitions we make or enter into, as applicable, could be difficult to integrate, disrupt our business, dilute shareholder value and seriously harm our financial condition.

We are not currently a party to any material pending merger or acquisition agreements. However, we may merge with or acquire additional businesses, products or technologies in the future. No assurance can be given that any future merger or acquisition will be successful or will not materially adversely affect our business, operating results or financial condition. We continue to review opportunities to merge with or acquire other businesses or technologies that would add to our existing product line, complement and enhance our current products, expand the breadth of our product and service offerings, enhance our technical capabilities or otherwise offer growth opportunities. If we enter into a merger or make acquisitions in the future, we could, among other things:

- issue stock that would dilute existing stockholders' percentage ownership;
- incur debt or assume liabilities;
- reduce significantly our cash and investments;
- incur significant impairment charges related to the write-off of goodwill and intangible assets;
- incur significant amortization expenses related to intangible assets; and/or
- incur large and immediate write-offs for in-process research and development and stock-based compensation.

Mergers and acquisitions are inherently risky and subject to many factors outside of our control. Therefore, we cannot be certain that we would be successful in overcoming problems in connection with our past or future acquisitions. Our inability to do so could significantly harm our business, revenue, and results of operations.

Failure to hire and retain key personnel, or the loss of any of our executive officers, could negatively impact our ability to meet our business objectives and impair our future growth.

Our business depends upon highly skilled technical, managerial, engineering, sales, marketing and customer support personnel. Competition for these personnel is intense, especially during times of economic recovery or growth. Any failure to hire, assimilate in a timely manner and retain key qualified personnel, particularly engineering and sales personnel, could impair our growth and make it difficult to meet key objectives, such as timely and effective product introductions. The challenge of retaining key employees could be increasingly difficult due to strong industry competition. In addition, our ability to attract and retain key employees could be adversely impacted if we do not have a sufficient number of shares available under the Amended and Restated Stock Incentive Plan to issue to our employees, or if our stockholders do not approve requested share increases or a new equity incentive plan. We may not be able to locate suitable employees for any key employee who leaves or offer employment to potential replacements on reasonable terms.

Our future success also depends upon the continued services of our executive officers who have critical industry experience and relationships that we rely on to implement our business plan. With the exception of certain key employees based in the European Union, none of our officers or key employees is bound by an employment agreement for any specific term. The loss of the services of any of our executive officers or key employees could delay the development and introduction of, and negatively impact our ability to sell, our products and achieve our business objectives.

The terms of our credit agreement could adversely affect our operating flexibility and pose risks of default or springing maturity, which would negatively impact our liquidity and operations. In addition, we may not be able to refinance our debt or obtain additional financing on favorable terms, or at all.

Our credit facility with Silicon Valley Bank includes \$100 million of commitments, the full amount of which is available for revolving loans, a \$15 million sublimit that is available for letters of credit and a \$15 million sublimit that is available for swingline loans. The senior secured credit facility is scheduled to mature in December 2021, subject to a springing maturity if, on or before July 14, 2020, the existing promissory note issued to certain shareholders is not converted or extended to March 2022 or later. The credit agreement includes procedures for additional financial institutions to become lenders, or for any existing lender to increase its commitment under the facility, subject to an available increase of \$50 million for all incremental commitments under the credit agreement, without amendment. The credit agreement was amended on June 24, 2018, to, among other things, permit the acquisition of Edgewater and related transactions. Provisions in the credit agreement impose limitations on our ability to, among other things, incur additional indebtedness, create liens, make acquisitions or engage in mergers, enter into transactions with affiliates, dispose of assets, make certain investments and amend or repay certain junior debt.

In addition, we are required to meet certain financial covenants customary for financings of this type. Our failure to comply with these covenants may result in the declaration of an event of default, which could cause us to be unable to borrow under the credit facility or result in the acceleration of the maturity of indebtedness outstanding under the credit facility at such time. If the maturity of our indebtedness is accelerated, we may not have sufficient funds available for repayment or we may not have the ability to borrow or obtain sufficient funds to replace the accelerated indebtedness on terms acceptable to us, or at all.

The United Kingdom's Financial Conduct Authority, which regulates the London Inter-bank Offered Rate ("LIBOR"), has announced that it intends to stop encouraging or requiring banks to submit LIBOR rates after 2021, and it is unclear if LIBOR will cease to exist or if new methods of calculating LIBOR will evolve. We currently have the option to determine our interest rate that includes either the LIBOR rate or the base rate. If LIBOR ceases to exist or the methods of calculating LIBOR change from their current form, we may no longer have the ability to elect the LIBOR rate option under our current credit facility, and our current or future indebtedness may be adversely affected. This could impact our interest costs and our ability to borrow additional funds under this credit facility.

We had \$55 million of borrowings outstanding at a weighted average interest rate of 5.96% under the credit facility as of December 31, 2018. In addition, we had \$2.7 million of letters of credit outstanding at an interest rate of 1.75% under the credit facility as of December 31, 2018. If we are prevented from borrowing or if we are unable to extend, renew or replace the credit facility by the maturity date of December 2021, or an early springing maturity date, on favorable terms, or at all, this could have a material adverse effect on our liquidity and cause our business, operations and financial condition to suffer. If the

credit facility is subjected to the early springing maturity, we may not have sufficient funds available for repayment or we may not have the ability to borrow or obtain sufficient funds to replace the indebtedness on terms acceptable to us, or at all.

In addition, we cannot be sure that our current cash, cash equivalents, marketable securities and available borrowings under our credit facility will be sufficient to meet our future needs. If we are unable to generate sufficient cash flows in the future, and if availability under our current facility is not sufficient to support our operations, we may need to refinance our debt or obtain additional financing. We may not be able to refinance our debt or obtain additional financing on favorable terms or at all.

Litigation and government investigations could result in significant legal expenses and settlement payments, fines or damage awards.

From time to time, we are subject to litigation regarding intellectual property rights or other claims. In the past, we have also been named as a defendant in securities class action and stockholder derivative lawsuits. We are generally obliged, to the extent permitted by law, to indemnify our current and former directors and officers who are named as defendants in these lawsuits. Defending against litigation may require significant attention and resources of management. Regardless of the outcome, such litigation could result in significant legal expenses. For instance, we are involved in six patent infringement lawsuits involving Metaswitch Networks Ltd., Metaswitch Networks Corp. and Metaswitch Inc. (collectively, "Metaswitch"). In five of the six lawsuits, we are the plaintiff and, in three of the lawsuits, we are a counterclaim defendant. In the sixth case, we are the defendant. At this time, it is not possible to predict the outcome of the ongoing lawsuits, including whether or not any proceedings will continue, and when or how these matters will be resolved or whether we will ultimately receive, and in what sum, amounts previously awarded as a result of these proceedings. Regardless of whether we are ultimately successful in these lawsuits, we will likely elect to continue to incur substantial legal fees in connection with these matters.

We have also been subject to employment claims in connection with employee terminations and may be subject to additional claims in the future. In addition, companies in our industry whose employees accept positions with us may claim that we have engaged in unfair hiring practices. These claims may result in material litigation. We could incur substantial costs defending ourselves or our employees against these claims, regardless of their merits. Further, defending ourselves from these types of claims could divert our management's attention from our operations. The quantity and cost of employment claims may rise as a result of our increasing international expansion and the Merger.

In addition, we are from time to time subject to investigations by the government. For example, we fully cooperated with an SEC inquiry regarding the development and issuance of Sonus' first quarter 2015 revenue and earnings guidance. We reached an agreement with the SEC in principle to resolve this matter and on August 7, 2018, the SEC's Division of Enforcement issued a Cease and Desist Order (the "Order"). As part of the Order, the findings of which we neither admitted nor denied, we agreed to pay a \$1.9 million civil penalty and agreed not to violate the securities laws in the future. There is no assurance that we will not be subject to similar investigations by the SEC or other government agencies in the future.

If the defenses we claim in our material litigation matters are ultimately unsuccessful, or if we are unable to achieve a favorable settlement with an adverse party or a government agency, we could be liable for large settlement payments, damage awards or fines that could have a material adverse effect on our business and results of operations.

A breach of the security of our information systems or those of our third-party providers could adversely affect our operating results.

We rely upon our information systems and, in certain circumstances, those of our third-party providers, such as vendors, consultants and contract manufacturers, to protect our sensitive or proprietary information and information of or about our customers, to develop and provide our products and services to customers, and to otherwise operate our business. Our information systems and those of our third-party providers are vulnerable to threats such as computer hacking, cyber-terrorism or other unauthorized activity that may result in third party access to or modification, corruption or deletion of our or our customers' sensitive or proprietary information or other disruptions to our business. Such cyberattacks and other cyber incidents are occurring more frequently, are constantly evolving, are becoming more sophisticated and can take many forms. While we believe that we leverage best-in-class detection and prevention systems and services and that we focus on continuous improvement based upon the latest attack vectors in the industry, we cannot guarantee that there will never be any information technology system failures, including a breach of our or our third-party providers' data security measures through a cyberattack, other cyber incident or otherwise, or the theft or loss of laptops, other mobile devices or electronic records used to back up our systems or our third-party providers' systems, which could result in a disclosure of customer, employee, or our information or otherwise disrupt our ability to function in the normal course of business by potentially causing, among other things, delays in the fulfillment or cancellation of customer orders or disruptions in the manufacture or shipment of products or delivery of services, any of which could have a material adverse effect on our operating results.

Additionally, the compromise of our information systems or the information systems of our third party providers and our customers could be compromised, which could lead to unauthorized tampering with our products. Unauthorized tampering may result in, among other things, the disruption of our customers' businesses, errors or defects occurring in the software due to such unauthorized tampering, and our products not operating as expected after such unauthorized tampering. These types of security breaches could also create exposure to lawsuits, regulatory investigations, and increased legal liability. As a provider of secure RTC solutions, the reputational harm of any actual or perceived breach, compromise, defect or error relating to the security of our information systems and the products and services we provide may result in substantial harm to our reputation, even if the legal or regulatory impact is minimal. In addition, the costs to remediate any cyberattack could be significant. Such consequences could be exacerbated if we or our third-party providers are unable to adequately recover critical systems in a timely manner following a systems failure. Our insurance coverage may be insufficient to cover all losses related to cyberattacks.

Worldwide efforts to contain capital spending and global economic conditions and uncertainties in the geopolitical environment have been and may continue to be materially adverse to our business.

One factor that significantly affects our operating results is the impact of economic conditions on the willingness of our current and potential customers to make capital investments. Given the general uncertainty regarding global economic conditions and uncertainties in the geopolitical environment, we believe that customers have tried to maintain or improve profitability through cost control and constrained capital spending, which places additional pressure on IT departments to demonstrate acceptable return on investment. Some of our customers have canceled or delayed, and current and prospective customers may continue to cancel and delay, spending on the development or roll-out of capital and technology projects with us due to economic uncertainty and, consequently, our results of operations have been, and may continue to be, adversely affected. In addition, current uncertain worldwide economic and political environments make it increasingly difficult for us, our customers and our suppliers to accurately forecast future product demand, which could result in an inability to satisfy demand for our products and a loss of market share. Our revenue is likely to decline in such circumstances, which may result in erosion of our profit margins and significant losses.

Moreover, economic conditions worldwide may contribute to slowdowns in the communications and networking industries, as well as to specific segments and markets in which we operate, particularly the wireline sector, resulting in, among other things:

- reduced demand for our products and services as a result of our customers choosing to refrain from building capital intensive networks;
- increased price competition for our products, not only from our competitors, but also as a consequence of customers disposing of unutilized products;
- risk of excess and obsolete inventories;
- excess facilities and manufacturing capacity; and/or
- higher overhead costs as a percentage of revenue and higher interest expense.

Continuing turmoil in the geopolitical environment in many parts of the world, as well as changes implemented by the current U.S. presidential administration, may continue to put pressure on global economic conditions which, in turn, could materially adversely affect our operating results.

Man-made problems, such as terrorism, and natural disasters may disrupt our operations and harm our operating results.

The continued threat of terrorism and heightened security and military action in response to this threat, or any future acts of terrorism, may cause disruptions to the economies of the United States and other countries. Events such as work stoppages or widespread blackouts could have similar negative impacts. Such disruptions or uncertainties could result in delays or cancellations of customer orders or the manufacture or shipment of our products and have a material adverse effect on our business and results of operations.

Natural catastrophic events, such as earthquakes, fire, floods, or tornadoes, may also affect our or our customers' operations. For example, two of our offices are located in the Silicon Valley area of Northern California, a region known for seismic activity. These facilities are located near the San Francisco Bay where the water table is quite close to the surface and where tenants in nearby facilities have experienced water intrusion problems. A significant natural disaster, such as an earthquake or flood, could have a material adverse effect on our business in this location.

If we fail to maintain appropriate internal controls in the future, we may not be able to report our financial results accurately, which may adversely affect our stock price and our business.

Section 404 of the Sarbanes-Oxley Act of 2002 and the related regulations require our management to report on, and our independent registered public accounting firm to attest to, the effectiveness of our internal control over financial reporting. We have committed and will be required to continue to commit significant financial and managerial resources in order to comply with these requirements.

Further, we are required to integrate Edgewater and other acquired businesses into our system of disclosure controls and procedures and internal control over financial reporting. As may be the case with other companies we acquire, prior to the Edgewater Acquisition, Edgewater was not required to implement or maintain the disclosure controls and procedures or internal control over financial reporting that are required of public companies, and we cannot provide assurance as to how long the integration process may take.

Internal control over financial reporting has inherent limitations, including human error, the possibility that controls could be circumvented or become inadequate because of changed conditions, and fraud. If we are unable to maintain effective internal controls, we may not have adequate, accurate or timely financial information, and we may be unable to meet our reporting obligations as a publicly traded company or comply with the requirements of the SEC or the Sarbanes-Oxley Act of 2002. This could result in a restatement of our financial statements, the imposition of sanctions, or investigation by regulatory authorities, and could cause investors to lose confidence in our reported financial information. Any such consequence or other negative effect of our inability to meet our reporting requirements or comply with legal and regulatory requirements, as well as any disclosure of an accounting, reporting or control issue, could adversely affect the trading price of our common stock and our business.

Changes to existing accounting pronouncements or taxation rules or practices may cause adverse fluctuations in our reported results of operations or affect how we conduct our business.

A change in accounting pronouncements or taxation rules or practices can have a significant effect on our reported results and may affect our reporting of transactions completed before the change is effective. New accounting pronouncements, taxation rules and varying interpretations of accounting pronouncements or taxation rules have occurred in the past and may occur in the future. For example, we were required to adopt the new revenue recognition standard in 2018 and have adopted the new lease accounting standard effective January 1, 2019. Any change to existing or any adoption of new accounting pronouncements or taxation rules, or the need for us to modify a current tax position may adversely affect our reported financial results or the way we conduct our business.

If our goodwill or intangible assets become impaired, we may be required to record a significant charge to earnings.

Under generally accepted accounting principles, we review our intangible assets for impairment when events or changes in circumstances indicate the carrying value may not be recoverable. Our intangible assets increased by approximately \$57 million in 2018 as a result of the Edgewater Acquisition and by approximately \$237 million in 2017 as a result of the Merger. Goodwill, which increased by approximately \$48 million in 2018 as a result of the Edgewater Acquisition and by approximately \$286 million in 2017 as a result of the Merger, is tested for impairment at least annually. Factors that may be considered a change in circumstances indicating that the carrying value of our goodwill or intangible assets may not be recoverable include significant underperformance relative to plan or long-term projections, strategic changes in business strategy, significant negative industry or economic trends, significant change in circumstances relative to a large customer, significant decline in our stock price for a sustained period and decline in our market capitalization to below net book value. Any material impairment of goodwill or intangible assets could adversely affect our results of operations.

Risks Relating to our Intellectual Property

Our business could be jeopardized if we are unable to protect our intellectual property. Additionally, in some jurisdictions, our rights may not be as strong as we currently enjoy in the United States.

We rely on a combination of security countermeasures within our deployed products, as well as patent, copyright, trademark and trade secret laws and contractual restrictions on disclosure to protect our intellectual property rights. Despite our efforts to protect our proprietary rights, unauthorized parties may attempt to copy or otherwise misappropriate our products or technology. Monitoring unauthorized use of our products is difficult and we cannot be certain that the steps we have taken will prevent unauthorized use of our technology, particularly in foreign countries where the laws may not protect our proprietary rights as fully as in the United States. The legal systems of many foreign countries do not protect or honor intellectual property rights to the same extent as the legal system of the United States. It may be very difficult, time-consuming and costly for us to

attempt to enforce our intellectual property rights, especially in these foreign jurisdictions. If competitors are able to use our technology, our ability to compete effectively could be harmed, which could have a material adverse effect on our business.

Claims that our current or future products infringe or misappropriate the proprietary rights of others could adversely affect our ability to sell those products and cause us to incur additional costs.

Substantial litigation over intellectual property rights exists in the telecommunications industry. For instance, we are involved in six patent infringement lawsuits involving Metaswitch. In five of the six lawsuits, we are the plaintiff and, in three of the lawsuits, we are a counterclaim defendant. In the sixth case, we are the defendant. At this time, it is not possible to predict the outcome of the ongoing lawsuits, including whether or not any proceedings will continue, and when or how these matters will be resolved or whether we will ultimately receive, and in what sum, amounts previously awarded to us as a result of these proceedings.

We expect that we could be increasingly subject to third-party infringement claims as our revenue increases, the number of competitors grows and/or the functionality of products and technology in different industry segments overlaps. Third parties may currently have, or may eventually be issued, patents on which our current or future products or technologies may allegedly infringe. For example, we and our customers have received inquiries from intellectual property owners and may become subject to claims that we or our customers allegedly infringe the intellectual property rights of third parties. If a third party asserts that our products infringe upon their proprietary rights, we may be forced either to defend ourselves, our customers or contract manufacturers in litigation or to license their patents or other intellectual property for substantial royalty payments. These claims and any resulting licensing arrangement or lawsuit could subject us to significant royalty payments or liability for damages and invalidation of our proprietary rights. Any potential intellectual property litigation also could force us to do one or more of the following:

- delay shipments of, or stop selling, incorporating or using our products that use the challenged intellectual property;
- obtain from the owner of the infringed intellectual property right a license to sell or use the relevant technology, which license may not be available at acceptable prices, on acceptable terms, or at all; or
- redesign those products that use any allegedly infringing technology, if feasible.

Patent litigation, regardless of its outcome, will likely result in the expenditure of significant financial resources and the diversion of management's time and resources. In addition, patent litigation may cause negative publicity and adversely impact our ability to gain prospective customers. If a third party's claim of infringement against us in a particular patent litigation is successful, and we could not develop non-infringing technology or license the infringed or similar technology on a timely and cost-effective basis, our revenue may decrease substantially, and we could be exposed to significant liability. A court could enter orders that temporarily, preliminarily or permanently enjoin us or our customers from making, using, selling, offering to sell or importing our current or future products, or could enter an order mandating that we undertake certain remedial activities. In addition, costs relating to indemnification provisions in our product agreements may be significant.

Risks Relating to our International Operations

We may face risks associated with our international expansion that could impair our ability to grow our international revenue. If we fail to manage the operational and financial risks associated with our international operations, it could have a material adverse effect on our business and results of operations.

We have expanded, and expect to continue to expand, our operations in international and emerging markets. International operations are a significant part of our business, and such operations will continue to require significant management attention and financial resources to successfully develop direct and indirect international sales and support channels. In addition, our international operations are subject to other inherent risks, including:

- reliance on channel partners;
- greater difficulty collecting accounts receivable and longer collection cycles;
- difficulties and costs of staffing and managing international operations;
- impacts of differing technical standards outside the United States;
- compliance with international trade, customs and export control regulations;
- reduced protection for intellectual property rights in some countries;
- foreign government regulations limiting or prohibiting potential sales or increasing the cost of doing business in such markets, including adverse tax policies, tariffs, customs regulations, trade protection measures, export quotas and qualifications to transact business;
- differing regulatory requirements, including tax laws, data privacy laws and labor regulations;

- challenging pricing environments in highly competitive new markets;
- foreign currency exchange controls, restrictions on repatriation of cash and changes in currency exchange rates;
- management communication and integration problems related to entering new markets with different languages, cultures and political systems;
- potential exposure to liability or damage of reputation resulting from a higher incidence of corruption or unethical business practices in some countries;
- greater risk of a failure of employees to comply with both U.S. and foreign laws, including antitrust regulations, the U.S. Foreign Corrupt Practices Act (“FCPA”) and any trade regulations ensuring fair trade practices;
- higher or more variable network service provider fees outside of the United States;
- any need to adapt and localize our products for specific countries;
- our ability to effectively price our products in competitive international markets;
- potentially adverse tax consequences; and
- political, social and economic instability, including as a result of the fragility of global financial markets, health pandemics or epidemics and/or acts of war or terrorism.

Our international revenue, both as a percentage of total revenue and absolute dollars, may vary from one period to the next, and accordingly, current data may not be indicative of future periods. If we are unable to support our business operations in international and emerging markets, or their further expansion, while balancing the higher operational and financial risks associated with these markets, our business and results of operations could be harmed.

In addition, we may not be able to develop international market demand for our products, which could impair our ability to grow our revenue. In many international markets, long-standing relationships between potential customers and their local suppliers and protective regulations, including local content requirements and approvals, create barriers to entry. We have limited experience marketing, distributing and supporting our products in certain international locations and, to do so, we expect that we will need to develop versions of our products that comply with local standards. Moreover, difficulties in foreign financial markets and economies and of foreign financial institutions, particularly in emerging markets, could adversely affect demand from customers in the affected countries.

Increases in tariffs, trade restrictions or taxes on our products could have an adverse impact on our operations.

We manufacture certain of our appliance products and purchase a portion of our raw materials and components from suppliers in China and other foreign countries. The commerce we conduct in the international marketplace makes us subject to tariffs, trade restrictions and other taxes when the raw materials or components we purchase, and the products we ship, cross international borders. Trade tensions between the United States and China and other countries have been escalating in recent months. Most notably, three rounds of U.S. tariffs were placed on Chinese goods being exported to the United States, with such tariffs taking effect in July, August and September 2018. Each of these U.S. tariff impositions against Chinese exports was followed by a round of retaliatory Chinese tariffs on United States exports to China. In December 2018, the United States and China agreed to a 90-day truce as they attempt to resolve the trade dispute. This window is set to expire on or around March 1, 2019. If the two countries fail to reach an agreement by this date, the tariffs are expected to be reinstated. Certain of the raw materials and components we purchase from China are subject to these tariffs. Although we have not experienced a significant resulting increase in our manufacturing costs, if we were to do so, this eventually could make our products less competitive than those of our competitors whose imports are not subject to these tariffs. In addition, the U.S. administration has threatened to impose tariffs on all products imported from China. If this were to occur, we may not be able to mitigate the impacts of these tariffs and our business, results of operations and financial position could be materially adversely affected. Products we sell into certain foreign markets could also become subject to similar retaliatory tariffs, making the products we sell uncompetitive to similar products not subject to such import tariffs. Further changes in U.S. trade policies, tariffs, taxes, export restrictions or other trade barriers, or restrictions on raw materials or components, may limit our ability to manufacture products, increase our manufacturing costs, decrease our profit margins, reduce the competitiveness of our products, or inhibit our ability to sell products or purchase raw materials or components, which could have a material adverse effect on our business, results of operations and financial condition.

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

Because a portion of our business is conducted outside the United States, we face exposure to adverse movements in foreign currency exchange rates. These exposures may change over time as business practices evolve, and they could have a material adverse impact on our financial results and cash flows. An increase in the value of the U.S. dollar could increase the real cost to our customers of our products in those markets outside the United States where we often sell in dollars, and a weakened U.S. dollar could increase the cost of local operating expenses and procurement of raw materials from sources outside the United States. Therefore, changes in the value of the U.S. dollar against other currencies will affect our revenue, income from

operations, net income and the value of balance sheet items originally denominated in other currencies. There is no guarantee that our financial results will not be adversely affected by currency exchange rate fluctuations.

Our business and operations in the United Kingdom are exposed to potential disruptions and uncertainty relating to Brexit.

In March 2017, Prime Minister Theresa May of the United Kingdom formally began the process of withdrawing the United Kingdom from the European Union, following the June 2016 referendum in which the majority of voters in the United Kingdom supported such withdrawal (known as Brexit). Brexit could cause disruptions to and create uncertainty surrounding our business and operations in the United Kingdom, including affecting relationships with existing and future customers, suppliers and employees. The effects of Brexit will depend on any agreements the United Kingdom makes to retain access to European Union markets either during a transitional period or more permanently. The measures could potentially disrupt the markets we serve and the tax jurisdictions in which we operate and adversely change tax benefits or liabilities in these or other jurisdictions. In addition, Brexit could lead to legal uncertainty and potentially divergent national laws and regulations as the United Kingdom determines which European Union laws to replace or replicate. These developments in turn may inhibit our sales, mobility of our personnel, and our access to capital. If the United Kingdom and the European Union are unable to negotiate acceptable withdrawal terms or if other Member States pursue withdrawal, barrier-free access between the United Kingdom and other Member States or among the European economic area overall could be diminished or eliminated. Additionally, political instability in the European Union as a result of Brexit may result in a material negative effect on credit markets and foreign direct investments in the European Union and United Kingdom.

Our use and reliance upon research and development resources in India may expose us to unanticipated costs and/or liabilities.

We have two offices in Bangalore, India. The employees at these facilities consist principally of research and development personnel. There is no assurance that our reliance upon development resources in India will enable us to achieve meaningful cost reductions or greater resource efficiency. Further, our development efforts and other operations in India involve significant risks, including:

- difficulty hiring and retaining appropriate engineering and management resources due to intense competition for such resources and resulting wage inflation;
- knowledge transfer related to our technology and resulting exposure to misappropriation of intellectual property or information that is proprietary to us, our customers and other third parties;
- heightened exposure to changes in economic, security and political conditions in India; and
- fluctuations in currency exchange rates and tax compliance in India.

Difficulties resulting from the factors noted above and other risks related to our operations in India could increase our expenses, impair our development efforts, harm our competitive position and damage our reputation.

Risks Relating to Legislation and Government Regulation

Failure to comply with the Foreign Corrupt Practices Act or the U.K. Bribery Act could subject us to significant civil or criminal penalties.

We earn a significant portion of our total revenue from international sales generated through our foreign direct and indirect operations. As a result, we are subject to the FCPA, and the U.K. Bribery Act of 2010 (the "UKBA"), which prohibit bribery in the conduct of business. The FCPA generally prohibits U.S. companies and their intermediaries from making corrupt payments to foreign officials for the purpose of obtaining or keeping business or otherwise obtaining favorable treatment and requires companies to maintain adequate record-keeping and internal accounting practices to accurately reflect the transactions of the company. The FCPA applies to companies, individual directors, officers, employees and agents. The UKBA is much broader and prohibits all bribery, in both the public and private sectors. Although the UKBA does not contain a separate financial records provision, such a requirement is captured under other U.K. legislation. Under the FCPA and the UKBA, U.S. companies, their subsidiaries, employees, senior officers and/or directors may be held liable for actions taken by strategic or local partners or representatives. In addition, the U.S. government or the U.K. government, as applicable, may seek to hold us liable for successor liability violations committed by companies we have acquired or may in the future acquire. If we or our intermediaries fail to comply with the requirements of the FCPA and the UKBA, governmental authorities in the United States and the United Kingdom, as applicable, could seek to impose civil and/or criminal penalties, which could have a material adverse effect on our reputation, results of operations and the trading price of our common stock.

We are subject to governmental export and import controls that could subject us to liability, require a license from the U.S. government or impair our ability to compete in international markets.

Certain of our products incorporating encryption technology are subject to export controls and may be exported only with the required level of export license or through an export license exception. Under these laws and regulations, we are responsible for obtaining all necessary licenses or other approvals, if required, for exports of appliances, software and technology, as well as the provision of service. If we were to fail to comply with export licensing, customs regulations, economic sanctions and other laws, we could be subject to substantial civil and criminal penalties, including fines for the Company and incarceration for responsible employees and managers, and the possible loss of export or import privileges. Similarly, various countries regulate the import of certain encryption technology and have enacted laws that could limit our ability to distribute our products or our customers' ability to implement our products in those countries.

In addition, if our distributors fail to obtain appropriate import, export or re-export licenses or permits, we may also be adversely affected through reputational harm and penalties. Obtaining export licenses can be difficult and time-consuming, and in some cases a license may not be available on a timely basis or at all.

Furthermore, export control laws and economic sanctions prohibit the shipment of certain products to embargoed or sanctioned countries, governments and persons. We cannot assure that a violation of these regulations will not occur, whether knowingly or inadvertently. Any such shipment could have negative consequences including government investigations, penalties, fines, civil and criminal sanctions, and reputational harm.

Additionally, any change in our products or in export or import regulations, economic sanctions or related legislation, shift in approach to the enforcement or scope of existing regulations or change in the countries, persons or technologies targeted by such regulations, could result in delays in the introduction of our products in international markets, decreased use of our products by, or in our decreased ability to export or sell our products to, existing or potential customers with international operations. Any decreased use of our products or limitation on our ability to export or sell our products would likely have a material adverse effect on our business and results of operations.

Regulation of the telecommunications industry, or changes in governmental regulation, interpretation or legislative reform could harm our operating results and future prospects.

The telecommunications industry is highly regulated and our business and financial condition could be adversely affected by changes in the regulations relating to the telecommunications industry. Currently, there are few laws or regulations that apply directly to access to or delivery of voice services on IP networks. We could be adversely affected by regulation of IP networks and commerce in any country where we operate, including the United States. Such regulations could include matters such as voice over the Internet or using Internet protocol, encryption technology, and access charges for service providers. The adoption of such regulations could decrease demand for our products, and at the same time increase the cost of selling our products, which could have a material adverse effect on our business and results of operations.

Other laws and regulations, including in the areas of advertising, consumer affairs, data protection, finance, marketing, privacy, publishing and taxation requirements, are subject to change and differing interpretations. Changes in the political climate or in existing laws or regulations, or their interpretations, or the enactment of new laws or the issuance of new regulations or changes in enforcement priorities or activity could adversely affect our business by, among other things, increasing our administrative, compliance and other costs; forcing us to undergo a corporate restructuring; limiting our ability to engage in inter-company transactions with its affiliates and subsidiaries; increasing our tax obligations, including unfavorable outcomes from audits performed by various tax authorities; affecting our ability to continue to serve our customers and to attract new customers; affecting cash management practices and repatriation efforts; forcing us to alter or restructure our relationships with vendors and contractors; increasing compliance efforts or costs; limiting our use of or access to personal information; restricting our ability to market our products; and/or requiring us to implement additional or different programs and systems.

Compliance with regulations is costly and time-consuming, and we may encounter difficulties, delays or significant expenses in connection with compliance, and we may be exposed to significant penalties, liabilities, reputational harm and loss of business in the event that we fail to comply. While it is not possible to predict when or whether fundamental policy or interpretive changes would occur, these or other changes could fundamentally change the dynamics of our industry or the costs associated with our operations. Changes in public policy or enforcement priorities could materially affect our profitability, our ability to retain or grow business, or in the event of extreme circumstances, our financial condition.

Risks Related to our Common Stock

Our stock price has been and may continue to be volatile.

The market for technology stocks has been, and will likely continue to be, volatile. The following factors, among others, could cause the market price of our common stock to fluctuate significantly:

- addition or loss of any major customer;
- continued significant declines in customer spending in the media gateway trunking business;
- decreased spending by customers in the SBC and/or DSC security businesses;
- consolidation among our customers and/or our competitors in the telecommunications industry;
- changes in the financial condition or anticipated capital expenditures of any existing or potential major customer;
- economic conditions for the telecommunications, networking and related industries;
- quarterly variations in our bookings, revenue and operating results;
- failure to meet our earnings guidance or securities analysts' estimates;
- changes in financial estimates by securities analysts;
- speculation in the press or investment community, and shorting of our stock by investors;
- announcements by us or our competitors of significant contracts, new products or acquisitions, distribution partnerships, joint ventures, mergers or capital commitments;
- activism by any single large stockholder or combination of stockholders;
- sales of common stock or other securities by us or by our stockholders, including the OEP Stockholders, in the future;
- securities and other litigation;
- developments with respect to intellectual property rights, including any related litigation;
- repurchases under our stock buyback program;
- departure of key personnel or other major changes in our board of directors or management;
- changes in governmental regulations;
- our ability to develop and market new and enhanced products on a timely basis;
- announcement of a stock split, reverse stock split, stock dividend or similar event; and/or
- emergence or adoption of new technologies or industry standards.

Furthermore, brokerage firms often do not permit stocks trading below \$5.00 per share to be sold short, but often permit short-selling of shares which are traded at higher prices. As a result, to the extent our per-share trading price is consistently above \$5.00, investors may short our stock. This may increase the volatility of our stock price.

Delaware law and our charter documents contain provisions that could discourage or prevent a potential takeover, even if such a transaction would be beneficial to our stockholders.

Some provisions in our amended and restated certificate of incorporation, our amended and restated by-laws, as well as provisions of Delaware law, may discourage, delay or prevent a merger or acquisition that may be deemed undesirable by our Board of Directors but that a stockholder may consider favorable. These include provisions:

- authorizing the Board of Directors to issue shares of preferred stock;
- limiting the persons who may call special meetings of stockholders;
- prohibiting stockholder actions by written consent;
- permitting the Board of Directors to increase the size of the Board and to fill vacancies;
- providing indemnification to our directors and officers;
- controlling the procedures for conduct and scheduling of Board and stockholder meetings;
- requiring a super-majority vote of our stockholders to amend our amended and restated by-laws and certain provisions of our amended and restated certificate of incorporation; and
- establishing advance notice requirements for nominations for election to the Board of Directors or for proposing matters that can be acted on by stockholders at stockholder meetings.

These provisions, alone or together, could delay hostile takeovers or changes in control of us or our management.

As a Delaware corporation, we are also subject to provisions of Delaware law, including Section 203 of the Delaware General Corporation law, which prevents some stockholders holding more than 15% of our outstanding common stock from engaging in certain business combinations without approval of the holders of substantially all of our outstanding common stock.

Any provision of our amended and restated certificate of incorporation, our amended and restated by-laws or Delaware law that has the effect of delaying or deterring a change in control could limit the opportunity for our stockholders to receive a premium for their shares of our common stock and could also affect the price that some investors are willing to pay for our common stock. Although we believe that our amended and restated certificate of incorporation, our amended and restated bylaws and provisions of Delaware law provide an opportunity for the Board of Directors to assure that our stockholders realize full value for their investment, they could have the effect of delaying or preventing a change of control that some stockholders may consider beneficial.

Item 1B. Unresolved Staff Comments

None.

Item 2. Properties

As of December 31, 2018, we maintained the following facilities:

Location	Principal use	Square footage (approximate)	Lease expiration
Plano, Texas	Engineering/development, customer support, general and administrative and sales	100,300	February 2022
Paladium (Ottawa), Canada	Engineering/development, customer support and general and administrative	98,100	December 2029
Westford, Massachusetts	Corporate headquarters, engineering/development, customer support, general and administrative and sales	97,500	August 2028
Research Triangle Park, North Carolina	Engineering/development, customer support, general and administrative and sales	71,300	April 2027
Bangalore, India	Engineering/development	60,100	October 2019
Durham, North Carolina	Warehouse	50,300	August 2021
San Jose, California	Engineering/development, customer support and sales	37,600	November 2023
Richardson, Texas	Customer testing	26,500	January 2020
Prague, Czech Republic	Customer support	22,600	October 2025
Maidenhead, United Kingdom (a)	Engineering/development, customer support and sales	20,400	July 2020
Bangalore, India	Engineering/development	16,200	June 2019
Fremont, California	Engineering/development and general and administrative	16,000	June 2020
Richardson, Texas (a)	Engineering/development, general and administrative and sales	15,600	September 2021
Freehold, New Jersey	Engineering/development	13,300	January 2024
Mexico City, Mexico	Customer support	11,900	October 2019
Swindon, United Kingdom	Engineering/development and customer support	5,800	March 2019
Galway, Ireland	General and administrative and sales	5,600	January 2023
Rochester, New York (b)	Engineering/development and customer support	5,400	October 2019
New York, New York	General and administrative and sales	5,100	August 2020
Tokyo, Japan	Sales and customer support	5,000	May 2020
Haryana, India	Storage	4,300	Month-to-month
Kuala Lumpur, Malaysia	Technical support	4,200	October 2021
Madrid, Spain	Sales and customer support	4,100	September 2019
Montreal (Quebec), Canada	Engineering/development	4,000	November 2020
Immenstaad, Germany	Customer support	4,000	June 30, 2019
Sydney, Australia	Sales and customer support	3,400	October 2021
Schaumburg, Illinois	Engineering/development	2,700	October 2019
Dallas, Texas	Sales and customer support	2,600	April 2021
Gaithersburg, MD	Engineering/development and customer support	2,600	May 2022

(a) A portion of this facility was not in use at December 31, 2018 and is currently being subleased as part of a restructuring initiative.

(b) Facility was not in use at December 31, 2018 as part of a restructuring initiative and is currently being subleased.

We also lease small (under 1,000 square feet) short-term office space in various countries around the world for sales, marketing and services staff. We believe our existing facilities are adequate for our current needs and that suitable additional space will be available as needed.

Item 3. Legal Proceedings

We are involved in six lawsuits with Metaswitch Networks Ltd., Metaswitch Networks Corp. and Metaswitch Inc. (collectively, "Metaswitch"). In five of the lawsuits, we are the plaintiff and, in three of those five lawsuits, we are a counterclaim defendant. In the sixth case, we are the defendant.

On January 21, 2014, GENBAND and our indirectly-owned subsidiary, GENBAND US LLC, filed a complaint in the Eastern District of Texas, Marshall Division, alleging that Metaswitch infringed certain patents owned by GENBAND. Following unsuccessful mediation, a trial took place and on January 15, 2016 the jury awarded approximately \$8.2 million in past royalty damages to GENBAND, which neither GENBAND nor we have recorded. On September 29, 2016, the district court confirmed the jury verdict following motions from both parties. On March 22, 2018, the district court entered final judgment awarding GENBAND \$8.9 million in royalties for damages through January 15, 2016 at rates set by the district court, excluding pre- and post-judgment interest and costs. On April 10, 2018, the clerk of the district court set the awarded costs at \$0.4 million. On April 19, 2018, Metaswitch filed a notice of appeal on the judgment with the United States Court of Appeals for the Federal Circuit, and Metaswitch filed its appeal brief on July 6, 2018. Oral argument on the appeal is set for March 8, 2019.

On April 18, 2018, through Sonus, we filed a complaint in the Eastern District of Texas, Marshall Division, alleging that Metaswitch is continuing to infringe the patents from the first lawsuit above through sales of Metaswitch's allegedly "redesigned" products. This suit seeks a finding that Metaswitch's infringement is willful. This suit also alleges false advertising and seeks monetary damages resulting from allegedly false and misleading statements Metaswitch made regarding the first lawsuit. The district court has set trial for September 9, 2019.

Through Sonus and GENBAND US LLC, we are involved as plaintiff and counterclaim defendant in a lawsuit with Metaswitch regarding claims that Metaswitch misappropriated trade secrets of GENBAND, and we are seeking monetary damages. This case is pending in state court in Dallas County, Texas, and stems from claims originally brought in a patent lawsuit between GENBAND and Metaswitch. The state court action was filed on March 28, 2017. Metaswitch filed its answer on April 21, 2017, in which it asserted counterclaims against GENBAND. On July 11, 2018, Metaswitch filed its fifth amended answer and counterclaims against GENBAND. The Texas state court has set a special setting for a trial for this case on April 22, 2019.

Through Sonus, we are involved as plaintiff and counterclaim defendant in two patent infringement lawsuits with Metaswitch, asserting infringement of a total of ten patents that came into the Company from Sonus, and we are seeking monetary damages. Sonus filed these two lawsuits in the Eastern District of Texas, Marshall Division, on March 8, 2018. Metaswitch filed its answers on May 15, 2018, in which it asserted counterclaims against Sonus, including alleged infringement by the Company and Sonus of a total of ten patents. The district court has set trials for these two cases to occur on February 18, 2020 and June 15, 2020.

On November 9, 2018, Metaswitch filed a complaint against us and several of our subsidiaries in the Southern District of New York alleging various antitrust violations based, in large part, on allegations that GENBAND should not have brought its successful patent infringement lawsuit against Metaswitch. Metaswitch is seeking monetary damages. We have not yet filed an answer, and the court has not yet set a schedule.

At this time, it is not possible to predict the outcome of the litigation matters with Metaswitch, but we do not expect the results of this suit to have a material adverse effect on our business or consolidated financial statements.

On November 8, 2018, Ron Miller, a purported stockholder of ours, filed a Class Action Complaint (the "Miller Complaint") in the United States District Court for the District of Massachusetts (the "Massachusetts District Court") against us and three of our former officers, Raymond P. Dolan, Mark T. Greenquist and Michael Swade (collectively, "the Defendants"), claiming to represent a class of purchasers of Sonus common stock during the period from January 8, 2015 through March 25, 2015 and alleging violations of the federal securities laws. Similar to a previous complaint entitled *Sousa et al. vs. Sonus Networks, Inc. et al.*, which was dismissed with prejudice by Order dated June 6, 2017, the Miller Complaint claims that the Defendants made misleading forward-looking statements concerning Sonus' expected fiscal first quarter of 2015 financial

performance, which statements were also the subject of an August 7, 2018 SEC Cease and Desist Order, whose findings we neither admitted nor denied. The Miller plaintiffs are seeking monetary damages.

After the Miller Complaint was filed, several parties filed and briefed motions seeking to be selected by the Massachusetts District Court to serve as a Lead Plaintiff in the action. Briefing on the issue was completed on January 30, 2019 and the Massachusetts District Court is expected to issue a decision shortly. We have not yet filed an answer, and the Massachusetts District Court has not yet set a schedule.

In addition, we are often a party to disputes and legal proceedings that we consider routine and incidental to our business. Management does not expect the results of any of these actions to have a material effect on our business or results of operations.

Item 4. Mine Safety Disclosures

Not applicable.

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

Effective November 29, 2017, our common stock was quoted on The Nasdaq Global Select Market under the symbol "RBBN." Our common stock began publicly trading on The Nasdaq Global Select Market on October 30, 2017 under the symbol "SONS," following the Merger.

Holders

At February 26, 2019, there were approximately 237 holders of record of our common stock.

Recent Sales of Unregistered Securities

None.

Purchases of Equity Securities by the Issuer and Affiliated Purchasers

The following table summarizes repurchases of our common stock during the fourth quarter of 2018:

<u>Period</u>	<u>Total Number of Shares Purchased (1)</u>	<u>Average Price Paid per Share</u>	<u>Total Number of Shares Purchased as Part of Publicly Announced Plans or Programs</u>	<u>Approximate Dollar Value of Shares that May Yet be Purchased Under the Plans or Programs</u>
October 1, 2018 to October 31, 2018	4,463	\$ 6.76	—	\$ —
November 1, 2018 to November 30, 2018	96,232	\$ 6.12	—	\$ —
December 1, 2018 to December 31, 2018	112,348	\$ 5.10	—	\$ —
Total	213,043	\$ 5.60	—	\$ —

(1) Upon vesting of restricted stock awards, certain of our employees may return to us a portion of the newly vested shares to satisfy the tax withholding obligations that arise in connection with such vesting. During the fourth quarter of 2018, 213,043 shares of restricted stock were returned to us by employees to satisfy tax withholding obligations arising in connection with vesting of restricted stock, which shares are included in this column.

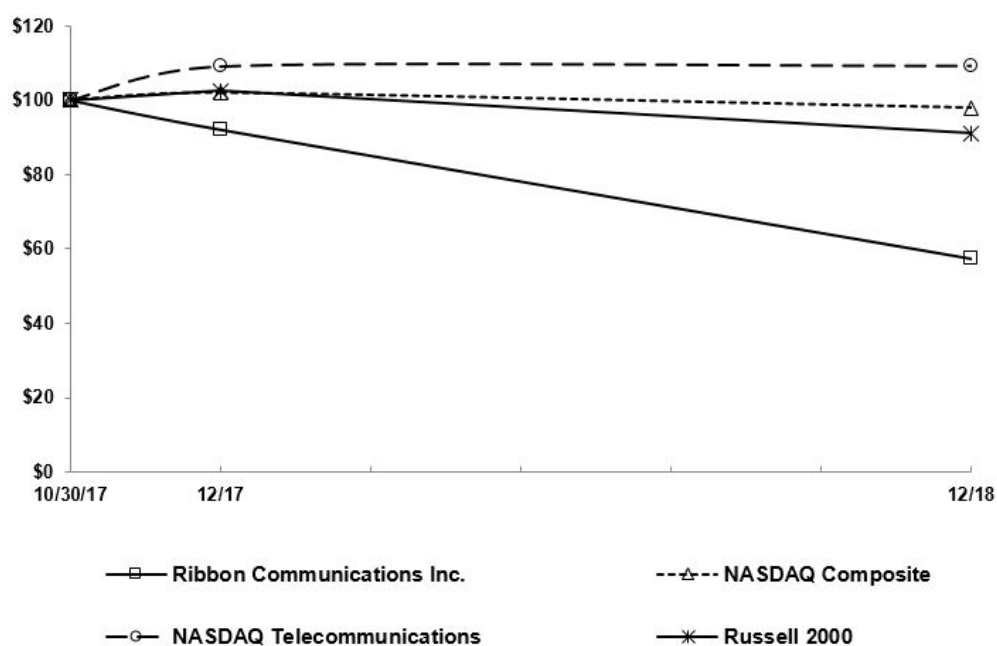
Performance Graph

The following performance graph compares the cumulative total return to stockholders for our common stock for the period from October 30, 2017 (the date Ribbon's common stock began trading on Nasdaq) through December 31, 2018 with the cumulative total return over the same period on the Nasdaq Composite Index, the Nasdaq Telecommunications Index and the Russell 2000. The Company elected to include the Russell 2000 Index because it believes that such index is more comparable to the Company's specific business. The comparison assumes an investment of \$100 on October 30, 2017 in our common stock and in each of the indices and, in each case, assumes reinvestment of all dividends, if any. The performance shown is not necessarily indicative of future performance.

This graph is not deemed to be "filed" with the SEC or subject to the liabilities of Section 18 of the Securities Exchange Act of 1934, as amended (the "Exchange Act"), and should not be deemed to be incorporated by reference into any of our prior or subsequent filings under the Securities Act of 1933, as amended, or the Exchange Act.

COMPARISON OF 14 MONTH CUMULATIVE TOTAL RETURN*

Among Ribbon Communications Inc., the NASDAQ Composite Index, the NASDAQ Telecommunications Index and the Russell 2000 Index



*\$100 invested on 10/30/17 in stock or 10/31/17 in index, including reinvestment of dividends. Fiscal year ending December 31.

Copyright© 2019 Russell Investment Group. All rights reserved.

	October 30, 2017	December 31, 2017	December 31, 2018
Ribbon Communications Inc.	\$ 100.00	\$ 92.13	\$ 57.45
Nasdaq Composite	\$ 100.00	\$ 101.99	\$ 97.95
Nasdaq Telecommunications	\$ 100.00	\$ 109.13	\$ 109.30
Russell 2000	\$ 100.00	\$ 102.47	\$ 91.18

Item 6. Selected Financial Data

On October 27, 2017, (the "Merger Date"), Sonus and GENBAND completed the Merger. The following table presents selected consolidated financial data of Sonus, prior to the Merger Date, and selected consolidated financial data of Ribbon, on and after the Merger Date. The selected consolidated financial data set forth below as of December 31, 2018 and 2017 and for each of the years ended December 31, 2018, 2017 and 2016 have been derived from the audited consolidated financial statements included elsewhere herein. The selected consolidated financial data set forth below as of December 31, 2016, 2015 and 2014 and for each of the years ended December 31, 2015 and 2014 have been derived from audited consolidated financial statements not included elsewhere herein. The following selected consolidated financial data should be read in conjunction with "Management's Discussion and Analysis of Financial Condition and Results of Operations" and our consolidated financial statements and notes thereto included elsewhere in this Annual Report on Form 10-K.

Consolidated Statement of Operations Data (In thousands, except per share amounts)	Year ended December 31,				
	2018 (1)	2017 (2)	2016 (3)	2015 (4)	2014 (5)
Revenue:					
Product	\$ 279,014	\$ 181,119	\$ 146,381	\$ 141,913	\$ 182,455
Service	298,891	148,823	106,210	107,121	113,871
Total revenue	<u>577,905</u>	<u>329,942</u>	<u>252,591</u>	<u>249,034</u>	<u>296,326</u>
Cost of revenue:					
Product	142,185	70,250	47,367	50,460	60,284
Service	127,388	58,196	37,613	36,917	42,637
Total cost of revenue	<u>269,573</u>	<u>128,446</u>	<u>84,980</u>	<u>87,377</u>	<u>102,921</u>
Gross profit	<u>308,332</u>	<u>201,496</u>	<u>167,611</u>	<u>161,657</u>	<u>193,405</u>
Operating expenses:					
Research and development	145,462	101,481	72,841	77,908	79,396
Sales and marketing	128,276	83,403	68,539	72,841	80,141
General and administrative	66,036	47,642	35,948	39,846	43,937
Acquisition- and integration-related expense	16,951	14,763	1,152	131	1,558
Restructuring expense	17,015	9,436	2,740	2,148	5,625
Total operating expenses	<u>373,740</u>	<u>256,725</u>	<u>181,220</u>	<u>192,874</u>	<u>210,657</u>
Loss from operations	(65,408)	(55,229)	(13,609)	(31,217)	(17,252)
Interest and other (expense) income, net	(8,002)	1,537	2,193	1,329	2,611
Loss from continuing operations before income taxes	(73,410)	(53,692)	(11,416)	(29,888)	(14,641)
Income tax benefit (provision)	(3,400)	18,440	(2,516)	(2,007)	(2,214)
Net loss	<u>\$ (76,810)</u>	<u>\$ (35,252)</u>	<u>\$ (13,932)</u>	<u>\$ (31,895)</u>	<u>\$ (16,855)</u>
Loss per share:					
Basic	\$ (0.74)	\$ (0.60)	\$ (0.28)	\$ (0.64)	\$ (0.34)
Diluted	\$ (0.74)	\$ (0.60)	\$ (0.28)	\$ (0.64)	\$ (0.34)
Shares used to compute loss per share:					
Basic	103,916	58,822	49,385	49,560	50,245
Diluted	103,916	58,822	49,385	49,560	50,245

- (1) Includes \$21.5 million of revenue and \$4.3 million of net loss attributable to Edgewater for the period subsequent to its acquisition by the Company on August 3, 2018.
- (2) Includes \$69.1 million of revenue and \$12.5 million of net loss attributable to GENBAND for the period subsequent to the Merger on October 27, 2017.
- (3) Includes \$1.9 million of revenue and \$4.7 million of net loss attributable to Taqua, LLC for the period subsequent to its acquisition by the Company on September 26, 2016.
- (4) Includes the results of operations of the SDN Business of Treq Labs, Inc. for the period subsequent to its acquisition by the Company on January 2, 2015. The Company has not disclosed the revenue and earnings of the SDN Business for the periods since January 2, 2015, as these amounts are not significant to the Company's consolidated financial statements.

(5) Includes \$14.8 million of revenue attributable to Performance Technologies Incorporated for the period subsequent to its acquisition by the Company on February 19, 2014. The impact on earnings is not significant.

Consolidated Balance Sheet Data

(In thousands)	December 31,				
	2018	2017	2016	2015	2014
Cash and cash equivalents	\$ 43,694	\$ 57,073	\$ 31,923	\$ 50,111	\$ 41,157
Marketable securities	\$ 7,284	\$ 17,224	\$ 61,836	\$ 58,533	\$ 64,443
Investments	\$ —	\$ 9,031	\$ 32,371	\$ 33,605	\$ 42,407
Total assets	\$ 957,159	\$ 910,883	\$ 308,059	\$ 312,891	\$ 332,635
Revolving credit facility	\$ 55,000	\$ 20,000	\$ —	\$ —	\$ —
Long-term debt, related party	\$ 24,100	\$ 22,500	\$ —	\$ —	\$ —
Other long-term obligations	\$ 53,107	\$ 30,160	\$ 11,868	\$ 12,416	\$ 14,878

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

Overview

We are a leading provider of next generation ("NextGen") software solutions to telecommunications, wireless and cable service providers and enterprises across industry verticals. With over 1,000 customers around the globe, including some of the largest telecommunications service providers and enterprises in the world, we enable service providers and enterprises to modernize their communications networks through software and provide secure RTC solutions to their customers and employees. By securing and enabling reliable and scalable IP networks, we help service providers and enterprises adopt the next generation of software-based virtualized and cloud communications technologies for service providers to drive new, incremental revenue while protecting their existing revenue streams. Our software solutions provide a secure way for our customers to connect and leverage multivendor, multiprotocol communications systems and applications across their networks and the cloud, around the world and in a rapidly changing ecosystem of IP-enabled devices, such as smartphones and tablets. In addition, our software solutions secure cloud-based delivery of UC solutions - both for service providers transforming to a cloud-based network and for enterprises using cloud-based UC. We sell our software solutions through both direct sales and indirect channels globally, leveraging the assistance of resellers, and we provide ongoing support to our customers through a global services team with experience in design, deployment and maintenance of some of the world's largest software IP networks.

Business Acquisitions

Edgewater Networks, Inc.

On August 3, 2018 (the "Edgewater Acquisition Date"), we completed our acquisition of Edgewater Networks, Inc. ("Edgewater"), a private company headquartered in San Jose, California (the "Edgewater Acquisition"). Edgewater is a market leader in Network Edge Orchestration for the small and medium enterprise and UC market. We believe that the acquisition of Edgewater will allow us to offer our global customer base a complete core-to-edge product portfolio, end-to-end service assurance and analytics solutions, and a fully integrated SD-WAN service.

As consideration for the Edgewater Acquisition, we paid, in the aggregate, approximately \$46 million of cash, net of cash acquired, and issued 4.2 million shares of Ribbon common stock to Edgewater's selling shareholders and holders of vested in-the-money options and warrants to acquire common stock of Edgewater (the "Edgewater Selling Stakeholders") on the Edgewater Acquisition Date. The cash payment was funded through our existing credit facility. We had previously agreed to pay the Edgewater Selling Stakeholders an additional \$30 million of cash, \$15 million of which was to be paid six months from the Edgewater Acquisition Date and the other \$15 million of which was to be paid as early as nine months from the Edgewater Acquisition Date and no later than 18 months from the Edgewater Acquisition Date (the exact timing of which would depend on the amount of revenue generated from the sales of Edgewater products in 2018) (the "Edgewater Deferred Consideration"). On February 15, 2019, we and the Edgewater Selling Stakeholders agreed to reduce the amount of Edgewater Deferred Consideration from \$30 million to \$21.9 million and agreed that all such deferred consideration will be payable on March 8, 2019.

The Edgewater Acquisition has been accounted for as a business combination and the financial results of Edgewater have been included in our consolidated financial statements for the period subsequent to the Edgewater Acquisition Date.

GENBAND

On October 27, 2017 (the "Merger Date"), Sonus Networks, Inc. ("Sonus") consummated an acquisition as specified in an Agreement and Plan of Merger (the "Merger Agreement") with Solstice Sapphire Investments, Inc. ("NewCo") and certain of its wholly-owned subsidiaries, GENBAND Holdings Company, GENBAND Inc. and GENBAND II, INC. (collectively, "GENBAND") such that, following a series of mergers (collectively, the "Merger"), Sonus and GENBAND each became a wholly-owned subsidiary of NewCo.

As a result of the Merger, we believe we are better positioned to enable network transformations to IP and to cloud-based networks for service providers and enterprise customers worldwide, with a broader and deeper sales footprint, increased ability to invest in growth, more efficient and effective research and development, and a comprehensive RTC product offering.

Pursuant to the Merger Agreement, NewCo issued 50.9 million shares to the GENBAND equity holders, with the number of shares issued in the aggregate to the GENBAND equity holders equal to the number of shares of Sonus common stock

outstanding immediately prior to the closing date of the Merger, such that former stockholders of Sonus would own approximately 50%, and former shareholders of GENBAND and the two related holding companies would own approximately 50%, of the shares of NewCo common stock issued and outstanding immediately following the consummation of the Merger.

The Merger has been accounted for as a business combination and the financial results of GENBAND have been included in our consolidated financial statements beginning on the Merger Date. On November 28, 2017, the Company changed its name to "Ribbon Communications Inc."

Taqua, LLC

On September 26, 2016 (the "Taqua Acquisition Date"), we acquired Taqua, LLC ("Taqua"), a leading supplier of IP communications systems, applications and services to mobile and fixed operators. Taqua enables the transformation of software-based service provider networks to deliver next-generation voice, video and messaging services, including VoIP, VoWiFi and VoLTE. The financial results of Taqua are included in our consolidated financial statements beginning on the Taqua Acquisition Date.

Anova Data, Inc.

On February 28, 2019, we acquired the business and technology assets of Anova Data, Inc. ("Anova"), a provider of advanced analytics solutions, for total purchase consideration of 3.3 million shares of our common stock. Anova is based in the U.S., and its NextGen products provide a cloud-native, streaming analytics platform for network and subscriber optimization and monetization. We believe that the proposed acquisition reinforces and extends our strategy to expand into network optimization, security and data monetization via big data analytics and machine learning. We do not expect that the acquisition will have a material effect on our consolidated financial statements in 2019.

Financial Overview

Financial Results

We reported losses from operations of approximately \$65 million for 2018, \$55 million for 2017 and \$14 million for 2016. We reported net losses of approximately \$77 million for 2018, \$35 million for 2017 and \$14 million for 2016.

Our revenue was approximately \$578 million in 2018, \$330 million in 2017 and \$253 million in 2016. Our gross profit was approximately \$308 million in 2018, \$201 million in 2017 and \$168 million in 2016. Our gross profit as a percentage of revenue ("total gross margin") was approximately 53% in 2018, 61% in 2017 and 66% in 2016.

Our operating expenses were approximately \$374 million in 2018, compared to approximately \$257 million in 2017 and approximately \$181 million in 2016.

Our 2018 operating expenses included approximately \$17 million of acquisition- and integration-related expenses, primarily related to the Merger and, to a lesser extent, to the recent acquisition of Edgewater, and approximately \$17 million of restructuring expense, primarily related to severance and related costs.

Our 2017 operating expenses included approximately \$15 million of acquisition- and integration-related expenses, nearly all related to the Merger, and approximately \$9 million of restructuring expense. Our 2017 restructuring expense was primarily related to severance and related costs.

Our 2016 operating expenses included approximately \$1 million of acquisition- and integration-related costs for professional and services fees related to our acquisition of Taqua and approximately \$3 million of restructuring expense. Our 2016 restructuring expense was primarily related to severance and related costs.

We recorded stock-based compensation expense of approximately \$11 million in 2018, \$26 million in 2017 and \$20 million in 2016. The expense recorded in 2017 includes approximately \$9 million of incremental expense related to the acceleration of stock options and certain full value stock awards in connection with the Merger.

See "Results of Operations" in this Management's Discussion and Analysis of Financial Condition and Results of Operations ("MD&A") for additional discussion of our results of operations for the years ended December 31, 2018, 2017 and 2016.

Restructuring and Cost Reduction Initiatives

In connection with the Merger, we implemented a restructuring plan in the fourth quarter of 2017 to eliminate certain redundant positions and facilities within the combined companies (the "Merger Restructuring Initiative"). We recorded approximately \$16 million of restructuring expense related to the Merger Restructuring Initiative in 2018, comprised of approximately \$15 million for severance and related expenses and approximately \$1 million in connection with redundant facilities located in the Czech Republic, Canada and the U.S. We recorded approximately \$9 million of restructuring expense for severance and related expenses in 2017 related to the Merger Restructuring Initiative. We anticipate that we will record additional future expense in connection with this initiative for headcount and redundant facilities aggregating approximately \$5 million. We believe that the severance payments currently accrued will be completed in 2019 and that the payments related to redundant facilities will be completed in 2029, when the last of the leases for these restructured facilities expires. We are actively seeking to sublease each of these facilities.

We assumed GENBAND's restructuring liability aggregating approximately \$4 million at the Merger Date (the "GENBAND Restructuring Initiative"), primarily related to headcount reductions. In 2018, we recorded approximately \$1 million of restructuring expense for changes in estimated costs for previously recorded initiatives, primarily changes in negotiated severance to employees in certain international locations and changes in estimated sublease income for restructured facilities. We do not expect to record additional expense in connection with this initiative except for adjustments for changes in estimated costs. We believe that the payments will be completed in 2020, when the lease for this restructured facility expires.

On July 25, 2016, we announced a program (the "2016 Restructuring Initiative") to further accelerate our investment in new technologies as the communications industry migrates to a cloud-based architecture and pursues new strategic initiatives, such as new products and an expanded go-to-market footprint in selected geographies and discrete vertical markets. We have recorded an aggregate of approximately \$2 million of restructuring expense in connection with this initiative, primarily for severance and related costs. The amounts accrued for severance and related costs were fully paid in 2017. We expect that the amounts accrued for facilities will be paid by the end of 2019.

In connection with the acquisition of Taqua, we implemented a restructuring plan in the third quarter of 2016 to eliminate certain redundant positions within the combined companies. On October 24, 2016, the Audit Committee of our Board of Directors (the "Audit Committee") approved a broader Taqua restructuring plan related to headcount and redundant facilities (collectively, the "Taqua Restructuring Initiative"). In connection with this initiative, we have recorded approximately \$2 million of restructuring expense for severance and related costs and estimated costs related to the elimination of redundant facilities, including adjustments recorded for changes in cost estimates for the planned restructuring activities. The actions under the Taqua Restructuring Initiative have been implemented and accordingly, we do not expect to record additional expense in connection with this initiative. The amounts accrued for severance and related costs were fully paid by the end of the third quarter of 2017. We expect that the amounts accrued for facilities costs will be paid in 2019.

Critical Accounting Policies and Estimates

Management's discussion and analysis of the financial condition and results of operations is based upon our consolidated financial statements, which have been prepared in accordance with accounting principles generally accepted in the United States of America. The preparation of these financial statements requires us to make estimates and judgments that affect the reported amounts of assets, liabilities, revenue and expenses, and related disclosure of contingent assets and liabilities. We base our estimates and judgments on historical experience, knowledge of current conditions and beliefs of what could occur in the future given available information. We consider the following accounting policies to be both those most important to the portrayal of our financial condition and those that require the most subjective judgment. If actual results differ significantly from management's estimates and projections, there could be a material effect on our consolidated financial statements. The significant accounting policies that we believe are the most critical include revenue recognition, the valuation of inventory, loss contingencies and reserves, stock-based compensation, business combinations, goodwill and intangible assets, and accounting for income taxes.

Revenue Recognition. We account for revenue in accordance with Accounting Standards Codification ("ASC") 606, *Revenue from Contracts with Customers* ("ASC 606"), which we adopted on January 1, 2018 using the modified retrospective method.

We derive revenue from two primary sources: products (software and non-software products) and services. Software and non-software product revenue is generated from sales of our software with proprietary appliances that function together to deliver the products' essential functionality. Software and appliances are also sold on a standalone basis. Services include customer support (software updates and technical support), consulting, design services, installation services and training. A

typical contract includes both product and services. Generally, contracts with customers contain multiple performance obligations. For these contracts, we account for individual performance obligations separately if they are distinct. The transaction price is allocated to the separate performance obligations on a relative standalone selling price basis. SSPs are typically estimated based on observable transactions when these services are sold on a standalone basis.

The software licenses typically provide a perpetual right to use our software. We also sell term-based software licenses that expire and Software-as-a-Service ("SaaS")-based software which are referred to as subscription arrangements. We do not customize our software nor are installation services required, as the customer has a right to utilize internal resources or a third-party service company. The software and appliances are delivered before related services are provided and are functional without professional services or customer support. We have concluded that our software licenses are functional intellectual property that are distinct, as the user can benefit from the software on its own. The product revenue is typically recognized upon transfer of control or when the software is made available for download, as this is the point that the user of the software can direct the use of, and obtain substantially all of the remaining benefits from, the functional intellectual property. We do not recognize software revenue related to the renewal of subscription software licenses earlier than the beginning of the subscription period. Appliance products are generally sold with software to provide the customer solution.

Service revenue includes revenue from customer support and other professional services. We offer warranties on our products. Certain of our warranties are considered to be assurance-type in nature and do not cover anything beyond ensuring that the product is functioning as intended. Based on the guidance in ASC 606, assurance-type warranties do not represent separate performance obligations. We also sell separately-priced maintenance service contracts which qualify as service-type warranties and represent separate performance obligations. We do not allow and have no history of accepting product returns.

Customer support includes software updates on a when-and-if-available basis, telephone support, integrated web-based support and bug fixes or patches. We sell our customer support contracts at a percentage of list or net product price related to the support. Customer support revenue is recognized ratably over the term of the customer support agreement, which is typically one year.

Our professional services include consulting, technical support, resident engineer services, design services and installation services. Because control transfers over time, revenue is recognized based on progress toward completion of the performance obligation. The method to measure progress toward completion requires judgment and is based on the nature of the products or services to be provided. We generally use the input method to measure progress for our contracts because we believe it best depicts the transfer of assets to the customer which occurs as we incur costs for the contracts. Under the cost-to-cost measure of progress, the progress toward completion is measured based on the ratio of costs incurred to date to the total estimated costs at completion of the performance obligation. When the measure of progress is based upon expended labor, progress toward completion is measured as the ratio of labor time expended to date versus the total estimated labor time required to complete the performance obligation. Revenue is recorded proportionally as costs are incurred or as labor is expended. Costs to fulfill these obligations include internal labor as well as subcontractor costs.

We offer customer training courses, for which the related revenue is typically recognized as the training services are performed.

Our contracts with customers often include promises to transfer multiple products and services to the customer. Determining whether products and services are considered distinct performance obligations that should be accounted for separately versus together may require significant judgment.

Judgment is required to determine the SSP for each distinct performance obligation. In instances where SSP is not directly observable, such as when we do not sell the product or service separately, we determine the SSP using information that may include market conditions and other observable inputs. We typically have more than one SSP for individual products and services due to the stratification of those products and services by customers and circumstances. In these instances, the Company may use information such as the size of the customer and geographic region in determining the SSP.

Valuation of Inventory. We review inventory for both potential obsolescence and potential loss of value periodically. In this review, we make assumptions about the future demand for and market value of the inventory and, based on these assumptions, estimate the amount of any excess, obsolete or slow-moving inventory.

We write down our inventories if they are considered to be obsolete or at levels in excess of forecasted demand. In these cases, inventory is written down to estimated realizable value based on historical usage and expected demand. Inherent in our estimates of market value in determining inventory valuation are estimates related to economic trends, future demand for our products and technical obsolescence of our products. If future demand or market conditions are less favorable than our

projections, additional inventory write-downs could be required and would be reflected in the cost of revenue in the period the revision is made. To date, we have not been required to revise any of our assumptions or estimates used in determining our inventory valuations.

We write down our evaluation equipment at the time of shipment to our customers, as it is not probable that the inventory value will be realizable.

Loss Contingencies and Reserves. We are subject to ongoing business risks arising in the ordinary course of business that affect the estimation process of the carrying value of assets, the recording of liabilities and the possibility of various loss contingencies. An estimated loss contingency is accrued when it is probable that a liability has been incurred or an asset has been impaired and the amount of loss can be reasonably estimated. We regularly evaluate current information available to determine whether such amounts should be adjusted and record changes in estimates in the period they become known. We are subject to various legal claims. We reserve for legal contingencies and legal fees when the amounts are probable and reasonably estimable.

Stock-Based Compensation. Our stock-based compensation cost is measured at the grant date based on the fair value of the award and is recognized as expense over the requisite service period, which is generally the vesting period.

We use the Black-Scholes valuation model for estimating the fair value on the date of grant of employee stock options. Determining the fair value of stock option awards at the grant date requires judgment regarding certain valuation assumptions, including the volatility of our stock price, expected term of the option, risk-free interest rate and expected dividends. Changes in such assumptions and estimates could result in different fair values and could therefore impact our earnings. Such changes, however, would not impact our cash flows. The fair value of restricted stock awards, restricted stock units and performance-based awards is based upon our stock price on the grant date.

We grant performance-based stock units, some of which include a market condition, to certain of our executives. We use a Monte Carlo simulation approach to model future stock price movements based upon the risk-free rate of return, the volatility of each entity, and the pair-wise covariance between each entity. These results are then used to calculate the grant date fair values of the performance-based stock units.

The amount of stock-based compensation expense recorded in any period for unvested awards requires estimates of the amount of stock-based awards that are expected to be forfeited prior to vesting, as well as assumptions regarding the probability that performance-based stock awards without market conditions will be earned.

Business Combinations. We allocate the purchase price of acquired companies to identifiable assets acquired and liabilities assumed at their acquisition date fair values. Goodwill as of the acquisition date is measured as the excess of consideration transferred over the net of the acquisition date fair values of the assets acquired and the liabilities assumed and represents the expected future economic benefits arising from other assets acquired in the business combination that are not individually identified and separately recognized. Significant management judgments and assumptions are required in determining the fair value of assets acquired and liabilities assumed, particularly acquired intangible assets which are principally based upon estimates of the future performance and cash flows expected from the acquired business and applied discount rates. While we use our best estimates and assumptions as part of the purchase price allocation process to accurately value assets acquired and liabilities assumed at a business combination date, our estimates and assumptions are inherently uncertain and subject to refinement. If different assumptions are used, it could materially impact the purchase price allocation and our financial position and results of operations. Any adjustments to assets acquired or liabilities assumed subsequent to the purchase price allocation period are included in operating results in the period in which the adjustments are determined. Intangible assets typically are comprised of in-process research and development, developed technology, customer relationships, trade names and internal use software.

Goodwill and Intangible Assets. Goodwill is not amortized, but instead is tested for impairment annually, or more frequently if indicators of potential impairment exist. Intangible assets with estimated lives and other long-lived assets are reviewed for impairment when events or changes in circumstances indicate that the carrying amount of an asset may not be recoverable. Recoverability of intangible assets with estimated lives and other long-lived assets is measured by comparing the carrying amount of the asset to future net undiscounted pretax cash flows expected to be generated by the asset. If these comparisons indicate that an asset is not recoverable, we will recognize an impairment loss for the amount by which the carrying value of the asset exceeds the related estimated fair value.

Judgment is required in determining whether an event has occurred that may impair the value of goodwill or identifiable intangible or other long-lived assets. Factors that could indicate an impairment may exist include significant underperformance

relative to plan or long-term projections, strategic changes in business strategy, significant negative industry or economic trends, a significant change in circumstances relative to a large customer, a significant decline in our stock price for a sustained period and a decline in our market capitalization to below net book value. We must make assumptions about future control premiums, market comparables, cash flows, operating plans, discount rates and other factors to determine recoverability.

Our annual testing for impairment of goodwill is completed as of November 30. We operate as a single operating segment with one reporting unit and consequently we evaluate goodwill for impairment based on an evaluation of the fair value of the Company as a whole. We performed our step one assessments for each of the years ended December 31, 2018, 2017 and 2016 and determined each year that our fair value was in excess of our carrying value and accordingly, there was no impairment of goodwill. At certain times during 2018, including at our annual testing date of November 30, 2018, our market capitalization was below our book value. While we have concluded that the fair value exceeds carrying value at that date, we regularly monitor for changes in circumstances, including changes to our projections regarding performance of the business, that could result in impairment of goodwill.

Accounting for Income Taxes. Our provision for income taxes is comprised of a current and a deferred portion. The current income tax provision is calculated as the estimated taxes payable or refundable on tax returns for 2018. We provide for deferred income taxes resulting from temporary differences between financial and taxable income. Such differences arise primarily from tax net operating loss ("NOL") and credit carryforwards, depreciation, deferred revenue, stock-based compensation expense, accruals and reserves.

We assess the recoverability of any tax assets recorded on the balance sheet and provide any necessary valuation allowances as required. In evaluating our ability to recover our deferred tax assets, we consider all available positive and negative evidence including our past operating results, the existence of cumulative income in the most recent years, changes in the business in which we operate and our forecast of future taxable income. In determining future taxable income, we are responsible for assumptions utilized, including the amount of state, federal and international pre-tax operating income, the reversal of temporary differences and the implementation of feasible and prudent tax planning strategies. These assumptions require significant judgment about the forecasts of future taxable income and are consistent with the plans and estimates we are using to manage our underlying businesses. Such assessment is completed on a jurisdiction by jurisdiction basis.

At December 31, 2018, we had valuation allowances of approximately \$82 million to offset net domestic deferred tax assets of approximately \$83 million. In addition, we had valuation allowances to offset Canada federal credits carryovers of approximately \$10 million and Ireland net deferred tax assets of \$10 million. In the event we determine it is more likely than not that we will be able to use a deferred tax asset in the future in excess of its net carrying value, the valuation allowance would be reduced, thereby increasing net earnings and increasing equity in the period such determination is made. We have recorded net deferred tax assets in some of our international subsidiaries. These amounts could change in future periods based upon our operating results and changes in tax law.

We provide for income taxes during interim periods based on the estimated effective tax rate for the full year. We record a cumulative adjustment to the tax provision in an interim period in which a change in the estimated annual effective tax rate is determined.

We have provided for income taxes on the undistributed earnings of our non-U.S. subsidiaries as of December 31, 2018, with the exception of the Company's Irish subsidiary, as we do not plan to permanently reinvest these amounts outside the U.S. The repatriation of the undistributed earnings would result in withholding taxes imposed on the repatriation. Consequently, we have recorded a tax liability of \$4.5 million, consisting of potential withholding and distribution taxes related to undistributed earnings from these subsidiaries as of December 31, 2018. Had the earnings of the Irish subsidiary been determined to not be permanently reinvested outside the U.S., no additional deferred tax liability would be required due to no withholding taxes or income tax expense being imposed on such repatriation.

We assess all material positions taken in any income tax return, including all significant uncertain positions, in all tax years that are still subject to assessment or challenge by relevant taxing authorities. Assessing an uncertain tax position begins with the initial determination of the position's sustainability and is measured at the largest amount of benefit that has a greater than 50% likelihood of being realized upon ultimate settlement. As of each balance sheet date, unresolved uncertain tax positions must be reassessed, and we will determine whether (i) the factors underlying the sustainability assertion have changed and (ii) the amount of recognized tax benefit is still appropriate. The recognition and measurement of tax benefits require significant judgment. Judgments concerning the recognition and measurement of a tax benefit might change as new information becomes available.

On December 22, 2017, the U.S. government enacted comprehensive tax legislation commonly referred to as the Tax Cuts and Jobs Act (the "Tax Act"). The Tax Act makes broad and complex changes to the U.S. tax code, including, but not limited to: reducing the U.S. federal corporate tax rate from 35% to 21%; requiring companies to pay a one-time transition tax on certain unrepatriated earnings of foreign subsidiaries; generally eliminating U.S. federal income taxes on dividends from foreign subsidiaries; requiring a current inclusion in U.S. federal taxable income of certain earnings (Global Intangible Low-taxed Income) ("GILTI") of controlled foreign corporations; eliminating the corporate alternative minimum tax ("AMT") and changing how existing AMT credits can be realized; creating the base erosion anti-abuse tax; creating a new limitation on deductible interest expense; changing rules related to uses and limitations of net operating loss carryforwards created in tax years beginning after December 31, 2017; providing a tax deduction for foreign-derived intangible income; and changing rules related to deductibility of compensation for certain officers.

We completed our accounting for the effects of the Tax Act in the fourth quarter of 2018 and the effects of the Tax Act were reflected in in our 2018 tax provision. We considered the impact of the Base Erosion and Anti-Abuse Tax ("BEAT"), the GILTI, the deduction for foreign derived intangible income and other provisions of the Tax Act when preparing our 2018 tax provision. Based on this analysis, we recorded BEAT tax expense of \$0.4 million in 2018 and recorded an adjustment to the provisional amounts previously recorded related to the Tax Act that decreased our deferred tax assets by \$0.2 million.

Results of Operations

Years Ended December 31, 2018 and 2017

Revenue. Revenue for the years ended December 31, 2018 and 2017 was as follows (in millions, except percentages):

	Year ended December 31,		Increase from prior year	
	2018	2017	\$	%
Product	\$ 279.0	\$ 181.1	\$ 97.9	54.1%
Service	298.9	148.8	150.1	100.8%
Total revenue	\$ 577.9	\$ 329.9	\$ 248.0	75.2%

Our product revenue is generated from sales of software with attached appliances, software licenses and software subscription fees. Certain of our products may be included in more than one of our solutions (session solutions, network transformation solutions, and applications and security solutions), dependent upon the configuration of the individual customer solutions sold. Our software with attached appliances and software license revenues are primarily comprised of our media gateway, call controller, signaling, virtual mobile core and management (i.e., analytics, assurance, billing, etc.) products. Our software subscription fees revenue is primarily comprised of sales of our UC-related (i.e., application server, media server, etc.), Kandy Cloud and Ribbon Protect products. All three of our solutions portfolios address both the service provider and enterprise markets and are sold through both our direct sales program and from indirect sales through our channel partner program.

Our product revenue increased in 2018 compared to 2017 primarily due to the inclusion of GENBAND's product revenue for the full year in 2018 compared to the inclusion of two months of GENBAND's product revenue in 2017. Product revenue from sales of our software with attached appliances and software licenses contributed approximately \$85 million in the aggregate to the increase in our product revenue in 2018, coupled with approximately \$13 million of higher 2018 product revenue from sales of our software subscriptions.

In 2018, approximately 21% of our product revenue was attributable to sales to enterprise customers, compared to approximately 20% in 2017. These sales were made through both our direct sales team and indirect sales channel partners.

In 2018, approximately 25% of our product revenue was from indirect sales through our channel partner program, compared to approximately 24% in 2017.

The timing of the completion of customer projects and revenue recognition criteria satisfaction may cause our product revenue to fluctuate from one period to the next.

Service revenue is primarily comprised of appliance and software maintenance and support ("maintenance revenue") and network design, installation and other professional services ("professional services revenue").

Service revenue for the years ended December 31, 2018 and 2017 was comprised of the following (in millions, except

percentages):

	Year ended December 31,		Increase from prior year	
	2018	2017	\$	%
Maintenance	\$ 234.0	\$ 114.7	\$ 119.3	103.9%
Professional services	64.9	34.1	30.8	90.5%
Total service revenue	\$ 298.9	\$ 148.8	\$ 150.1	100.8%

Our maintenance revenue increased in 2018 compared to 2017 primarily due to the inclusion of GENBAND maintenance revenue for the full year in 2018 compared to the inclusion of two months of GENBAND maintenance revenue in 2017.

The increase in our professional services revenue in 2018 compared to 2017 was primarily due to the inclusion of GENBAND professional services revenue for the full year in 2018 compared to the inclusion of two months of GENBAND professional services revenue in 2017.

The following customer contributed 10% or more of our revenue in the years ended December 31, 2018 and 2017:

	Year ended December 31,	
	2018	2017
Verizon Communications Inc.	17%	17%

Revenue earned from customers domiciled outside the United States was approximately 42% of revenue in 2018 and approximately 34% of revenue in 2017. Due to the timing of project completions, we expect that the domestic and international components as a percentage of our revenue may fluctuate from quarter to quarter and year to year.

Our deferred product revenue was approximately \$14 million at December 31, 2018 and approximately \$22 million at December 31, 2017. Our deferred service revenue was approximately \$108 million at December 31, 2018 and approximately \$93 million at December 31, 2017. Our deferred revenue balance may fluctuate as a result of the timing of revenue recognition, customer payments, maintenance contract renewals, contractual billing rights and maintenance revenue deferrals included in multiple element arrangements.

We expect that our product revenue in 2019 will increase compared with 2018 levels, primarily due to the inclusion of revenue attributable to our acquisition of Edgewater.

We expect that our service revenue in 2019 will increase compared with 2018 levels, primarily due to the inclusion of revenue attributable to our acquisition of Edgewater and the continued organic growth of our installed customer base. However, we expect to continue to encounter ongoing industry pricing pressure, third-party competition and legacy network product decommissioning.

Overall, we expect that total revenue in 2019 will increase compared with our 2018 total revenue, primarily due to the inclusion of revenue attributable to our acquisition of Edgewater.

In connection with the purchase price allocation to record our acquisition of GENBAND, we were required to record at fair value the assumed deferred revenue, resulting in a reduction of approximately \$50 million to the assumed deferred revenue and future recognizable revenue. We recognized approximately \$22 million less revenue in 2018 and expect to recognize approximately \$7 million less revenue in 2019 than GENBAND would have recognized in the same period had we not acquired it. Our purchase price allocation to record our acquisition of Edgewater resulted in a reduction of approximately \$4 million to the assumed deferred revenue and future recognizable revenue. We recognized approximately \$2 million less revenue in the period of 2018 following the Edgewater Acquisition Date than Edgewater would have recognized in the same period had we not acquired it. We expect that these purchase accounting-related reductions to future revenue will continue through 2020, primarily related to future maintenance revenue.

Cost of Revenue/Gross Margin. Our cost of revenue consists primarily of amounts paid to third-party manufacturers for purchased materials and services, royalties and manufacturing and services personnel and related costs. Our cost of revenue and gross margins for the years ended December 31, 2018 and 2017 were as follows (in millions, except percentages):

	Year ended December 31,		Increase from prior year	
	2018	2017	\$	%
Cost of revenue				
Product	\$ 142.2	\$ 70.2	\$ 72.0	102.4%
Service	127.4	58.2	69.2	118.9%
Total cost of revenue	<u>\$ 269.6</u>	<u>\$ 128.4</u>	<u>\$ 141.2</u>	<u>109.9%</u>
Gross margin				
Product	49.0%	61.2%		
Service	57.4%	60.9%		
Total gross margin	53.4%	61.1%		

The decrease in product gross margin in 2018 compared to 2017 was primarily due to the inclusion of GENBAND product costs for the full year in 2018 compared to the inclusion of two months of GENBAND product costs in 2017, including the amortization of intangible assets arising from the Merger, which decreased our product gross margin by approximately six percentage points, coupled with product and customer mix, which also decreased our product gross margin by approximately six percentage points.

The decrease in service gross margin in 2018 compared to 2017 was primarily due to the inclusion of GENBAND service costs for the full year in 2018 compared to the inclusion of two months of GENBAND service costs in 2017, coupled with higher project-related service costs, each of which decreased our service gross margin by approximately two percentage points. Although service revenue increased by approximately \$150 million in 2018 compared to 2017, the increase in service costs of approximately \$69 million contributed to the decline in gross margin. Our service cost of revenue is relatively fixed in advance of any particular quarter and therefore, changes in service revenue will typically have a significant impact on service gross margins.

Our purchases of materials and components for manufacture increased in 2018 compared with 2017 due to the inclusion of GENBAND's operations since October 27, 2017 in our consolidated results. We expect our future purchases of materials and components to decrease as a result of the increase in software content of our products both in absolute terms and as a percentage of our revenue.

We believe that our total gross margin will increase in 2019, primarily due to the expected higher software content as a percentage of our total revenue, coupled with the impact of our restructuring and integration cost reduction initiatives.

Research and Development Expenses. Research and development expenses consist primarily of salaries and related personnel expenses and prototype costs for the design, development, testing and enhancement of our products. Research and development expenses for the years ended December 31, 2018 and 2017 were as follows (in millions, except percentages):

	Year ended December 31,		Increase from prior year	
	2018	2017	\$	%
	\$ 145.5	\$ 101.5	\$ 44.0	43.3%

The increase in research and development expenses in 2018 compared to 2017 was attributable to approximately \$18 million of higher employee-related expenses, approximately \$14 million of higher product development expense (i.e., third-party development, prototype and test equipment costs) and approximately \$12 million of higher infrastructure-related expense. The increase in employee-related expenses was primarily attributable to approximately \$23 million of higher salary and related expenses, including our company-wide cash bonus program, partially offset by approximately \$5 million of lower stock-based compensation expense. These increases were primarily attributable to the inclusion of GENBAND research and development expenses for the full year in 2018 compared to the inclusion of two months of GENBAND research and development expenses in 2017, partially offset by the cost reductions realized from our recent restructuring initiatives. Our research and development expenses in 2018 also included approximately \$5 million of expense attributable to Edgewater since the Edgewater Acquisition Date, primarily for employee- and infrastructure-related expenses.

Some aspects of our research and development efforts require significant short-term expenditures, the timing of which may cause significant variability in our expenses. We believe that rapid technological innovation is critical to our long-term success, and we are tailoring our investments to meet the requirements of our customers and market. We believe that our research and development expenses in 2019 will increase from 2018 levels due to our continued increased investment in our software solutions and the impact of Edgewater's research and development expenses for the full year 2019, partially offset by

savings from our ongoing restructuring and integration cost savings initiatives.

Sales and Marketing Expenses. Sales and marketing expenses consist primarily of salaries and related personnel costs, commissions, travel and entertainment expenses, promotions, customer trial and evaluations inventory and other marketing and sales support expenses. Sales and marketing expenses for the years ended December 31, 2018 and 2017 were as follows (in millions, except percentages):

Year ended December 31,		Increase from prior year	
2018	2017	\$	%
\$ 128.3	\$ 83.4	\$ 44.9	53.8%

The increase in sales and marketing expenses in 2018 compared to 2017 was primarily attributable to approximately \$32 million of higher employee-related expenses, approximately \$6 million of higher amortization of acquired intangible assets and approximately \$6 million of higher infrastructure-related expenses. The increase in employee-related expenses was primarily attributable to \$28 million of higher salary and commissions and related expenses, including our company-wide cash bonus program, and approximately \$6 million of higher employee travel and training and related expenses, partially offset by approximately \$2 million of lower stock-based compensation expense. These increases were primarily attributable to the inclusion of GENBAND sales and marketing expenses for the full year in 2018 compared to the inclusion of two months of GENBAND sales and marketing expenses in 2017, partially offset by the cost reductions realized from our recent restructuring initiatives. Our sales and marketing expenses in 2018 also included approximately \$5 million of expense attributable to Edgewater for the period since the Edgewater Acquisition Date, primarily for employee- and infrastructure-related expenses.

We believe that our sales and marketing expenses will be essentially flat in 2019 compared with 2018, as we expect the inclusion of Edgewater's sales and marketing expenses for the full year 2019 will be offset by cost savings from our ongoing restructuring and integration cost savings initiatives.

General and Administrative Expenses. General and administrative expenses consist primarily of salaries and related personnel costs for executive and administrative personnel, and audit, legal and other professional fees. General and administrative expenses for the years ended December 31, 2018 and 2017 were as follows (in millions, except percentages):

Year ended December 31,		Increase from prior year	
2018	2017	\$	%
\$ 66.0	\$ 47.6	\$ 18.4	38.6%

The increase in 2018 general and administrative expenses was primarily attributable to approximately \$11 million of higher professional fees (i.e., legal, audit and outside services), approximately \$4 million of higher employee-related expenses, approximately \$2 million of higher infrastructure-related expenses and approximately \$1 million of net increases in other general and administrative expenses. The increase in our professional fees included approximately \$8 million of fees related to ongoing litigation with one of our competitors and approximately \$1 million of fees related to our planned convertible senior notes offering that we subsequently elected not to proceed with, as we believed that then-current market conditions were not conducive for an offering on terms that would be in the best interests of our stockholders. The increase in our employee-related expenses was primarily attributable to approximately \$9 million of higher salary and related expenses, including expense in connection with our company-wide cash bonus program, partially offset by approximately \$6 million of lower stock-based compensation expense. These increases were primarily attributable to the inclusion of GENBAND general and administrative expenses for the full year in 2018 compared to the inclusion of two months of GENBAND general and administrative expenses in 2017, partially offset by the cost reductions realized from our recent restructuring initiatives. Our general and administrative expenses in 2018 also included approximately \$1 million of expense attributable to Edgewater, primarily for professional fees and employee- and infrastructure-related expenses.

We believe that our general and administrative expenses will decrease in 2019 compared with 2018, primarily due to savings from our restructuring and integration cost savings initiatives.

Acquisition- and Integration-Related Expenses. Acquisition- and integration-related expenses include those expenses related to acquisitions that we would otherwise not have incurred. Acquisition-related expenses include professional and services fees, such as legal, audit, consulting, paying agent and other fees, and expenses related to cash payments to certain former executives of the acquired businesses in connection with their employment agreements. Integration-related expenses represent incremental costs related to combining the Company's systems and processes with those of acquired businesses,

such as third-party consulting and other third-party services. We recorded approximately \$17 million of acquisition- and integration-related expenses in 2018, comprised of \$10 million of acquisition-related expenses and approximately \$7 million of integration-related expenses. The acquisition-related expense primarily related to the Merger, with nominal amounts related to the acquisition of Edgewater and other acquisition-related activities. We recorded approximately \$15 million of acquisition- and integration-related expenses in 2017, comprised of approximately \$13 million of acquisition-related expense and approximately \$2 million of integration-related expense. The acquisition-related expense was comprised of approximately \$12 million for professional services fees and \$1 million related to cash payments to certain former GENBAND executives. We estimate that we will incur additional integration-related expense in 2019 approximating \$3 million.

Acquisition- and integration-related expenses are reported separately in the consolidated statements of operations.

Restructuring Expense. We have been committed to streamlining operations and reducing operating costs by closing and consolidating certain facilities and reducing our worldwide workforce. Please see the additional discussion of our restructuring initiatives in the "Restructuring and Cost Reduction Initiatives" section of the Overview of this Management's Discussion and Analysis of Financial Condition and Results of Operations.

We recorded restructuring expense of approximately \$17 million in 2018, comprised of approximately \$16 million in connection with our Merger Restructuring Initiative and approximately \$1 million for changes in estimated costs in connection with our assumption of GENBAND's restructuring liability at the time of Merger.

We recorded net restructuring expense of approximately \$9 million in 2017, comprised of approximately \$9 million in connection with our Merger Restructuring Initiative, less than \$1 million in connection with our Taqua Restructuring Initiative and less than \$1 million in connection with our 2016 Restructuring Initiative. The net restructuring expense recorded included reversals for changes in estimated costs totaling less than \$1 million in the aggregate in connection with the GENBAND Restructuring Initiative, the Taqua Restructuring Initiative and the 2016 Restructuring Initiative.

Although we have eliminated positions as part of our restructuring initiatives, we continue to hire in certain areas that we believe are important to our future growth. Restructuring expense is reported separately in the consolidated statements of operations.

Interest (Expense) Income, net. Interest expense and interest income for the years ended December 31, 2018 and 2017 were as follows (in millions, except percentages):

	Year ended December 31,		Increase (decrease) from prior year	
	2018	2017	\$	%
Interest income	\$ 0.3	\$ 1.0	\$ (0.7)	(69.4)%
Interest expense	(4.5)	(0.7)	3.8	573.0 %
Interest (expense) income, net	\$ (4.2)	\$ 0.3	\$ (4.5)	(1,708.4)%

Interest expense in both 2018 and 2017 was primarily comprised of interest on the related party promissory note issued in connection with the Merger, the outstanding revolving credit facility balance, the amortization of debt issuance costs in connection with our revolving credit facilities and interest on capital lease obligations. Interest income consisted of interest earned on our cash equivalents, marketable securities and investments. The higher interest expense in 2018 compared with 2017 was primarily due to the promissory note and credit facility balances outstanding for the full year 2018, compared to approximately two months in 2017. The decrease in interest income in 2018 compared with 2017 was primarily due to the lower amounts available for investment in 2018.

Other (Expense) Income, Net. Other expense, net, in 2018 of approximately \$4 million was primarily comprised of foreign currency losses. Other income, net, in 2017 of approximately \$1 million was primarily comprised of the gain on the sale of an intangible asset and foreign currency gains.

Income Taxes. We recorded an income tax provision of approximately \$3 million in 2018 and a benefit for income taxes of approximately \$18 million in 2017. The provision recorded in 2018 was primarily the result of foreign operations. The benefit recorded in 2017 was primarily the result of the release of an approximately \$16 million domestic valuation allowance as a result of net deferred tax liabilities acquired as part of the GENBAND acquisition.

During 2018 and 2017, we performed an analysis to determine if, based on all available evidence, we considered it more

likely than not that some portion or all of the recorded deferred tax assets will not be realized in a future period. As a result of our evaluations, we concluded that there was insufficient positive evidence to overcome the more objective negative evidence related to our cumulative losses and other factors. Accordingly, we maintained a valuation against our domestic deferred tax asset. A similar analysis and conclusion were made with regard to the valuation allowance on the deferred tax assets of our Irish subsidiary. In analyzing the deferred tax assets related to our Canada subsidiaries, we concluded that it was more likely than not that the Canadian federal credits would not be realized in a future period.

Years Ended December 31, 2017 and 2016

Revenue. Revenue for the years ended December 31, 2017 and 2016 was as follows (in millions, except percentages):

	Year ended December 31,		Increase from prior year	
	2017	2016	\$	%
Product	\$ 181.1	\$ 146.4	\$ 34.7	23.7%
Service	148.8	106.2	42.6	40.1%
Total revenue	\$ 329.9	\$ 252.6	\$ 77.3	30.6%

The increase in product revenue in 2017 compared to 2016 was primarily the result of the inclusion of GENBAND's product revenue for the period following the Merger Date. Revenue from sales of our software with attached appliances and software licenses contributed approximately \$32 million in the aggregate to the increase in product revenue in 2017, coupled with approximately \$3 million of higher 2017 product revenue from sales of our software subscriptions.

In 2017, approximately 24% of our product revenue was from indirect sales through our channel partner program, compared to approximately 26% in 2016.

In 2017, approximately 20% of our product revenue was attributable to sales to enterprise customers, compared to approximately 19% in 2016. These sales were made through both our direct sales team and indirect sales channel partners.

Service revenue for the years ended December 31, 2017 and 2016 was comprised of the following (in millions, except percentages):

	Year ended December 31,		Increase from prior year	
	2017	2016	\$	%
Maintenance	\$ 114.7	\$ 87.0	\$ 27.7	31.9%
Professional services	34.1	19.2	14.9	77.4%
Total service revenue	\$ 148.8	\$ 106.2	\$ 42.6	40.1%

Our maintenance revenue increased in 2017 compared to 2016 primarily due to the inclusion of approximately \$21 million of revenue attributable to GENBAND in 2017 for the period following the Merger Date and the inclusion of approximately \$5 million of revenue attributable to Taqua.

The increase in our professional services revenue in 2017 compared to 2016 was primarily due to the inclusion of approximately \$10 million of revenue attributable to GENBAND in 2017 for the period following the Merger Date, coupled with an increase in the volume of network transformation solutions projects completed in 2017 compared to 2016.

The following customers each contributed 10% or more of our revenue in at least one of the years ended December 31, 2017 and 2016:

	Year ended December 31,	
	2017	2016
Verizon Communications Inc.	17%	*
AT&T Inc.	*	12%

Revenue earned from customers domiciled outside the United States was approximately 34% of total revenue in 2017 and approximately 31% of revenue in 2016.

Our deferred product revenue was approximately \$22 million at December 31, 2017 and approximately \$7 million at December 31, 2016. Our deferred service revenue was approximately \$93 million at December 31, 2017 and approximately \$44 million at December 31, 2016.

Cost of Revenue/Gross Margin. Cost of revenue and gross margins for the years ended December 31, 2017 and 2016 were as follows (in millions, except percentages):

	Year ended December 31,		Increase from prior year	
	2017	2016	\$	%
Cost of revenue				
Product	\$ 70.2	\$ 47.4	\$ 22.8	48.3%
Service	58.2	37.6	20.6	54.7%
Total cost of revenue	\$ 128.4	\$ 85.0	\$ 43.4	51.1%
Gross margin				
Product	61.2%	67.6%		
Service	60.9%	64.6%		
Total gross margin	61.1%	66.4%		

The decrease in product gross margin in 2017 compared to 2016 was primarily due to the inclusion of GENBAND for the period following the Merger Date, which decreased our product gross margin by approximately seven percentage points, and impairment expense of approximately \$6 million related to the write-off of one of our previously acquired developed technology intangible assets, which decreased our product gross margin by approximately four percentage points. These decreases were partially offset by the impact of our product and customer mix, particularly sales of certain of our security and applications products, which increased our product gross margin by approximately five percentage points in 2017.

The decrease in service gross margin in 2017 compared to 2016 was primarily due to the inclusion of GENBAND expenses for the period following the Merger Date, which decreased our service gross margin by approximately four percentage points. Although service revenue increased by approximately \$43 million in 2017 compared to 2016, the increase in service costs of approximately \$21 million contributed to the decline in gross margin. Our service cost of revenue is relatively fixed in advance of any particular quarter and therefore, changes in service revenue will typically have a significant impact on service gross margins.

Research and Development Expenses. Research and development expenses for the years ended December 31, 2017 and 2016 were as follows (in millions, except percentages):

	Year ended December 31,		Increase from prior year	
	2017	2016	\$	%
	\$ 101.5	\$ 72.8	\$ 28.7	39.3%

The increase in research and development expenses in 2017 compared to 2016 was attributable to approximately \$19 million of higher employee-related expenses, approximately \$7 million of higher product development expense, approximately \$2 million of higher infrastructure-related expense and approximately \$1 million of net increases in other research and development costs. The increase in employee-related expenses was attributable to approximately \$14 million of higher salary and related expenses, approximately \$2 million of higher stock-based compensation expense and approximately \$3 million of higher combined expense in connection with our company-wide bonus program and employee travel, training and related expenses. Our 2017 research and development expenses included approximately \$17 million of expense attributable to GENBAND, primarily comprised of approximately \$9 million of employee-related expenses, approximately \$5 million of product development costs, approximately \$1 million of depreciation expense and approximately \$1 million of infrastructure expense.

Sales and Marketing Expenses. Sales and marketing expenses for the years ended December 31, 2017 and 2016 were as follows (in millions, except percentages):

	Year ended December 31,		Increase from prior year	
	2017	2016	\$	%
	\$ 83.4	\$ 68.5	\$ 14.9	21.7%

The increase in sales and marketing expenses in 2017 compared to 2016 was primarily attributable to the inclusion of GENBAND's expenses, aggregating approximately \$14 million, for the 2017 period following the Merger Date, primarily comprised of approximately \$10 million of employee-related expenses, \$3 million of amortization of acquired intangible assets and \$2 million of infrastructure-related expense.

General and Administrative Expenses. General and administrative expenses for the years ended December 31, 2017 and 2016 were as follows (in millions, except percentages):

Year ended December 31,		Increase from prior year	
2017	2016	\$	%
\$ 47.6	\$ 35.9	\$ 11.7	32.5%

Our 2017 general and administrative expenses included approximately \$5 million of expense attributable to GENBAND for the period following the Merger Date. The increase in general and administrative expenses in 2017 compared to 2016 was attributable to approximately \$10 million of higher employee-related expenses, approximately \$3 million of higher professional fees and approximately \$2 million of expense accrued for potential fines in connection with the then-ongoing SEC investigation. These increases were partially offset by approximately \$3 million of lower infrastructure costs.

Acquisition- and Integration-Related Expenses. We recorded approximately \$15 million of acquisition- and integration-related expenses in the year ended December 31, 2017, comprised of approximately \$13 million of acquisition-related expense and approximately \$2 million of integration-related expense. The acquisition-related expense was comprised of approximately \$12 million for professional services fees and \$1 million related to cash payments to certain former GENBAND executives. We recorded approximately \$1 million of acquisition-related expenses in 2016 in connection with the acquisition of Taqua.

Restructuring Expense. We recorded net restructuring expense of approximately \$9 million in 2017, comprised of approximately \$9 million in connection with our Merger Restructuring Initiative, less than \$1 million in connection with our Taqua Restructuring Initiative and less than \$1 million in connection with our 2016 Restructuring Initiative, net of reversals for changes in estimated costs totaling less than \$1 million in the aggregate in connection with the GENBAND Restructuring Initiative, the Taqua Restructuring Initiative and the 2016 Restructuring Initiative. We recorded restructuring expense aggregating approximately \$3 million in 2016, primarily for severance and related costs, comprised of approximately \$2 million under our 2016 Restructuring Initiative and approximately \$1 million related to our Taqua Restructuring Initiative.

Interest Income, net. Interest income and interest expense for the years ended December 31, 2017 and 2016 were as follows (in millions, except percentages):

	Year ended December 31,		Increase (decrease) from prior year	
	2017	2016	\$	%
Interest income	\$ 1.0	\$ 0.9	\$ 0.1	7.9 %
Interest expense	(0.7)	(0.1)	0.6	591.8 %
Interest income, net	\$ 0.3	\$ 0.8	\$ (0.5)	(65.8)%

Interest income consisted of interest earned on our cash equivalents, marketable securities and investments. Interest expense in 2017 was primarily comprised of interest on the outstanding revolving credit facility balance assumed in connection with the acquisition of GENBAND, amortization of debt issuance costs in connection with our revolving credit facilities and interest on capital lease obligations. Interest expense in 2016 was comprised of expense related to the amortization of debt issuance costs in connection with our revolving credit facility and expense related to interest on capital lease obligations.

Other Income, Net. Other income, net, in 2017 of approximately \$1 million was primarily comprised of the gain on the sale of an intangible asset and foreign currency gains. Other income, net, in 2016 of approximately \$1 million was primarily comprised of gains from the sale of intangible assets.

Income Taxes. We recorded a benefit for income taxes of approximately \$18 million in 2017 and a provision for income taxes of approximately \$3 million in 2016. The benefit recorded in 2017 was primarily the result of the release of an approximately \$16 million domestic valuation allowance as a result of net deferred tax liabilities acquired as part of the GENBAND acquisition. The expense recorded in 2016 was primarily related to foreign operations. During 2017 and 2016,

we performed an analysis to determine if, based on all available evidence, we considered it more likely than not that some portion or all of the recorded deferred tax assets will not be realized in a future period. As a result of our evaluations, we concluded that there was insufficient positive evidence to overcome the more objective negative evidence related to our cumulative losses and other factors. Accordingly, we maintained a valuation against our domestic deferred tax asset. A similar analysis and conclusion were made with regard to the valuation allowance on the deferred tax assets of our Irish subsidiary. In analyzing the deferred tax assets related to our Canada subsidiaries, we concluded that it was more likely than not that the Canadian federal SRED credits would not be realized in a future period.

Off-Balance Sheet Arrangements

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

Liquidity and Capital Resources

Our consolidated statements of cash flows are summarized as follows (in millions):

Year ended December 31, 2018 compared to year ended December 31, 2017

	Year ended December 31,		Change
	2018	2017	
Net loss	\$ (76.8)	\$ (35.2)	\$ (41.6)
Adjustments to reconcile net loss to cash flows (used in) provided by operating activities	77.1	35.0	42.1
Changes in operating assets and liabilities	(9.9)	8.3	(18.2)
Net cash (used in) provided by operating activities	\$ (9.6)	\$ 8.1	\$ (17.7)
Net cash (used in) provided by investing activities	\$ (35.4)	\$ 21.0	\$ (56.4)
Net cash provided by (used in) financing activities	\$ 31.8	\$ (4.5)	\$ 36.3

Year ended December 31, 2017 compared to year ended December 31, 2016

	Year ended December 31,		Change
	2017	2016	
Net loss	\$ (35.2)	\$ (13.9)	\$ (21.3)
Adjustments to reconcile net loss to cash flows provided by (used in) operating activities	35.0	35.0	—
Changes in operating assets and liabilities	8.3	(1.9)	10.2
Net cash provided by operating activities	\$ 8.1	\$ 19.2	\$ (11.1)
Net cash provided by (used in) investing activities	\$ 21.0	\$ (27.3)	\$ 48.3
Net cash used in financing activities	\$ (4.5)	\$ (9.9)	\$ 5.4

Our cash, cash equivalents and short- and long-term investments totaled approximately \$51 million at December 31, 2018 and \$83 million at December 31, 2017. We had cash held by our non-U.S. subsidiaries aggregating approximately \$11 million at December 31, 2018 and \$14 million at December 31, 2017. If we elect to repatriate all of the funds held by our non-U.S. subsidiaries as of December 31, 2018, we do not believe that the amounts of potential withholding taxes that would arise from the repatriation would have a material effect on our liquidity.

On November 13, 2018, we announced that we intended to offer, subject to market conditions and other factors, \$150 million aggregate principal amount of convertible senior notes due 2023 in a private offering to qualified institutional buyers pursuant to Rule 144A under the Securities Act of 1933, as amended. We expected to grant the initial purchasers a 30-day option to purchase up to an additional \$25 million aggregate principal amount of such notes, solely to cover over-allotments, if any. On that same day, we decided not to proceed with our previously-announced offering and consequently did not sell any securities as part of such offering. We believed that then-current market conditions were not conducive for an offering on terms that would be in the best interests of our stockholders. In connection with this offering, we incurred \$1 million of expense, primarily for professional fees, which is included as a component of General and administrative expense in our consolidated statement of operations for the year ended December 31, 2018.

On the Merger Date and in connection with the Merger, we assumed GENBAND's Senior Secured Credit Agreement (the "Prior Credit Agreement") with Silicon Valley Bank ("SVB"), which had outstanding borrowings and letters of credit totaling approximately \$18 million and \$3 million, respectively, and an average interest rate of 4.67%. GENBAND had entered into the Prior Credit Agreement with SVB effective July 1, 2016. The Prior Credit Agreement had a maturity date of July 1, 2019 and provided for revolving loans, including letters of credit and swingline loans, not to exceed \$50 million in total, with potential further increases of up to \$75 million available for a total revolving line of credit of up to \$125 million. The Prior Credit Agreement was superseded by a Senior Secured Credit Agreement, as amended, which was entered into on December 21, 2017 and is discussed below.

On December 21, 2017, we entered into a Senior Secured Credit Agreement (as amended, the "Credit Facility") with SVB, which refinanced the Prior Credit Agreement. The Credit Facility includes \$100 million of commitments, the full amount of which is available for revolving loans, a \$15 million sublimit that is available for letters of credit and a \$15 million sublimit that is available for swingline loans. The Credit Facility is scheduled to mature in December 2021, subject to a springing maturity if, on or before July 14, 2020, the existing promissory note issued to certain shareholders is not converted or extended to March 2022 or later. The Credit Facility contains procedures for additional financial institutions to become lenders, or for any existing lender to increase its commitment under the facility, subject to an available increase of \$50 million for all incremental commitments under the Credit Facility without amendment. On June 24, 2018, we amended the Credit Facility to, among other things, permit the Edgewater Acquisition and related transactions.

The indebtedness and other obligations under the Credit Facility are unconditionally guaranteed on a senior secured basis by us and each of our other material U.S. domestic subsidiaries (collectively, the "Guarantors"). The Credit Agreement is secured by first-priority liens on substantially all of our assets.

The Credit Facility requires periodic interest payments on outstanding borrowings until maturity. We may prepay all revolving loans under the Credit Facility at any time without premium or penalty (other than customary LIBOR breakage costs), subject to certain notice requirements.

Revolving loans under the Credit Facility bear interest at our option at either the Eurodollar (LIBOR) rate plus a margin ranging from 2.50% to 3.00% per year or the base rate (the highest of the Federal Funds rate plus 0.50%, or the prime rate announced from time to time in The Wall Street Journal) plus a margin ranging from 1.50% to 2.00% per year (such margins being referred to as the "Applicable Margin"). The Applicable Margin varies depending on our consolidated leverage ratio (as defined in the Credit Agreement). The base rate and the LIBOR rate are each subject to a zero percent floor.

We are charged a commitment fee ranging from 0.25% to 0.40% per year on the daily amount of the unused portions of the commitments under the Credit Facility. Additionally, with respect to all letters of credit outstanding under the Credit Facility, we are charged a fronting fee of 0.125% per year and an outstanding letter of credit fee equal to the Applicable Margin for base rate loans ranging from 1.50% to 2.00% times the amount of the outstanding letters of credit.

The Credit Facility requires compliance with certain financial covenants, including a minimum consolidated quick ratio, minimum consolidated interest coverage ratio and maximum consolidated leverage ratio, all of which are defined in the Credit Agreement and tested on a quarterly basis. In addition, the Credit Facility contains various covenants that, among other restrictions, limit our and our subsidiaries' ability to enter into certain types of transactions, including, but not limited to: incurring or assuming indebtedness, making acquisitions or engaging in mergers, making investments, repurchasing equity and paying dividends, selling or otherwise transferring assets, changing the nature of our business and amending or making prepayments on certain junior debt. We were in compliance with all covenants of the Credit Facility at December 31, 2018 and 2017.

The Credit Facility contains events of default that are customary for a secured credit facility. If an event of default relating to bankruptcy or other insolvency events with respect to a borrower occurs, all obligations under the Credit Facility will immediately become due and payable. If any other event of default exists under the Credit Facility, the lenders may accelerate the maturity of the obligations outstanding under the Credit Facility and exercise other rights and remedies, including charging a default rate of interest equal to 2.00% per year above the rate that would otherwise be applicable. In addition, if any event of default exists under the Credit Facility, the lenders may commence foreclosure or other actions against the collateral.

If any default exists under the Credit Facility, or if the Borrower is unable to make any of the representations and warranties as stated in the Credit Agreement at the applicable time, the Borrower will be unable to borrow funds or have letters of credit issued under the Credit Facility, which, depending on the circumstances prevailing at that time, could have a material adverse effect on the Borrower's liquidity and working capital.

On December 21, 2017, concurrently with the completion of the Credit Facility, we repaid in full all outstanding amounts under the Prior Credit Agreement and terminated the agreement. We did not incur any early termination penalties in connection with the termination of the Prior Credit Agreement.

At December 31, 2018, we had an outstanding debt balance of \$55 million at a weighted average interest rate of 5.96% and approximately \$3 million of outstanding letters of credit at an interest rate of 1.75% under the Credit Facility. At December 31, 2017, we had an outstanding debt balance of \$20 million at an interest rate of 4.51% and approximately \$3 million of outstanding letters of credit at an interest rate of 2.00% under the Credit Facility.

In connection with the Merger, on October 27, 2017, we issued a promissory note for approximately \$23 million to certain of GENBAND's equity holders (the "Promissory Note"). The Promissory Note does not amortize and the principal thereon is payable in full on the third anniversary of its execution. Interest on the promissory note is payable quarterly in arrears and accrued at a rate of 7.5% per year for the first six months after issuance, and thereafter at a rate of 10% per year. The failure to make any payment under the Promissory Note when due and, with respect to payment of any interest, the continuation of such failure for a period of thirty days thereafter, constitutes an event of default under the Promissory Note. If an event of default occurs under the Promissory Note, the payees may declare the entire balance of the Promissory Note due and payable (including principal and accrued and unpaid interest) within five business days of the payees' notification to the Company of such acceleration. Interest that is not paid on the interest payment date will increase the principal amount of the Promissory Note. At December 31, 2018, the Promissory Note balance was \$24.1 million, comprised of \$22.5 million of principal plus \$1.6 million of interest converted to principal.

Sonus maintained a credit facility by and among Sonus, as Borrower, Bank of America, N.A. ("Bank of America"), as Administrative Agent, Swing Line Lender and L/C Issuer, and the other lenders from time to time party thereto entered into on June 27, 2014 (as amended, the "Sonus Credit Agreement"). The Sonus Credit Agreement expired by its terms on June 30, 2017 and was not renewed.

Our operating activities used approximately \$10 million of cash in 2018 and provided approximately \$8 million of cash in 2017 and \$19 million of cash in 2016.

Cash used in operating activities in 2018 was primarily the result of lower accrued expenses and other long-term liabilities and accounts payable, coupled with higher accounts receivable and other operating assets. These were partially offset by higher deferred revenue, lower inventory, and the net impact of non-cash items against our net loss. The decrease in accrued expenses and other long-term liabilities is primarily related to lower accruals for taxes and professional fees. The decrease in accounts payable relates to the timing and amounts of purchases of both services and tangible goods and their related payment arrangements. The increase in accounts receivable primarily relates to the Edgewater Acquisition. Deferred revenue balances may fluctuate as a result of the timing of invoicing and revenue recognition. Our net loss, adjusted for non-cash items such as depreciation, amortization, stock-based compensation, deferred income taxes and other non-cash items, including foreign currency exchange losses, was virtually break-even.

Cash provided by operating activities in 2017 was primarily the result of higher deferred revenue and accounts payable, coupled with decreases in inventory and other operating assets. These were partially offset by higher accounts receivable and lower accrued expenses and other long-term liabilities, plus the impact of our net loss, adjusted for non-cash items. The increase in accounts payable relates to the timing of purchases of both services and tangible goods and their related payment arrangements. The increase in accounts receivable primarily relates to higher revenue in 2017 compared to 2016, partially offset by our continued focus on our collection efforts. Our net loss, adjusted for non-cash items such as depreciation, amortization, stock-based compensation, impairment of intangible assets and deferred income taxes, was virtually break-even.

Cash provided by operating activities in 2016 was primarily the result of decreases in inventory and other operating assets and higher deferred revenue, partially offset by lower accrued expenses and accounts payable, higher accounts receivable and our net loss. The decrease in accrued expenses primarily relates to lower accruals in connection with our Company-wide cash bonus program, for which we changed the timing of bonus payments in 2016 such that a portion of the bonus was paid in August 2016 based on our results against certain internal goals for the first half of the year. Bonuses for the remainder of 2016 were paid in early 2017 based on our results for the second half of 2016. The increase in accounts receivable primarily relates to higher revenue in 2016 compared to 2015, partially offset by the results of our continued focus on our collection efforts. Our net loss, adjusted for non-cash items such as depreciation, amortization, stock-based compensation and deferred income taxes, provided approximately \$21 million of cash.

Our investing activities used approximately \$35 million of cash in 2018, provided approximately \$21 million of cash in 2017 and used approximately \$27 million of cash in 2016. In 2018, we used approximately \$46 million to pay the cash consideration for the Edgewater Acquisition and approximately \$8 million to purchase property and equipment, partially offset by approximately \$19 million of sales and maturities of our investments in marketable securities. In 2017, net sales of our investments in marketable securities provided approximately \$67 million of cash, of which we used approximately \$43 million to pay the cash consideration for GENBAND. We used approximately \$4 million to purchase property and equipment. In 2016, we used approximately \$21 million of cash, net of cash acquired, for business acquisitions, approximately \$5 million of cash for the purchase of property and equipment, and approximately \$3 million for net investments in marketable securities. The amount used for business acquisitions was comprised of \$20 million, net of cash acquired, for the acquisition of Taqua, and slightly under \$1 million paid as the final consideration installment for a previous acquisition.

Our financing activities provided approximately \$32 million of cash in 2018 and used approximately \$4 million of cash in 2017 and \$10 million in 2016. The 2018 amount was primarily comprised of approximately \$35 million of net borrowings against our Credit Facility, partially offset by approximately \$2 million used to pay withholding obligations related to the net share settlement of restricted and performance-based stock grants upon vesting and approximately \$1 million in the aggregate used to make principal payments on our capital lease obligations and debt issuance costs related to our Credit Facility. The 2017 amount was primarily comprised of approximately \$8 million used to pay withholding obligations related to the net share settlement of restricted and performance-based stock grants upon vesting and \$1 million to pay debt issuance costs related to our Credit Facility, partially offset by approximately \$2 million of net borrowings against our Credit Facility, \$1 million of proceeds from the sale of our common stock in connection with our Amended and Restated 2000 Employee Stock Purchase Plan, as amended, and approximately \$1 million of proceeds from the exercise of stock options. The 2016 amount was primarily comprised of approximately \$10 million used for the repurchase of common stock under our stock buyback program.

Contractual Obligations

Our contractual obligations at December 31, 2018 consisted of the following (in millions):

	Payments due by period				
	Total	Less than 1 year	1-3 years	3-5 years	More than 5 years
Capital lease obligations	\$ 2.3	\$ 1.0	\$ 1.3	\$ —	\$ —
Operating lease obligations *	57.4	10.7	15.8	11.1	19.8
Purchase obligations	40.4	37.8	2.6	—	—
Restructuring severance obligations	1.9	1.9	—	—	—
Debt obligations - principal **	79.1	—	24.1	55.0	—
Employee postretirement defined benefit plans	7.0	0.1	0.1	0.3	6.5
Uncertain tax positions ***	4.1	4.1	—	—	—
	<u>\$ 192.2</u>	<u>\$ 55.6</u>	<u>\$ 43.9</u>	<u>\$ 66.4</u>	<u>\$ 26.3</u>

* Includes restructuring payments aggregating approximately \$1 million, approximately 50% of which is due in less than one year and the remainder is due in one to three years. Excludes current estimated sublease income aggregating approximately \$125,000 over the remaining lease terms of the restructured facilities.

** Debt obligations - principal represents both our Promissory Note payable of \$24.1 million and the outstanding balance on our Credit Facility of \$55.0 million at December 31, 2018. We periodically make payments and borrow on the revolving credit facility, and accordingly, we have included it in current liabilities in our consolidated balance sheet. However, we have reported the outstanding balance payment due in the table above in the "3-5 years" column based solely on the expiration date of the Credit Facility.

*** This liability is not subject to fixed payment terms and the amount and timing of payments, if any, that we will make related to this liability are not known. See Note 19 to our consolidated financial statements appearing in this Annual Report on Form 10-K for additional information.

Based on our current expectations, we believe our current cash, cash equivalents, marketable securities and available borrowings under the Credit Agreement will be sufficient to meet our anticipated cash needs for working capital and capital expenditures for at least twelve months. However, we cannot be sure that our current cash, cash equivalents, marketable securities and available borrowings under our credit facility will be sufficient to meet our future needs. If we are unable to generate sufficient cash flows in the future, and if availability under our credit facility is not sufficient to support our

operations, we may need to refinance our debt or obtain additional financing. We may not be able to refinance our debt or obtain additional financing on favorable terms or at all.

The rate at which we will consume cash will be dependent on the cash needs of future operations, including changes in working capital, which will, in turn, be directly affected by the levels of demand for our products, the timing and rate of expansion of our business, the resources we devote to developing our products and any litigation settlements. We anticipate devoting substantial capital resources to continue our research and development efforts, to maintain our sales, support and marketing, to complete merger-related integration activities and for other general corporate activities. However, it is difficult to predict future liquidity requirements with certainty. See Note 22 to our consolidated financial statements for a description of our other contingencies.

Recent Accounting Pronouncements

In May 2014, the Financial Accounting Standards Board ("FASB") issued Accounting Standards Update ("ASU") 2014-09, its new standard on revenue from contracts with customers, along with additional ASUs which, among other things, clarified the implementation of the new revenue guidance and delayed the adoption by one year, to January 1, 2018 (the "New Revenue Standard"). The New Revenue Standard outlines a single comprehensive model for entities to use in accounting for revenue arising from contracts with customers and supersedes most current revenue recognition guidance, including industry-specific guidance. The core principle of the revenue model is that an entity recognizes revenue to depict the transfer of promised goods or services to customers in an amount that reflects the consideration to which the entity expects to be entitled in exchange for those goods or services. In applying the revenue model to contracts within its scope, an entity identifies the contract(s) with a customer, identifies the performance obligations in the contract, determines the transaction price, allocates the transaction price to the performance obligations in the contract and recognizes revenue when (or as) the entity satisfies a performance obligation. Effective January 1, 2018, we adopted the New Revenue Standard using the modified retrospective option and have identified the necessary changes to our policies, processes, systems and controls. Under the modified retrospective method, we are applying the New Revenue Standard to all contracts not yet completed as of January 1, 2018, recognizing in beginning Accumulated deficit an adjustment for the cumulative effect of the change and providing additional disclosures comparing results to those as if we were still following the previous accounting standards. Under ASC 605, we concluded we did not have VSOE for certain elements in software bundled arrangements, which resulted in revenue being recognized ratably over the longest performance period. The majority of the transition adjustments related to these arrangements. In connection with the adoption of ASC 606, as of January 1, 2018, the Company recorded an adjustment to decrease Accumulated deficit by approximately \$12 million and capitalized certain commission costs resulting directly from securing contracts which were previously expensed.

In May 2017, the FASB issued ASU 2017-09, *Compensation - Stock Compensation (Topic 718): Scope of Modification Accounting* ("ASU 2017-09"), which amends the scope of modification accounting for share-based payment arrangements such that an entity would not apply modification accounting if the fair value, vesting conditions and classification of the awards are the same immediately before and after the modification. ASU 2017-09 became effective for us beginning January 1, 2018 for both interim and annual reporting periods. The adoption of ASU 2017-09 did not have a material impact on our condensed consolidated financial statements.

In March 2017, the FASB issued ASU 2017-07, *Compensation - Retirement Benefits (Topic 715): Improving the Presentation of Net Periodic Pension Cost and Net Periodic Post Retirement Benefit Cost* ("ASU 2017-07"). ASU 2017-07 amends the requirements in ASC 715, *Compensation - Retirement Benefits* ("ASC 715") to require entities to disaggregate the current-service-cost component from the other components of net benefit cost (the "other components") and include it with other current compensation costs for related employees, present the other components elsewhere in the income statement and outside of income from operations if such a subtotal is presented and disclose the income statement lines that contain the other components if they are not presented on appropriately described separate lines. ASU 2017-07 became effective for us beginning January 1, 2018 for both interim and annual reporting periods. The adoption of ASU 2017-07 did not have a material impact on our condensed consolidated financial statements.

In August 2016, the FASB issued ASU 2016-15, *Statement of Cash Flows (Topic 230): Classification of Certain Cash Receipts and Cash Payments* ("ASU 2016-15"), which adds or clarifies guidance on eight cash flow issues, including debt prepayment or debt extinguishment costs, settlement of zero-coupon debt instruments or certain other debt instruments, contingent consideration payments made after a business combination, proceeds from the settlement of insurance claims, proceeds from the settlement of corporate-owned life insurance policies, distributions received from equity method investees, beneficial interests in securitization transactions and separately identifiable cash flows and application of the predominance principle. ASU 2016-15 became effective for us beginning January 1, 2018 for both interim and annual reporting periods.

Entities must apply the guidance retrospectively to all periods presented but may apply it prospectively from the earliest date practicable if retrospective application would be impracticable. The adoption of ASU 2016-15 did not have a material impact on our condensed consolidated financial statements.

In August 2018, the FASB issued ASU 2018-15, *Intangibles - Goodwill and Other - Internal-Use Software (Subtopic 350-40): Customer's Accounting for Implementation Costs Incurred in a Cloud Computing Arrangement That Is a Service Contract* ("ASU 2018-15"), which provides guidance on implementation costs incurred in a cloud computing arrangement ("CCA") that is a service contract. ASU 2018-15 amends ASC 350, *Intangibles - Goodwill and Other* ("ASC 350") to include in its scope implementation costs of a CCA that is a service contract and clarifies that a customer should apply the guidance in ASC 350-40 to determine which implementation costs should be capitalized in such a CCA. ASU 2018-15 is effective for us beginning January 1, 2020. We are currently assessing the potential impact of the adoption of ASU 2018-15 on our consolidated financial statements.

In February 2016, the FASB issued ASU 2016-02, *Leases (Topic 842) Section A - Leases: Amendments to the FASB Accounting Standards Codification* ("ASU 2016-02"), its new standard on accounting for leases. ASU 2016-02 introduces a lessee model that brings most leases onto the balance sheet. ASU 2016-02 eliminates the current GAAP requirement for an entity to use bright-line tests in determining lease classification. ASU 2016-02 became effective for us for both interim and annual periods beginning January 1, 2019. Upon adoption of ASU 2016-02, we will recognize lease obligations for the right to use these assets in connection with our existing lease agreements. In July 2018, the FASB issued ASU 2018-11, *Leases (Topic 842): Targeted Improvements* ("ASU 2018-11") and ASU 2018-10, *Codification Improvements to Topic 842, Leases*, both of which provided improvements to certain aspects of the guidance in ASC 842, *Leases*. In January 2018, the FASB issued ASU 2018-01, *Leases (Topic 842): Land Easement Practical Expedient for Transition to Topic 842*, which provided additional clarification and implementation guidance. We have elected to use the alternative transition method as described in ASU 2018-11, which allows entities to initially apply ASU 2016-02 at the adoption date and recognize a cumulative-effect adjustment to the opening balance of retained earnings, with no subsequent adjustments to prior period lease costs for comparability. To illustrate the magnitude of this change, the amount of our off-balance sheet operating leases at December 31, 2018 is disclosed in Note 22 to our consolidated financial statements. Beginning on January 1, 2019, our operating leases, excluding those with terms less than 12 months, were discounted and recorded as assets and liabilities on our consolidated balance sheet.

In addition, the FASB has issued the following accounting pronouncements, none of which we believe will have a material impact on our consolidated financial statements:

In August 2018, the FASB issued ASU 2018-14, *Compensation - Retirement Benefits - Defined Benefit Plans - General (Subtopic 715-20): Disclosure Framework - Changes to the Disclosure Requirements for Defined Benefit Plans* ("ASU 2018-14"), which amends ASC 715 to add, remove and clarify disclosure requirements related to defined benefit pension and other postretirement plans. ASU 2018-14 is effective for us beginning January 1, 2020.

In August 2018, the FASB issued ASU 2018-13, *Fair Value Measurement (Topic 820): Disclosure Framework - Changes to the Disclosure Requirements for Fair Value Measurement* ("ASU 2018-13"), which changes the fair value measurement requirements of ASC 820, *Fair Value Measurement* ("ASC 820"). ASU 2018-13 is effective for us beginning January 1, 2020 for both interim and annual reporting.

In July 2018, the FASB issued ASU 2018-09, *Codification Improvements* ("ASU 2018-09"), which contains amendments to clarify, correct errors in or make minor improvements to the Codification. ASU 2018-09 makes improvements to multiple topics, including but not limited to comprehensive income, debt, income taxes related to both stock-based compensation and business combinations, fair value measurement and defined contribution benefit plans. ASU 2018-09 became effective for us beginning January 1, 2019.

In June 2018, the FASB issued ASU 2018-07, *Compensation - Stock Compensation (Topic 718): Improvements to Nonemployee Share-Based Payment Accounting* ("ASU 2018-07"), which expands the scope of ASC 718, *Compensation - Stock Compensation* ("ASC 718"), to include all share-based payment arrangements related to the acquisition of goods and services from both nonemployees and employees. As a result, most of the guidance in ASC 718 associated with employee share-based payments, including most of its requirements related to classification and measurement, applies to nonemployee share-based payment arrangements. ASU 2018-07 became effective for us beginning January 1, 2019.

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* ("ASU 2018-02"), which amends ASC 220, *Income Statement - Reporting Comprehensive Income*, to allow a reclassification from accumulated other comprehensive

income to retained earnings for stranded tax effects resulting from the Tax Act and requires entities to provide certain disclosures regarding stranded tax effects. ASU 2018-02 became effective for us beginning January 1, 2019.

In October 2016, the FASB issued ASU 2016-16, *Income Taxes (Topic 740): Intra-Entity Transfers of Assets Other Than Inventory* ("ASU 2016-16"), which removes the prohibition in ASC 740, Income Taxes, against the immediate recognition of the current and deferred income tax effects of intra-entity transfers of assets other than inventory. ASU 2016-16 is effective for us beginning January 1, 2019 for both interim and annual reporting periods.

In June 2016, the FASB issued ASU 2016-13, *Financial Instruments - Credit Losses (Topic 326): Measurement of Credit Losses on Financial Instruments* ("ASU 2016-13"), which adds an impairment model that is based on expected losses rather than incurred losses. Under ASU 2016-13, an entity recognizes as an allowance its estimate of expected credit losses, which the FASB believes will result in more timely recognition of such losses. ASU 2016-13 is effective for us beginning January 1, 2020 for both interim and annual reporting periods, with early adoption permitted.

Item 7A. Quantitative and Qualitative Disclosures About Market Risk

We are exposed to a variety of market risks, including changes in interest rates affecting the return on our investments and foreign currency fluctuations.

At December 31, 2018, our cash, cash equivalents and marketable securities totaled \$51 million. We maintain an investment portfolio of various holdings, types and maturities which may include money market funds, commercial paper, corporate notes, certificates of deposit and government debt securities. A sharp rise in market interest rates could have a material adverse impact on the fair value of our investment portfolio. Conversely, declines in market interest rates could have a material impact on the interest earnings of our investment portfolio. We do not currently hedge these interest rate exposures. We place our investments with high quality issuers and have policies limiting, among other things, the amount of credit exposure to any one issuer. We seek to limit default risk by purchasing only investment grade securities. We manage potential losses in fair value by investing in relatively short-term investments, thereby allowing us to hold our investments to maturity. A hypothetical movement of plus or minus 50 basis points in market interest rates would have had an immaterial effect on the value of our investment portfolio for the year ended December 31, 2018. However, we have the ability to hold our investments until maturity, and therefore do not expect our operating results or cash flows to be affected to any significant degree by the effect of a sudden change in market interest rates on our investment portfolio.

Based on a hypothetical 10% adverse movement in all foreign currency exchange rates, our revenue for the year ended December 31, 2018 would have been adversely affected by approximately \$9 million and our net loss for the year ended December 31, 2018 would have been adversely affected by approximately \$2 million, although the actual effects may differ materially from this hypothetical analysis.

Item 8. Financial Statements and Supplementary Data

Report of Independent Registered Public Accounting Firm	67
Consolidated Balance Sheets as of December 31, 2018 and 2017	68
Consolidated Statements of Operations for the years ended December 31, 2018, 2017 and 2016	69
Consolidated Statements of Comprehensive Loss for the years ended December 31, 2018, 2017 and 2016	70
Consolidated Statements of Stockholders' Equity for the years ended December 31, 2018, 2017 and 2016	71
Consolidated Statements of Cash Flows for the years ended December 31, 2018, 2017 and 2016	72
Notes to Consolidated Financial Statements	73

REPORT OF INDEPENDENT REGISTERED PUBLIC ACCOUNTING FIRM

To the Board of Directors and Stockholders of Ribbon Communications Inc.

Opinion on the Financial Statements

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

We have also audited, in accordance with the standards the Public Company Accounting Oversight Board (United States) (PCAOB), the Company's internal control over financial reporting as of December 31, 2018, based on criteria established in *Internal Control - Integrated Framework (2013)* issued by the Committee of Sponsoring Organizations of the Treadway Commission and our report dated March 4, 2019, expressed an unqualified opinion on the Company's internal control over financial reporting.

Change in Accounting Principle

As discussed in Note 2 to the financial statements, the Company adopted Accounting Standards Codification (ASC) Topic 606, "Revenue from Contracts with Customers," using the modified retrospective adoption method on January 1, 2018.

Basis for Opinion

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

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

Boston, Massachusetts
March 4, 2019

We have served as the Company's auditor since 2005.

RIBBON COMMUNICATIONS INC.
Consolidated Balance Sheets
(in thousands, except share and per share data)

	December 31, 2018	December 31, 2017
Assets		
Current assets:		
Cash and cash equivalents	\$ 43,694	\$ 57,073
Marketable securities	7,284	17,224
Accounts receivable, net	187,853	165,156
Inventory	22,602	21,303
Other current assets	17,002	21,463
Total current assets	278,435	282,219
Property and equipment, net	27,042	24,780
Intangible assets, net	251,391	244,414
Goodwill	383,655	335,716
Investments	—	9,031
Deferred income taxes	9,152	8,434
Other assets	7,484	6,289
	<u>\$ 957,159</u>	<u>\$ 910,883</u>
Liabilities and Stockholders' Equity		
Current liabilities:		
Revolving credit facility	\$ 55,000	\$ 20,000
Accounts payable	45,304	45,851
Accrued expenses and other	84,263	76,380
Deferred revenue	105,087	100,571
Total current liabilities	289,654	242,802
Long-term debt, related party	24,100	22,500
Deferred revenue, net of current	17,572	14,184
Deferred income taxes	4,738	2,787
Other long-term liabilities	30,797	13,189
Total liabilities	366,861	295,462
Commitments and contingencies		
Stockholders' equity:		
Preferred stock, \$0.01 par value; 10,000,000 shares authorized; none issued and outstanding	—	—
Common stock, 240,000,000 shares authorized, \$0.0001 par value, 106,815,636 shares issued and outstanding at December 31, 2018; 101,752,856 shares issued and outstanding at December 31, 2017	11	10
Additional paid-in capital	1,723,576	1,684,768
Accumulated deficit	(1,136,992)	(1,072,426)
Accumulated other comprehensive income	3,703	3,069
Total stockholders' equity	590,298	615,421
	<u>\$ 957,159</u>	<u>\$ 910,883</u>

See notes to the consolidated financial statements.

RIBBON COMMUNICATIONS INC.
Consolidated Statements of Operations
(in thousands, except per share data)

	Year ended December 31,		
	2018	2017	2016
Revenue:			
Product	\$ 279,014	\$ 181,119	\$ 146,381
Service	298,891	148,823	106,210
Total revenue	<u>577,905</u>	<u>329,942</u>	<u>252,591</u>
Cost of revenue:			
Product	142,185	70,250	47,367
Service	127,388	58,196	37,613
Total cost of revenue	<u>269,573</u>	<u>128,446</u>	<u>84,980</u>
Gross profit	<u>308,332</u>	<u>201,496</u>	<u>167,611</u>
Operating expenses:			
Research and development	145,462	101,481	72,841
Sales and marketing	128,276	83,403	68,539
General and administrative	66,036	47,642	35,948
Acquisition- and integration-related	16,951	14,763	1,152
Restructuring	17,015	9,436	2,740
Total operating expenses	<u>373,740</u>	<u>256,725</u>	<u>181,220</u>
Loss from operations	(65,408)	(55,229)	(13,609)
Interest (expense) income, net	(4,230)	263	769
Other (expense) income, net	(3,772)	1,274	1,424
Loss before income taxes	(73,410)	(53,692)	(11,416)
Income tax (provision) benefit	(3,400)	18,440	(2,516)
Net loss	<u>\$ (76,810)</u>	<u>\$ (35,252)</u>	<u>\$ (13,932)</u>
Loss per share:			
Basic	\$ (0.74)	\$ (0.60)	\$ (0.28)
Diluted	\$ (0.74)	\$ (0.60)	\$ (0.28)
Shares used to compute loss per share:			
Basic	103,916	58,822	49,385
Diluted	103,916	58,822	49,385

See notes to the consolidated financial statements.

RIBBON COMMUNICATIONS INC.
Consolidated Statements of Comprehensive Loss
(in thousands)

	Year ended December 31,		
	2018	2017	2016
Net loss	\$ (76,810)	\$ (35,252)	\$ (13,932)
Other comprehensive income (loss), net of tax:			
Foreign currency translation adjustments	220	(1,940)	54
Unrealized gain on available-for-sale marketable securities, net of reclassification adjustments for realized amounts	45	146	51
Employee retirement benefits	369	(578)	—
Other comprehensive income (loss), net of tax	634	(2,372)	105
Comprehensive loss, net of tax	<u>\$ (76,176)</u>	<u>\$ (37,624)</u>	<u>\$ (13,827)</u>

See notes to the consolidated financial statements.

RIBBON COMMUNICATIONS INC.
Consolidated Statements of Stockholders' Equity
(in thousands, except share data)

	Common stock		Additional paid-in capital	Accumulated deficit	Accumulated other comprehensive income (loss)	Total stockholders' equity
	Shares	Amount				
Balances, January 1, 2016	49,473,789	\$ 49	\$ 1,240,803	\$ (1,023,242)	\$ 5,416	\$ 223,026
Issuance of common stock in connection with employee stock purchase plan	225,031		1,360			1,360
Exercise of stock options	23,070		153			153
Vesting of restricted stock awards and units	792,773	1	(1)			—
Vesting of performance-based stock awards and units	18,438					—
Shares of restricted stock returned to the Company under net share settlements to satisfy tax withholding obligations	(231,620)		(1,810)			(1,810)
Repurchase of common stock	(1,259,600)	(1)	(9,529)			(9,530)
Stock-based compensation expense			19,768			19,768
Other comprehensive income					87	87
Net loss				(13,932)		(13,932)
Balances, December 31, 2016	49,041,881	49	1,250,744	(1,037,174)	5,503	219,122
Issuance of common stock in connection with employee stock purchase plan	249,621		1,252			1,252
Exercise of stock options	105,688		617			617
Vesting of restricted stock awards and units	2,160,553					—
Vesting of performance-based stock awards and units	145,357					—
Shares of restricted stock returned to the Company under net share settlements to satisfy tax withholding obligations	(807,952)		(7,523)			(7,523)
Shares issued as consideration in connection with acquisition of GENBAND	50,857,708	5	413,977			413,982
Stock-based compensation expense			25,657			25,657
Reclassification between Common stock and Additional paid-in capital to record change in par value of common stock		(44)	44			—
Other comprehensive loss					(2,434)	(2,434)
Net loss				(35,252)		(35,252)
Balances, December 31, 2017	101,752,856	10	1,684,768	(1,072,426)	3,069	615,421
Adoption of Accounting Standards Codification 606, <i>Revenue from Contracts with Customers</i>				12,244		12,244
Exercise of stock options	15,935		73			73
Vesting of restricted stock awards and units	1,278,062					—
Vesting of performance-based stock units	57,768					—
Shares of restricted stock returned to the Company under net share settlements to satisfy tax withholding obligations	(524,516)		(2,024)			(2,024)
Shares issued as consideration in connection with acquisition of Edgewater Networks, Inc.	4,235,531	1	29,999			30,000
Assumption of equity awards in connection with acquisition of Edgewater Networks, Inc.			747			747
Stock-based compensation expense			10,013			10,013
Other comprehensive income					634	634
Net loss				(76,810)		(76,810)
Balances, December 31, 2018	106,815,636	\$ 11	\$ 1,723,576	\$ (1,136,992)	\$ 3,703	\$ 590,298

See notes to the consolidated financial statements.

RIBBON COMMUNICATIONS INC.
Consolidated Statements of Cash Flows
(in thousands)

	Year ended December 31,		
	2018	2017	2016
Cash flows from operating activities:			
Net loss	\$ (76,810)	\$ (35,252)	\$ (13,932)
Adjustments to reconcile net loss to cash flows (used in) provided by operating activities:			
Depreciation and amortization of property and equipment	11,200	8,486	7,970
Amortization of intangible assets	49,723	17,112	7,500
Stock-based compensation	11,072	25,657	19,768
Impairment of intangible assets	—	5,471	—
Deferred income taxes	513	(20,361)	1,088
Other	4,611	(1,340)	(1,265)
Changes in operating assets and liabilities:			
Accounts receivable	(13,017)	(30,759)	(851)
Inventory	993	5,786	4,858
Other operating assets	5,036	269	506
Accounts payable	(6,057)	13,415	(821)
Accrued expenses and other long-term liabilities	(13,422)	(4,263)	(7,778)
Deferred revenue	16,563	23,859	2,149
Net cash (used in) provided by operating activities	<u>(9,595)</u>	<u>8,080</u>	<u>19,192</u>
Cash flows from investing activities:			
Purchases of property and equipment	(7,907)	(3,999)	(4,626)
Business acquisitions, net of cash acquired	(46,389)	(42,951)	(20,669)
Purchases of marketable securities	—	(28,731)	(78,528)
Sale/maturities of marketable securities	18,919	96,112	75,178
Proceeds from the sale of intangible assets	—	576	1,298
Net cash (used in) provided by investing activities	<u>(35,377)</u>	<u>21,007</u>	<u>(27,347)</u>
Cash flows from financing activities:			
Borrowings under revolving line of credit	197,500	15,500	—
Principal payments on revolving line of credit	(162,500)	(13,500)	—
Principal payments of capital lease obligations	(652)	(99)	(43)
Payment of debt issuance costs	(624)	(731)	—
Proceeds from the sale of common stock in connection with employee stock purchase plan	—	1,252	1,360
Proceeds from the exercise of stock options	73	617	153
Payment of tax withholding obligations related to net share settlements of restricted stock awards	(2,024)	(7,523)	(1,810)
Repurchase of common stock	—	—	(9,530)
Net cash provided by (used in) financing activities	<u>31,773</u>	<u>(4,484)</u>	<u>(9,870)</u>
Effect of exchange rate changes on cash and cash equivalents	<u>(180)</u>	<u>547</u>	<u>(163)</u>
Net (decrease) increase in cash and cash equivalents	(13,379)	25,150	(18,188)
Cash and cash equivalents, beginning of year	57,073	31,923	50,111
Cash and cash equivalents, end of year	<u>\$ 43,694</u>	<u>\$ 57,073</u>	<u>\$ 31,923</u>
Supplemental disclosure of cash flow information:			
Interest paid	\$ 2,367	\$ 317	\$ 41
Income taxes paid	\$ 5,505	\$ 2,290	\$ 1,249
Income tax refunds received	\$ 537	\$ 274	\$ 511
Supplemental disclosure of non-cash investing activities:			
Capital expenditures incurred, but not yet paid	\$ 1,127	\$ 1,043	\$ 277
Property and equipment acquired under capital lease	\$ 2,178	\$ —	\$ 36
Business acquisition purchase consideration - common stock issued	\$ 30,000	\$ 413,982	\$ —
Business acquisition purchase consideration - deferred payments	\$ 30,000	\$ —	\$ —
Business acquisition purchase consideration - note issued to selling equity holders	\$ —	\$ 22,500	\$ —
Business acquisition purchase consideration - assumed equity awards	\$ 747	\$ —	\$ —
Supplemental disclosure of non-cash financing activities:			
Total fair value of restricted stock awards, restricted stock units, performance-based stock awards and performance-based stock units on date vested	\$ 8,312	\$ 20,515	\$ 10,376

See notes to the consolidated financial statements.

RIBBON COMMUNICATIONS INC.
Notes to Consolidated Financial Statements

(1) NATURE OF THE BUSINESS

Ribbon is a leading provider of next generation ("NextGen") software solutions to telecommunications, wireless and cable service providers and enterprises of all sizes across industry verticals. With over 1,000 customers around the globe, including some of the largest telecommunications service providers and enterprises in the world, Ribbon enables service providers and enterprises to modernize their communications networks through software and provide secure RTC solutions to their customers and employees. By securing and enabling reliable and scalable IP networks, Ribbon helps service providers and enterprises adopt the next generation of software-based virtualized and cloud communications technologies to drive new, incremental revenue, while protecting their existing revenue streams. Ribbon's software solutions provide a secure way for its customers to connect and leverage multivendor, multiprotocol communications systems and applications across their networks and the cloud, around the world and in a rapidly changing ecosystem of IP-enabled devices, such as smartphones and tablets. In addition, Ribbon's software solutions secure cloud-based delivery of UC solutions - both for service providers transforming to a cloud-based network and for enterprises using cloud-based UC. Ribbon sells its software solutions through both direct sales and indirect channels globally, leveraging the assistance of resellers, and provides ongoing support to its customers through a global services team with experience in design, deployment and maintenance of some of the world's largest software IP networks.

(2) BASIS OF PRESENTATION AND SUMMARY OF SIGNIFICANT ACCOUNTING POLICIES**Basis of Presentation**

The consolidated financial statements have been prepared in United States dollars, in accordance with accounting principles generally accepted in the United States ("GAAP").

On August 3, 2018 (the "Edgewater Acquisition Date"), the Company completed the acquisition of Edgewater Networks, Inc. ("Edgewater" and such acquisition, the "Edgewater Acquisition"). The financial results of Edgewater are included in the Company's consolidated financial statements for the period subsequent to the Edgewater Acquisition Date.

On October 27, 2017 (the "Merger Date"), Sonus Networks, Inc. ("Sonus") consummated an acquisition as specified in an Agreement and Plan of Merger (the "Merger Agreement") with Solstice Sapphire Investments, Inc. ("NewCo") and certain of its wholly-owned subsidiaries, GENBAND Holdings Company, GENBAND Inc. and GENBAND II, Inc. (collectively, "GENBAND") pursuant to which, following a series of merger transactions (collectively, the "Merger"), Sonus and GENBAND each became a wholly-owned subsidiary of NewCo, with Sonus deemed the acquirer in the transaction for accounting purposes. Subsequently, on November 28, 2017, the Company changed its name to "Ribbon Communications Inc."

The consolidated financial statements of the Company represent the consolidated financial statements of Sonus, prior to the Merger Date, and the consolidated financial statements of Ribbon, on and after the Merger Date. The financial results of GENBAND are included in Ribbon's consolidated financial statements beginning on the Merger Date.

On September 26, 2016 (the "Taqua Acquisition Date"), the Company acquired Taqua, LLC ("Taqua"). The financial results of Taqua are included in the Company's consolidated financial statements beginning on the Taqua Acquisition Date.

Significant Accounting Policies***Principles of Consolidation***

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

Use of Estimates and Judgments

The preparation of financial statements in conformity with GAAP requires management to make estimates and assumptions that affect the reported amounts of assets and liabilities and disclosure of contingent assets and liabilities at the

RIBBON COMMUNICATIONS INC.**Notes to Consolidated Financial Statements (Continued)**

date of the financial statements and the reported amounts of revenue and expenses during the reporting periods. Significant estimates and judgments relied upon in preparing these consolidated financial statements include accounting for business combinations, revenue recognition for multiple element arrangements, inventory valuations, assumptions used to determine the fair value of stock-based compensation, intangible assets and goodwill valuations, legal contingencies and recoverability of Ribbon's net deferred tax assets and the related valuation allowances. Ribbon regularly assesses these estimates and records changes in estimates in the period in which they become known. Ribbon bases its estimates on historical experience and various other assumptions that it believes to be reasonable under the circumstances. Actual results could differ from those estimates.

Reclassifications

Certain reclassifications, not affecting previously reported net loss, have been made to the previously issued financial statements to conform to the current period presentation.

Business Combinations

The Company recognizes identifiable assets acquired and liabilities assumed at their acquisition date fair values. Goodwill as of the acquisition date is measured as the excess of consideration transferred over the net of the acquisition date fair values of the assets acquired and the liabilities assumed and represents the expected future economic benefits arising from other assets acquired in the business combination that are not individually identified and separately recognized. While the Company uses its best estimates and assumptions as part of the purchase price allocation process to accurately value assets acquired and liabilities assumed at the acquisition date, its estimates are inherently uncertain and subject to refinement. As a result, during the measurement period, which may be up to one year from the acquisition date, the Company records adjustments to the assets acquired and liabilities assumed with the corresponding offset to goodwill to the extent that it identifies adjustments to the preliminary purchase price allocation. Upon the conclusion of the measurement period or final determination of the values of assets acquired and liabilities assumed, whichever comes first, any subsequent adjustments are recorded to the consolidated statements of operations.

Revenue Recognition

Effective January 1, 2018, the Company adopted Accounting Standards Codification ("ASC") 606, *Revenue from Contracts with Customers* ("ASC 606" or the "New Revenue Standard") using the modified retrospective approach. As a result, the Company changed its accounting policy for revenue recognition, which is described below and in Note 14.

The Company derives revenue from two primary sources: products and services. Product revenue includes the Company's appliances and software that function together to deliver the products' essential functionality. Software and appliances are also sold on a standalone basis. Services include customer support (software updates, upgrades and technical support), consulting, design services, installation services and training. Generally, contracts with customers contain multiple performance obligations, consisting of products and services. For these contracts, the Company accounts for individual performance obligations separately if they are considered distinct.

When an arrangement contains more than one performance obligation, the Company will generally allocate the transaction price to each performance obligation on a relative standalone selling price basis. The Company utilizes the observable price of goods and services when they are sold separately to similar customers in order to estimate standalone selling price.

The Company's software licenses typically provide a perpetual right to use the Company's software. The Company also sells term-based software licenses that expire and Software-as-a-Service ("SaaS")-based software which are referred to as subscription arrangements. The Company does not customize its software nor are installation services required, as the customer has a right to utilize internal resources or a third-party service company. The software and appliances are delivered before related services are provided and are functional without professional services or customer support. The Company has concluded that its software licenses are functional intellectual property that are distinct, as the user can benefit from the software on its own. The product revenue is typically recognized upon transfer of control or when the software is made available for download, as this is the point that the user of the software can direct the use of, and obtain substantially all of the remaining benefits from, the functional intellectual property. The Company does not recognize software revenue related

RIBBON COMMUNICATIONS INC.

Notes to Consolidated Financial Statements (Continued)

to the renewal of subscription software licenses earlier than the beginning of the subscription period. Appliance products are generally sold with software to provide the customer solution.

The Company offers warranties on its products. Certain of the Company's warranties are considered to be assurance-type in nature and do not cover anything beyond ensuring that the product is functioning as intended. Based on the guidance in ASC 606, assurance-type warranties do not represent separate performance obligations. The Company also sells separately-priced maintenance service contracts which qualify as service-type warranties and represent separate performance obligations. The Company does not allow and has no history of accepting product returns.

Services revenue includes revenue from customer support and other professional services. Customer support includes software updates on a when-and-if-available basis, telephone support, integrated web-based support and bug fixes or patches. The Company sells its customer support contracts at a percentage of list or net product price related to the support. Customer support revenue is recognized ratably over the term of the customer support agreement, which is typically one year.

The Company's professional services include consulting, technical support, resident engineer services, design services and installation services. Because control transfers over time, revenue is recognized based on progress toward completion of the performance obligation. The method to measure progress toward completion requires judgment and is based on the nature of the products or services to be provided. The Company generally uses the input method to measure progress for its contracts because it believes such method best depicts the transfer of assets to the customer, which occurs as the Company incurs costs for the contracts. Under the cost-to-cost measure of progress, the progress toward completion is measured based on the ratio of costs incurred to date to the total estimated costs at completion of the performance obligation. When the measure of progress is based upon expended labor, progress toward completion is measured as the ratio of labor time expended to date vs the total estimated labor time required to complete the performance obligation. Revenue is recorded proportionally as costs are incurred or labor is expended. Costs to fulfill these obligations include internal labor as well as subcontractor costs.

Customer training includes courses offered by the Company. The related revenue is typically recognized as the training services are performed.

Financial Instruments

The carrying amounts of Ribbon's financial instruments approximate their fair values and include cash equivalents, investments, accounts receivable, borrowings under a revolving credit facility, accounts payable and long-term debt.

All investments in marketable securities are classified as available-for-sale and are reported at fair value, with unrealized gains and losses excluded from earnings and reported, net of tax, in Accumulated other comprehensive loss, which is a component of stockholders' equity. Unrealized losses that are determined to be other-than-temporary, based on current and expected market conditions, are recognized in earnings. Declines in fair value determined to be credit-related are charged to earnings. The cost of marketable securities sold is determined by the specific identification method.

Financial instruments with remaining maturities or that are due within one year from the balance sheet date are classified as current. Financial instruments with remaining maturities or that are payable more than one year from the balance sheet date are classified as noncurrent.

Cash and Cash Equivalents

Cash equivalents are stated at fair value. Cash equivalents are liquid securities that have remaining maturities of three months or less at the date of purchase.

Restricted Cash

The Company classifies as restricted cash all cash pledged as collateral to secure long-term obligations and all cash whose use is otherwise limited by contractual provisions. Restricted cash is recorded within other current assets on the consolidated balance sheet.

RIBBON COMMUNICATIONS INC.
Notes to Consolidated Financial Statements (Continued)

Foreign Currency Translation

For foreign subsidiaries where the functional currency is the local currency, assets and liabilities are translated into U.S. dollars at the current exchange rate on the balance sheet date. Revenue and expenses are translated at average rates of exchange prevailing during each period. Translation adjustments for these subsidiaries are included in Accumulated other comprehensive income.

For foreign subsidiaries where the functional currency is the U.S. dollar, monetary assets and liabilities are translated into U.S. dollars at the current exchange rate on the balance sheet date. Nonmonetary assets and liabilities are remeasured into U.S. dollars at historical exchange rates. Revenue and expense items are translated at average rates of exchange prevailing during each period.

Realized and unrealized foreign currency gains and losses arising from transactions denominated in currencies other than the subsidiary's functional currency are reflected in earnings.

Effective on the Merger Date, the Company began to record its foreign currency gains (losses) as a component of Other income (expense), net. The Company did not reclassify amounts previously recorded within General and administrative expenses as the amounts were not material to the consolidated results of the Company. The Company recognized a net foreign currency loss of \$4.6 million for the year ended December 31, 2018, a net foreign currency gain of \$0.7 million for the year ended December 31, 2017 and a net foreign currency loss of \$0.3 million for the year ended December 31, 2016.

Inventory

Inventory is recorded at the lower of cost or market value using the first-in, first-out convention. The Company reduces the carrying value of inventory for those items that are potentially excess, obsolete or slow-moving based on changes in customer demand, technology developments or other economic factors.

Ribbon writes down evaluation equipment at the time of shipment to its customers, as it is probable that the inventory value will not be realized.

Deferred product costs represent deferred cost of revenue for product shipments to customers prior to satisfaction of Ribbon's revenue recognition criteria. The Company classifies inventory that is not expected to be consumed within one year from the balance sheet date as noncurrent and includes such inventory as a component of Other assets.

Property and Equipment

Property and equipment are stated at cost, net of accumulated depreciation. Expenditures for maintenance and repairs are charged to expense as incurred. Depreciation is computed using the straight-line method over the estimated useful lives of the related assets, which range from two to five years. Leasehold improvements are amortized over the lesser of the lease term or five years. When an asset is sold or retired, the cost and related accumulated depreciation or amortization are eliminated, and the resulting gain or loss, if any, is recognized in income (loss) from operations in the consolidated statement of operations. The Company reviews property and equipment for impairment in the same manner as intangible assets discussed below.

Software development costs associated with internal use software are incurred in three stages of development: the preliminary project stage, the application development stage and the post-implementation stage. Costs incurred during the preliminary project and post-implementation stages are expensed as incurred. Certain qualifying costs incurred during the application development stage are capitalized as property and equipment. Internal use software is amortized on a straight-line basis over its estimated useful life of three years, beginning when the software is ready for its intended use.

Intangible Assets and Goodwill

Intangible assets are comprised of certain intangible assets arising from the Merger, the Edgewater Acquisition and previous acquisitions. These intangible assets include a combination of in-process research and development, developed technology, customer relationships, trade names, and internal use software. Intangible assets are reviewed for impairment

RIBBON COMMUNICATIONS INC.**Notes to Consolidated Financial Statements (Continued)**

when events or changes in circumstances indicate that their carrying amounts may not be recoverable based upon the estimated undiscounted cash flows. Recoverability of intangible assets with estimated lives and other long-lived assets is measured by a comparison of the carrying amount of an asset or asset group to future net undiscounted cash flows expected to be generated by the asset or asset group. If these comparisons indicate that an asset is not recoverable, the Company will recognize an impairment loss for the amount by which the carrying value of the asset or asset group exceeds the related estimated fair value. Estimated fair value is based on either discounted future operating cash flows or appraised values, depending on the nature of the asset. The Company amortizes its intangible assets over their respective useful lives, with the exception of in-process research and development, which has an indefinite life until the product is generally available, at which time such asset is typically reclassified to developed technology, and the Company begins to amortize this asset. See Note 9 for additional information regarding the Company's intangible assets.

Goodwill is recorded when the consideration for an acquisition exceeds the fair value of net tangible and identifiable intangible assets acquired. Goodwill is not amortized, but instead is tested for impairment at least annually, or more frequently if indicators of potential impairment exist, by comparing the fair value of the Company's reporting unit to its carrying value.

The Company's annual testing for impairment of goodwill is completed as of November 30. The Company operates as a single operating segment with one reporting unit and consequently evaluates goodwill for impairment based on an evaluation of the fair value of the Company as a whole. The Company performed its step one assessments for each of the years ended December 31, 2018, 2017 and 2016 and determined each year that its fair value was in excess of its carrying value and accordingly, there was no impairment of goodwill. At certain times during the year ended December 31, 2018, including at the Company's annual testing date of November 30, 2018, the Company's market capitalization was below its book value. While the Company has concluded that the fair value exceeds carrying value at that date, the Company regularly monitors for changes in circumstances, including changes to the Company's performance, that could result in impairment of goodwill.

Other Assets

Other assets are primarily comprised of the long-term portions of inventory, prepaid expenses and deposits.

Stock-Based Compensation

The Company's stock-based compensation cost is measured at the grant date based on the fair value of the award and is recognized as expense over the requisite service period, which generally represents the vesting period, and includes an estimate of the awards that will be forfeited.

The Company uses the Black-Scholes valuation model for estimating the fair value on the date of grant of stock options. The fair value of stock option awards is affected by the Company's stock price as well as valuation assumptions, including the volatility of Ribbon's stock price, expected term of the option, risk-free interest rate and expected dividends.

The Company may grant performance-based stock units ("PSUs") that include a market condition to certain of its executives. The Company uses a Monte Carlo simulation approach to model future stock price movements based upon the risk-free rate of return, the volatility of each entity and the pair-wise covariance between each entity. These results are then used to calculate the grant date fair values of the PSUs.

Research and Development Costs

Research and development costs are expensed as incurred.

Concentrations of Credit Risk

The financial instruments that potentially subject Ribbon to concentrations of credit risk are cash, cash equivalents, investments and accounts receivable. The Company's cash equivalents and investments were managed by one financial institution at both December 31, 2018 and 2017. Historically, the Company has not experienced significant losses due to such bank depository concentration.

RIBBON COMMUNICATIONS INC.
Notes to Consolidated Financial Statements (Continued)

Certain components and software licenses from third parties used in Ribbon's products are procured from single sources of supply. The failure of a supplier, including a subcontractor, to deliver on schedule could delay or interrupt Ribbon's delivery of products and thereby materially adversely affect Ribbon's revenue and operating results.

Advertising Costs

Advertising costs are expensed as incurred and included as a component of Sales and marketing expense in the Company's consolidated statements of operations. Advertising expenses were \$0.5 million for the year ended December 31, 2018, \$0.3 million for the year ended December 31, 2017 and \$0.1 million for the year ended December 31, 2016.

Operating Segments

The Company operates in a single segment, as the chief operating decision maker makes decisions and assesses performance at the company level. Operating segments are identified as components of an enterprise about which separate discrete financial information is utilized for evaluation by the chief operating decision maker in making decisions regarding resource allocation and assessing performance. To date, the chief operating decision maker has made such decisions and assessed performance at the company level, as one segment. The Company's chief operating decision maker is its President and Chief Executive Officer.

Loss Contingencies and Reserves

Ribbon is subject to ongoing business risks arising in the ordinary course of business, including legal claims, that affect the estimation process of the carrying value of assets, the recording of liabilities and the possibility of various loss contingencies. An estimated loss contingency is accrued when it is probable that a liability has been incurred or an asset has been impaired and the amount of loss can be reasonably estimated. Ribbon regularly evaluates current information available to determine whether such amounts should be adjusted and records changes in estimates in the period they become known.

An allowance for doubtful accounts is estimated based on the Company's assessment of the collectability of specific customer accounts.

Ribbon accrues for royalties for technology that it licenses from vendors based on established royalty rates and usage. In certain cases, Ribbon has been contacted by third parties who claim that Ribbon's products infringe on certain intellectual property of a third party. Ribbon evaluates these claims and accrues amounts when it is probable that the obligation has been incurred and the amounts are reasonably estimable.

Accounting for Income Taxes

Deferred tax assets and liabilities are recognized for the expected future consequences of events that have been reflected in the consolidated financial statements. Deferred tax assets and liabilities are determined based on the differences between the financial reporting and tax basis of assets and liabilities and operating loss carryforwards, using tax rates expected to be in effect for the years in which the differences are expected to reverse. The Company records valuation allowances to reduce deferred income tax assets to the amount that is more likely than not to be realized.

The Company has provided for income taxes on the undistributed earnings of its non-U.S. subsidiaries as of December 31, 2018, with the exception of the Company's Irish subsidiary, as the Company does not plan to permanently reinvest these amounts outside the United States. The repatriation of the undistributed earnings would result in withholding taxes imposed on the repatriation. Consequently, the Company has recorded a tax liability of \$4.5 million, primarily consisting of withholding and distribution taxes, relating to undistributed earnings from these subsidiaries as of December 31, 2018. Had the earnings of the Irish subsidiary been determined to not be permanently reinvested outside the U.S., no additional deferred tax liability would be required due to no withholding taxes or income tax expense being imposed on such repatriation.

The Company determines whether it is more likely than not that a tax position will be sustained upon examination. If it is not more likely than not that a position will be sustained, no amount of the benefit attributable to the position is recognized. The tax benefit to be recognized of any tax position that meets the more likely than not recognition threshold is calculated as

RIBBON COMMUNICATIONS INC.**Notes to Consolidated Financial Statements (Continued)**

the largest amount that is more than 50% likely of being realized upon resolution of the contingency. The Company accounts for interest and penalties related to uncertain tax positions as part of its provision for income taxes.

Defined Benefit Plans

The Company has defined benefit plans for some of its employees at various international locations. The Company recognizes retirement benefit assets or liabilities in the consolidated balance sheets reflecting the funded status of pension and other retirement benefit plans. Retirement benefit assets and liabilities are adjusted for the difference between the benefit obligations and the plan assets at fair value (measured at year-end), with the offset recorded directly to stockholders' equity through accumulated other comprehensive income (loss), net of tax. The amount recorded in stockholders' equity represents the after-tax unamortized actuarial gains or losses, unamortized transition obligations and unamortized prior service costs.

Recent Accounting Pronouncements

In May 2017, the Financial Accounting Standards Board ("FASB") issued ASU 2017-09, *Compensation - Stock Compensation (Topic 718): Scope of Modification Accounting* ("ASU 2017-09"), which amends the scope of modification accounting for share-based payment arrangements such that an entity would not apply modification accounting if the fair value, vesting conditions and classification of the awards are the same immediately before and after the modification. ASU 2017-09 became effective for the Company beginning January 1, 2018 for both interim and annual reporting periods. The adoption of ASU 2017-09 did not have a material impact on the Company's consolidated financial statements.

In March 2017, the FASB issued ASU 2017-07, *Compensation - Retirement Benefits (Topic 715): Improving the Presentation of Net Periodic Pension Cost and Net Periodic Post Retirement Benefit Cost* ("ASU 2017-07"). ASU 2017-07 amends the requirements in ASC 715, *Compensation - Retirement Benefits* ("ASC 715") to require entities to disaggregate the current-service-cost component from the other components of net benefit cost (the "other components") and include it with other current compensation costs for related employees, present the other components elsewhere in the income statement and outside of income from operations if such a subtotal is presented and disclose the income statement lines that contain the other components if they are not presented on appropriately described separate lines. ASU 2017-07 became effective for the Company beginning January 1, 2018 for both interim and annual reporting periods. The adoption of ASU 2017-07 did not have a material impact on the Company's consolidated financial statements.

In August 2016, the FASB issued ASU 2016-15, *Statement of Cash Flows (Topic 230): Classification of Certain Cash Receipts and Cash Payments* ("ASU 2016-15"), which adds or clarifies guidance on eight cash flow issues, including debt prepayment or debt extinguishment costs, settlement of zero-coupon debt instruments or certain other debt instruments, contingent consideration payments made after a business combination, proceeds from the settlement of insurance claims, proceeds from the settlement of corporate-owned life insurance policies, distributions received from equity method investees, beneficial interests in securitization transactions and separately identifiable cash flows and application of the predominance principle. ASU 2016-15 became effective for the Company beginning January 1, 2018 for both interim and annual reporting periods. Entities must apply the guidance retrospectively to all periods presented but may apply it prospectively from the earliest date practicable if retrospective application would be impracticable. The adoption of ASU 2016-15 did not have a material impact on the Company's consolidated financial statements.

In August 2018, the FASB issued ASU 2018-15, *Intangibles - Goodwill and Other - Internal-Use Software (Subtopic 350-40): Customer's Accounting for Implementation Costs Incurred in a Cloud Computing Arrangement That Is a Service Contract* ("ASU 2018-15"), which provides guidance on implementation costs incurred in a cloud computing arrangement ("CCA") that is a service contract. ASU 2018-15 amends ASC 350, *Intangibles - Goodwill and Other* ("ASC 350") to include in its scope implementation costs of a CCA that is a service contract and clarifies that a customer should apply the guidance in ASC 350-40 to determine which implementation costs should be capitalized in such a CCA. ASU 2018-15 is effective for the Company beginning January 1, 2020. The Company is currently assessing the potential impact of the adoption of ASU 2018-15 on its consolidated financial statements.

In February 2016, the FASB issued ASU 2016-02, *Leases (Topic 842) Section A - Leases: Amendments to the FASB Accounting Standards Codification* ("ASU 2016-02"), its new standard on accounting for leases. ASU 2016-02 introduces a lessee model that brings most leases onto the balance sheet. ASU 2016-02 eliminates the current GAAP requirement for an entity to use bright-line tests in determining lease classification. ASU 2016-02 became effective for the Company for both

RIBBON COMMUNICATIONS INC.**Notes to Consolidated Financial Statements (Continued)**

interim and annual periods beginning January 1, 2019. Upon adoption of ASU 2016-02, the Company will recognize lease obligations for the right to use these assets in connection with its existing lease agreements. In July 2018, the FASB issued ASU 2018-11, *Leases (Topic 842): Targeted Improvements* ("ASU 2018-11") and ASU 2018-10, *Codification Improvements to Topic 842, Leases*, both of which provided improvements to certain aspects of the guidance in ASC 842, *Leases*. In January 2018, the FASB issued ASU 2018-01, *Leases (Topic 842): Land Easement Practical Expedient for Transition to Topic 842*, which provided additional clarification and implementation guidance. The Company has elected to use the alternative transition method as described in ASU 2018-11, which allows entities to initially apply ASU 2016-02 at the adoption date and recognize a cumulative-effect adjustment to the opening balance of retained earnings, with no subsequent adjustments to prior period lease costs for comparability. To illustrate the magnitude of this change, the amount of the Company's off-balance sheet operating leases at December 31, 2018 is disclosed in Note 22. Beginning on January 1, 2019, the Company's operating leases, excluding those with terms less than 12 months, were discounted and recorded as assets and liabilities in the Company's consolidated balance sheet.

In addition, the FASB has issued the following accounting pronouncements, none of which the Company believes will have a material impact on its consolidated financial statements:

In August 2018, the FASB issued ASU 2018-14, *Compensation - Retirement Benefits - Defined Benefit Plans - General (Subtopic 715-20): Disclosure Framework - Changes to the Disclosure Requirements for Defined Benefit Plans* ("ASU 2018-14"), which amends ASC 715 to add, remove and clarify disclosure requirements related to defined benefit pension and other postretirement plans. ASU 2018-14 is effective for the Company beginning January 1, 2020.

In August 2018, the FASB issued ASU 2018-13, *Fair Value Measurement (Topic 820): Disclosure Framework - Changes to the Disclosure Requirements for Fair Value Measurement* ("ASU 2018-13"), which changes the fair value measurement requirements of ASC 820, *Fair Value Measurement* ("ASC 820"). ASU 2018-13 is effective for the Company beginning January 1, 2020 for both interim and annual reporting.

In July 2018, the FASB issued ASU 2018-09, *Codification Improvements* ("ASU 2018-09"), which contains amendments to clarify, correct errors in or make minor improvements to the Codification. ASU 2018-09 makes improvements to multiple topics, including but not limited to comprehensive income, debt, income taxes related to both stock-based compensation and business combinations, fair value measurement and defined contribution benefit plans. ASU 2018-09 became effective for the Company beginning January 1, 2019.

In June 2018, the FASB issued ASU 2018-07, *Compensation - Stock Compensation (Topic 718): Improvements to Nonemployee Share-Based Payment Accounting* ("ASU 2018-07"), which expands the scope of ASC 718, *Compensation - Stock Compensation* ("ASC 718"), to include all share-based payment arrangements related to the acquisition of goods and services from both nonemployees and employees. As a result, most of the guidance in ASC 718 associated with employee share-based payments, including most of its requirements related to classification and measurement, applies to nonemployee share-based payment arrangements. ASU 2018-07 became effective for the Company beginning January 1, 2019.

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* ("ASU 2018-02"), which amends ASC 220, *Income Statement - Reporting Comprehensive Income*, to allow a reclassification from accumulated other comprehensive income to retained earnings for stranded tax effects resulting from the Tax Cuts and Jobs Act (the "Tax Act") and requires entities to provide certain disclosures regarding stranded tax effects. ASU 2018-02 became effective for the Company beginning January 1, 2019.

In October 2016, the FASB issued ASU 2016-16, *Income Taxes (Topic 740): Intra-Entity Transfers of Assets Other Than Inventory* ("ASU 2016-16"), which removes the prohibition in ASC 740, *Income Taxes*, against the immediate recognition of the current and deferred income tax effects of intra-entity transfers of assets other than inventory. ASU 2016-16 became effective for the Company beginning January 1, 2019 for both interim and annual reporting periods.

In June 2016, the FASB issued ASU 2016-13, *Financial Instruments - Credit Losses (Topic 326): Measurement of Credit Losses on Financial Instruments* ("ASU 2016-13"), which adds an impairment model that is based on expected losses rather than incurred losses. Under ASU 2016-13, an entity recognizes as an allowance its estimate of expected credit losses, which

RIBBON COMMUNICATIONS INC.

Notes to Consolidated Financial Statements (Continued)

the FASB believes will result in more timely recognition of such losses. ASU 2016-13 is effective for the Company beginning January 1, 2020 for both interim and annual reporting periods, with early adoption permitted.

(3) BUSINESS ACQUISITIONS

Edgewater Networks, Inc.

On the Edgewater Acquisition Date, the Company completed its acquisition of Edgewater, a private company headquartered in San Jose, California. The Edgewater Acquisition was completed in accordance with the terms and conditions of the Agreement and Plan of Merger, dated as of June 24, 2018, by and among Ribbon, Merger Sub, Edgewater and Shareholder Representative Services LLC, a Colorado limited liability company, solely in its capacity as the initial holder representative (the "Edgewater Merger Agreement").

Edgewater is a market leader in Network Edge Orchestration for the small and medium enterprise and UC market. The Company believes that the acquisition of Edgewater will allow it to offer its global customer base a complete core-to-edge product portfolio, end-to-end service assurance and analytics solutions, and a fully integrated software-defined SD-WAN service.

As consideration for the Edgewater Acquisition, Ribbon paid, in the aggregate, \$46.4 million of cash, net of cash acquired, and issued 4.2 million shares of Ribbon common stock to Edgewater's selling shareholders and holders of vested in-the-money options and warrants to acquire common stock of Edgewater (the "Edgewater Selling Stakeholders") on the Edgewater Acquisition Date. Pursuant to the Edgewater Merger Agreement and subject to the terms and conditions contained therein, Ribbon agreed to pay the Edgewater Selling Stakeholders an additional \$30 million of cash, \$15 million of which was to be paid 6 months from the closing date and the other \$15 million of which was to be paid as early as 9 months from the closing date and no later than 18 months from the closing date (the exact timing of which would depend on the amount of revenue generated from the sales of Edgewater products in 2018) ("Edgewater Deferred Consideration"). The current portion of this deferred purchase consideration is included as a component of Accrued expenses and other, and the noncurrent portion is included as a component of Other long-term liabilities in the Company's consolidated balance sheet as of December 31, 2018. On February 15, 2019, the Company and the Edgewater Selling Stakeholders agreed to reduce the amount of Edgewater Deferred Consideration from \$30 million to \$21.9 million and agreed that all such deferred consideration will be payable on March 8, 2019.

The Edgewater Acquisition has been accounted for as a business combination and the financial results of Edgewater have been included in the Company's consolidated financial statements for the period subsequent to its acquisition.

As of December 31, 2018, the valuation of acquired assets, identifiable intangible assets and certain assumed liabilities was preliminary. During the fourth quarter of 2018, the Company recorded changes to the initial preliminary purchase price allocation, primarily comprised of a decrease of \$0.7 million to current assets and an increase to other current liabilities of \$0.5 million. These adjustments, along with other immaterial adjustments, resulted in a net increase to goodwill of \$1.3 million since September 30, 2018. The Company is continuing the process of investigating the facts and circumstances existing as of the Edgewater Acquisition Date in order to finalize its valuation. The Company expects to finalize the valuation of the assets acquired and liabilities assumed by the third quarter of 2019.

A summary of the preliminary allocation of the purchase consideration for Edgewater is as follows (in thousands):

RIBBON COMMUNICATIONS INC.
Notes to Consolidated Financial Statements (Continued)

Fair value of consideration transferred:

Cash consideration:	
Cash paid to Edgewater Selling Stakeholders	\$ 51,162
Less cash acquired	(4,773)
Net cash consideration	46,389
Unpaid cash consideration	30,000
Fair value of Ribbon stock issued	30,000
Fair value of equity awards assumed (see Note 16)	747
Fair value of total consideration	<u>\$ 107,136</u>

Fair value of assets acquired and liabilities assumed:

Current assets, net of cash acquired	\$ 16,098
Property and equipment	245
Intangible assets:	
Developed technology	29,500
Customer relationships	26,100
Trade names	1,100
Goodwill	48,053
Other noncurrent assets	103
Deferred revenue	(2,749)
Other current liabilities	(9,926)
Deferred revenue, net of current	(669)
Other long-term liabilities	(719)
	<u>\$ 107,136</u>

The valuation of the acquired intangible assets is inherently subjective and relies on significant unobservable inputs. The Company used an income approach to value the acquired developed technology, customer relationships and trade name intangible assets. The valuation for each of these intangible assets was based on estimated projections of expected cash flows to be generated by the assets, discounted to the present value at discount rates commensurate with perceived risk. The valuation assumptions take into consideration the Company's estimates of customer attrition, technology obsolescence and revenue growth projections. The Company is amortizing the identifiable intangible assets arising from the Edgewater Acquisition in relation to the expected cash flows from the individual intangible assets over their respective useful lives, which have a weighted average life of 8.4 years (see Note 9). Goodwill resulting from the transaction is primarily due to expected synergies between the combined companies and is not deductible for tax purposes.

The Company's revenue for the year ended December 31, 2018 included \$21.5 million of revenue and \$4.3 million of net loss attributable to Edgewater since the Edgewater Acquisition Date. The Company has not provided pro forma financial information, as the historical amounts are not significant to the Company's consolidated financial statements.

GENBAND Merger

On October 27, 2017, Sonus consummated an acquisition as specified in the Merger Agreement with NewCo and GENBAND such that, following the Merger, each of Sonus and GENBAND became a wholly-owned subsidiary of NewCo, with Sonus deemed the acquirer in the transaction for accounting purposes. On November 28, 2017, the Company changed its name to "Ribbon Communications Inc."

Prior to the Merger, GENBAND was a Cayman Islands exempted company limited by shares that was formed on April 7, 2010. Through its wholly owned operating subsidiaries, GENBAND created rapid communications and applications for service providers, enterprises, independent software vendors, system integrators and developers globally. A majority of GENBAND's shares were held by JPMorgan Chase & Co. and managed by One Equity Partners ("OEP"). GENBAND shares were not listed on an exchange or quoted on any automated services, and there was no established trading market for GENBAND shares.

RIBBON COMMUNICATIONS INC.
Notes to Consolidated Financial Statements (Continued)

The Company believes that Sonus' and GENBAND's complementary products, solutions and strategies have positioned the combined company to deliver comprehensive solutions to service providers and enterprises migrating to a virtualized all-IP environment in an expanded customer and global footprint.

Pursuant to the Merger Agreement, NewCo issued 50.9 million shares of Sonus common stock to the GENBAND equity holders, with the number of shares issued in the aggregate to the GENBAND equity holders equal to the number of shares of Sonus common stock outstanding immediately prior to the closing date of the Merger, such that former stockholders of Sonus would own approximately 50%, and former shareholders of GENBAND would own approximately 50%, of the shares of NewCo common stock issued and outstanding immediately following the consummation of the Merger.

In addition, NewCo repaid GENBAND's long-term debt, including both principal and unpaid interest, to a related party of GENBAND totaling \$48.0 million and repaid GENBAND's management fees due to an affiliate of OEP totaling \$10.3 million. NewCo also issued a promissory note for \$22.5 million to certain GENBAND equity holders.

NewCo assumed the liability under GENBAND's revolving credit facility with Silicon Valley Bank, which had outstanding borrowings and letters of credit totaling \$17.9 million and \$2.9 million, respectively, at October 27, 2017. At October 27, 2017, the outstanding borrowings had an average interest rate of 4.67%.

The Merger has been accounted for as a business combination and the financial results of GENBAND have been included in the Company's consolidated financial statements for the period subsequent to its acquisition.

As of December 31, 2018, the valuation of acquired assets, identifiable intangible assets and certain assumed liabilities was final, as the Company finalized the valuation of the assets acquired and liabilities assumed in the third quarter of 2018. A summary of the final allocation of the purchase consideration for GENBAND is as follows (in thousands):

Fair value of consideration transferred:	
Cash consideration:	
Repayment of GENBAND long-term debt and accrued interest, related party	\$ 47,973
Payment of GENBAND management fees due to majority shareholder	10,302
Less cash acquired	(15,324)
Net cash consideration	42,951
Fair value of Sonus stock issued	413,982
Promissory note issued to GENBAND equity holders	22,500
Fair value of total consideration	<u>\$ 479,433</u>
Fair value of assets acquired and liabilities assumed:	
Current assets, net of cash acquired	\$ 99,126
Property and equipment	16,770
Intangible assets:	
In-process research and development	5,600
Developed technology	129,000
Customer relationships	101,300
Trade names	900
Goodwill	285,825
Other noncurrent assets	6,732
Revolving credit facility	(17,930)
Deferred revenue	(32,390)
Other current liabilities	(80,023)
Deferred revenue, net of current	(6,804)
Other long-term liabilities	(28,673)
	<u>\$ 479,433</u>

RIBBON COMMUNICATIONS INC.**Notes to Consolidated Financial Statements (Continued)**

The valuation of acquired intangible assets is inherently subjective and relies on significant unobservable inputs. The Company used an income approach to value the acquired developed technology, customer relationships and trade name intangible assets. The valuation for each of these intangible assets was based on estimated projections of expected cash flows to be generated by the assets, discounted to the present value at discount rates commensurate with perceived risk. The valuation assumptions took into consideration the Company's estimates of customer attrition, technology obsolescence and revenue growth projections. The Company will reclassify its in-process research and development intangible asset to a developed technology intangible asset in the period that the related product becomes generally available and will begin to record amortization expense for the developed technology intangible asset at that time. The Company is amortizing the identifiable intangible assets arising from the Merger in relation to the expected cash flows from the individual intangible assets over their respective useful lives, which have a weighted average life of 8.3 years (see Note 9). Goodwill resulting from the transaction is primarily due to expected synergies between the combined companies and is not deductible for tax purposes.

Pro Forma Results

The following unaudited pro forma information presents the condensed combined results of operations of Sonus and GENBAND for the years ended December 31, 2017 and 2016 as if the Merger had been completed on January 1, 2016, with adjustments to give effect to pro forma events that are directly attributable to the Merger. These pro forma adjustments include a reduction of historical GENBAND revenue for the fair value adjustment related to acquired deferred revenue, an increase in amortization expense for the acquired identifiable intangible assets, a decrease in historical GENBAND interest expense reflecting the extinguishment of certain of GENBAND's debt as a result of the Merger, net of the interest expense recorded in connection with the promissory note issued to certain GENBAND equity holders as part of the purchase consideration and the elimination of revenue and costs related to sales transactions between Sonus and GENBAND. Pro forma adjustments also include the elimination of acquisition- and integration-related costs directly attributable to the acquisition and incremental stock-based compensation expense directly attributable to the acquisition from the year ended December 31, 2017 and inclusion of such costs in the year ended December 31, 2016.

The unaudited pro forma results do not reflect any operating efficiencies or potential cost savings that may result from the consolidation of the operations of Sonus and GENBAND. Accordingly, these unaudited pro forma results are presented for illustrative purposes and are not intended to represent or be indicative of the actual results of operations of the combined company that would have been achieved had the Merger occurred at the beginning of the periods presented, nor are they intended to represent or be indicative of future results of operations (in thousands, except per share amounts):

	Year ended December 31,	
	2017	2016
	(unaudited)	
Revenue	\$ 615,286	\$ 631,914
Net loss	\$ (69,741)	\$ (147,394)
Loss per share	\$ (0.69)	\$ (1.46)

Taqua, LLC

The Company acquired Taqua, a privately-held company, on September 26, 2016 (the "Taqua Acquisition Date"). Taqua enables the transformation of software-based service provider networks to deliver next-generation voice, video and messaging services, including VoIP, VoWiFi and VoLTE. In consideration for the acquisition of Taqua, Sonus paid \$19.9 million in cash to the sellers on the Taqua Acquisition Date, net of cash acquired. The Company also entered into an Earn-Out Agreement, dated as of September 26, 2016, with Taqua Holdings, LLC and Jeffrey L. Brawner, the seller representative in the transaction, under which there is the potential for additional cash payments of up to \$65 million in the aggregate to the sellers if certain annual revenue thresholds are exceeded as measured annually through 2020. The Company had initially recorded \$10 million of contingent consideration as of the Taqua Acquisition Date, with the estimate based on historical sales and probability weighted cash flows related to forecasted sales. Because there are unobservable inputs to the valuation methodology that are significant to the measurement of its fair value, namely, forecasted sales, the Company had categorized the earn-out at Level 3 within the fair value hierarchy. During the fourth quarter of 2016, the Company reassessed the historical and updated forecasted sales and accordingly, reversed the previous estimated contingent consideration such that as of December 31, 2016, no incremental

RIBBON COMMUNICATIONS INC.**Notes to Consolidated Financial Statements (Continued)**

contingent consideration was recorded. In July 2017, Taqua Holdings, LLC ("Holdings") filed a lawsuit against the Company alleging that the Company had breached the Earn-Out Agreement. Following mediation, in April 2018, the Company and Holdings entered into a settlement agreement pursuant to which the Company agreed to release the \$0.6 million of remaining funds held in escrow and to pay an additional \$1.4 million to Holdings in lieu of any future payments under the Earn-Out Agreement (the "Taqua Settlement Agreement"). The Company paid the total amount due under the Taqua Settlement Agreement of \$2.0 million in April 2018.

The transaction has been accounted for as a business combination and the financial results of Taqua have been included in the Company's consolidated financial statements for the period subsequent to its acquisition.

The Company finalized its valuation of the identifiable intangible assets in the second quarter of 2017. During the first quarter of 2017 and the fourth quarter of 2016, the Company recorded changes to the initial preliminary purchase price allocation. The primary adjustments in the first quarter of 2017 were a \$0.4 million increase to current liabilities and a \$0.1 million increase to noncurrent liabilities. During the fourth quarter of 2016, the Company recorded changes to the initial preliminary purchase price allocation. The primary adjustments recorded in the fourth quarter of 2016 were the aforementioned reversal of the \$10 million of previously recorded contingent consideration, a reduction of \$12.1 million to the developed technology intangible asset and an increase of \$5.5 million to the customer relationship intangible asset. These adjustments, as well as other immaterial adjustments to other balance sheet accounts, resulted in a net reduction to goodwill of \$2.2 million. Based on this final purchase price allocation, the Company recorded \$9.6 million of goodwill, which is primarily due to expected synergies between the combined companies and expanded market opportunities resulting from the expanded product offering portfolio. The goodwill is deductible for tax purposes.

A summary of the final allocation of the purchase consideration for Taqua is as follows (in thousands):

Fair value of consideration transferred:	
Cash, net of cash acquired	\$ 19,919
Fair value of assets acquired and liabilities assumed:	
Current assets	\$ 3,347
Property and equipment	1,478
Intangible assets:	
Developed technology	2,100
Customer relationships	9,510
Goodwill	9,581
Other noncurrent assets	23
Current liabilities	(5,435)
Long-term liabilities	(685)
	<u>\$ 19,919</u>

The valuation of acquired intangible assets is inherently subjective and relies on significant unobservable inputs. The Company used an income approach to value the acquired developed technology and customer relationship intangible assets. The valuation for each of these intangible assets was based on estimated projections of expected cash flows to be generated by the assets, discounted to the present value at discount rates commensurate with perceived risk. The valuation assumptions took into consideration the Company's estimates of technology attrition and revenue growth projections. The Company is amortizing the identifiable intangible assets in relation to the expected cash flows from the individual intangible assets over their respective useful lives (see Note 9).

The Company's revenue for the year ended December 31, 2016 included \$1.9 million of revenue attributable to Taqua since the Taqua Acquisition Date. The inclusion of Taqua's operations for the period from the Taqua Acquisition Date to December 31, 2016 in the Company's financial results for the year ended December 31, 2016 increased the Company's loss by \$4.7 million. The Company has not provided pro forma financial information, as the historical amounts were not significant to the Company's consolidated financial statements.

RIBBON COMMUNICATIONS INC.**Notes to Consolidated Financial Statements (Continued)****Acquisition- and Integration-Related Expenses**

Acquisition- and integration-related expenses include those expenses related to acquisitions that would otherwise not have been incurred by the Company, including professional and services fees, such as legal, audit, consulting, paying agent and other fees, and expenses related to cash payments to certain former executives of the acquired businesses in connection with their employment agreements. Integration-related expenses represent incremental costs related to combining the Company and its business acquisitions, such as third-party consulting and other third-party services related to merging the previously separate companies' systems and processes. The acquisition- and integration-related expenses recorded in the year ended December 31, 2018 primarily related to the Merger, with nominal amounts related to the acquisition of Edgewater and other acquisition-related activities. The amounts recorded in the year ended December 31, 2017 primarily related to the Merger, with a nominal amount related to the acquisition of Taqua. The amount recorded in the year ended December 31, 2016 related to professional fees in connection with the acquisition of Taqua.

The components of acquisition- and integration-related costs incurred in the years ended December 31, 2018, 2017 and 2016 are as follows (in thousands):

	Year ended December 31,		
	2018	2017	2016
Professional and services fees (acquisition-related)	\$ 7,627	\$ 11,916	\$ 1,152
Management bonuses (acquisition-related)	1,972	931	—
Integration-related expenses	7,352	1,916	—
	<u>\$ 16,951</u>	<u>\$ 14,763</u>	<u>\$ 1,152</u>

(4) EARNINGS (LOSS) PER SHARE

Basic earnings (loss) per share is computed by dividing net income (loss) by the weighted average number of shares outstanding during the period. For periods in which the Company reports net income, diluted net income per share is determined by using the weighted average number of common and dilutive common equivalent shares outstanding during the period unless the effect is antidilutive.

The calculations of shares used to compute basic and diluted loss per share are as follows (in thousands):

	Year ended December 31,		
	2018	2017	2016
Weighted average shares outstanding—basic	103,916	58,822	49,385
Potential dilutive common shares	—	—	—
Weighted average shares outstanding—diluted	<u>103,916</u>	<u>58,822</u>	<u>49,385</u>

Options to purchase the Company's common stock, unvested shares of restricted stock, unvested shares underlying performance-based stock grants and shares in connection with future purchases under the Company's Amended and Restated 2000 Employee Stock Purchase Plan, as amended (the "ESPP"), aggregating 3.1 million shares for the year ended December 31, 2018, 2.5 million shares for the year ended December 31, 2017 and 8.0 million shares for the year ended December 31, 2016 have not been included in the computation of diluted loss per share because their effect would have been antidilutive.

(5) CASH EQUIVALENTS AND INVESTMENTS

The Company invests in debt instruments, primarily U.S. government-backed, municipal and corporate obligations, which management believes to be high quality (investment grade) credit instruments.

During the year ended December 31, 2018, the Company sold \$12.5 million of its available-for-sale securities, which it used for acquisition-related payments in connection with the Edgewater Acquisition and to support integration-related and restructuring activities in connection with the Merger. During the year ended December 31, 2017, the Company sold \$51.6

RIBBON COMMUNICATIONS INC.
Notes to Consolidated Financial Statements (Continued)

million of its available-for-sale securities, primarily to provide the cash consideration and other acquisition-related payments in connection with the Merger. During the year ended December 31, 2016, the Company sold \$4.9 million of its available-for-sale securities. The Company recognized nominal gross gains and losses from the sales of these securities.

Investments with continuous unrealized losses for one year or greater at December 31, 2018 were nominal; however, since the Company does not intend to sell these securities and does not believe it will be required to sell any securities before they recover in value, it does not believe these declines are other-than-temporary.

On a quarterly basis, the Company reviews its investments to determine if there have been any events that could create a credit impairment. Based on its reviews, the Company does not believe that any impairment existed with its current holdings at December 31, 2018.

The amortized cost, gross unrealized gains and losses and fair value of the Company's cash equivalents and investments at December 31, 2018 and 2017 were comprised of the following (in thousands):

	December 31, 2018			
	Amortized cost	Unrealized gains	Unrealized losses	Fair value
<i>Cash equivalents</i>	\$ 310	\$ —	\$ —	\$ 310
<i>Short-term investments</i>				
U.S. government agency notes	\$ 3,998	\$ —	\$ (9)	\$ 3,989
Corporate debt securities	3,301	—	(6)	3,295
	<u>\$ 7,299</u>	<u>\$ —</u>	<u>\$ (15)</u>	<u>\$ 7,284</u>
	December 31, 2017			
	Amortized cost	Unrealized gains	Unrealized losses	Fair value
<i>Cash equivalents</i>	\$ 1,254	\$ —	\$ —	\$ 1,254
<i>Short-term investments</i>				
U.S. government agency notes	\$ 4,091	\$ —	\$ (19)	\$ 4,072
Corporate debt securities	8,048	—	(31)	8,017
Certificates of deposit	5,135	—	—	5,135
	<u>\$ 17,274</u>	<u>\$ —</u>	<u>\$ (50)</u>	<u>\$ 17,224</u>
<i>Investments</i>				
U.S. government agency notes	\$ 3,992	\$ —	\$ (28)	\$ 3,964
Corporate debt securities	3,908	—	(24)	3,884
Certificates of deposit	1,183	—	—	1,183
	<u>\$ 9,083</u>	<u>\$ —</u>	<u>\$ (52)</u>	<u>\$ 9,031</u>

The Company's available-for-sale debt securities that are classified as Investments in the consolidated balance sheet mature after one year but within two years or less from the balance sheet date. At December 31, 2018, the Company did not hold any investments that matured beyond one year.

Fair Value Hierarchy

Fair value is the price that would be received to sell an asset or paid to transfer a liability in an orderly transaction between market participants. As such, fair value is a market-based measurement that should be determined based on assumptions that market participants would use in pricing an asset or a liability. The three-tier fair value hierarchy is based on the level of independent, objective evidence surrounding the inputs used to measure fair value. A financial instrument's categorization within the fair value hierarchy is based upon the lowest level of input that is significant to the fair value measurement. The fair value hierarchy is as follows:

RIBBON COMMUNICATIONS INC.
Notes to Consolidated Financial Statements (Continued)

Level 1. Level 1 applies to assets or liabilities for which there are quoted prices in active markets for identical assets or liabilities.

Level 2. Level 2 applies to assets or liabilities for which there are inputs that are directly or indirectly observable in the marketplace, such as quoted prices for similar assets or liabilities in active markets or quoted prices for identical assets or liabilities in markets with insufficient volume or infrequent transactions (less active markets).

Level 3. Level 3 applies to assets or liabilities for which there are unobservable inputs to the valuation methodology that are significant to the measurement of the fair value of the assets or liabilities.

The following table shows the fair value of the Company's financial assets at December 31, 2018 and 2017. These financial assets are comprised of the Company's available-for-sale debt securities and reported under the captions Cash and cash equivalents, Short-term investments and Investments in the consolidated balance sheets (in thousands):

	Total carrying value at December 31, 2018	Fair value measurements at December 31, 2018 using:		
		Quoted prices in active markets (Level 1)	Significant other observable inputs (Level 2)	Significant unobservable inputs (Level 3)
<i>Cash equivalents</i>	\$ 310	\$ 310	\$ —	\$ —
<i>Short-term investments</i>				
U.S. government agency notes	\$ 3,989	\$ —	\$ 3,989	\$ —
Corporate debt securities	3,295	—	3,295	—
	<u>\$ 7,284</u>	<u>\$ —</u>	<u>\$ 7,284</u>	<u>\$ —</u>

	Total carrying value at December 31, 2017	Fair value measurements at December 31, 2017 using:		
		Quoted prices in active markets (Level 1)	Significant other observable inputs (Level 2)	Significant unobservable inputs (Level 3)
<i>Cash equivalents</i>	\$ 1,254	\$ 1,254	\$ —	\$ —
<i>Short-term investments</i>				
U.S. government agency notes	\$ 4,072	\$ —	\$ 4,072	\$ —
Corporate debt securities	8,017	—	8,017	—
Certificates of deposit	5,135	—	5,135	—
	<u>\$ 17,224</u>	<u>\$ —</u>	<u>\$ 17,224</u>	<u>\$ —</u>
<i>Investments</i>				
U.S. government agency notes	\$ 3,964	\$ —	\$ 3,964	\$ —
Corporate debt securities	3,884	—	3,884	—
Certificates of deposit	1,183	—	1,183	—
	<u>\$ 9,031</u>	<u>\$ —</u>	<u>\$ 9,031</u>	<u>\$ —</u>

The Company's marketable securities and investments have been valued with the assistance of valuations provided by third-party pricing services, as derived from such services' pricing models. Inputs to the models may include, but are not limited to, reported trades, executable bid and asked prices, broker/dealer quotations, prices or yields of securities with similar characteristics, benchmark curves or information pertaining to the issuer, as well as industry and economic events. The pricing services may use a matrix approach, which considers information regarding securities with similar characteristics to determine the valuation for a security. The Company is ultimately responsible for the consolidated financial statements and underlying

RIBBON COMMUNICATIONS INC.
Notes to Consolidated Financial Statements (Continued)

estimates. Accordingly, the Company assesses the reasonableness of the valuations provided by the third-party pricing services by reviewing actual trade data, broker/dealer quotes and other similar data, which are obtained from quoted market prices or other sources.

(6) ACCOUNTS RECEIVABLE, NET

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

	December 31,	
	2018	2017
Accounts receivable	\$ 188,522	\$ 165,229
Allowance for doubtful accounts	(669)	(73)
Accounts receivable, net	<u>\$ 187,853</u>	<u>\$ 165,156</u>

The Company's allowance for doubtful accounts activity was as follows (in thousands):

Year ended December 31,	Balance at beginning of year	Charges to expense	Charges (credits) to other accounts (deferred revenue)	Write-offs	Balance at end of year
2018	\$ 73	\$ 351	\$ 620	\$ (375)	\$ 669
2017	\$ 10	\$ 154	\$ (56)	\$ (35)	\$ 73
2016	\$ 10	\$ 10	\$ —	\$ (10)	\$ 10

(7) INVENTORY

Inventory consisted of the following (in thousands):

	December 31,	
	2018	2017
On-hand final assemblies and finished goods inventories	\$ 19,879	\$ 18,374
Deferred cost of goods sold	3,798	4,569
	<u>23,677</u>	<u>22,943</u>
Less noncurrent portion (included in Other assets)	(1,075)	(1,640)
Current portion	<u>\$ 22,602</u>	<u>\$ 21,303</u>

(8) PROPERTY AND EQUIPMENT

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

	Useful Life	December 31,	
		2018	2017
Equipment	2-5 years	\$ 76,423	\$ 67,415
Software	2-5 years	24,707	21,977
Furniture and fixtures	3-5 years	1,490	1,892
Leasehold improvements	Shorter of the life of the lease or estimated useful life (1-5 years)	21,220	18,428
		<u>123,840</u>	<u>109,712</u>
Less accumulated depreciation and amortization		(96,798)	(84,932)
Property and equipment, net		<u>\$ 27,042</u>	<u>\$ 24,780</u>

RIBBON COMMUNICATIONS INC.
Notes to Consolidated Financial Statements (Continued)

The Company recorded depreciation and amortization expense related to property and equipment of \$11.2 million for the year ended December 31, 2018, \$8.5 million for the year ended December 31, 2017 and \$8.0 million for the year ended December 31, 2016. During each of the years ended December 31, 2018, 2017 and 2016, the Company disposed of certain property and equipment that was fully depreciated at the time of disposal, which resulted in reductions in both Cost and Accumulated depreciation.

Property and equipment under capital leases included in the amounts above were as follows (in thousands):

	December 31,	
	2018	2017
Cost	\$ 2,979	\$ 664
Less accumulated depreciation	(875)	(180)
Property and equipment under capital leases, net	<u>\$ 2,104</u>	<u>\$ 484</u>

The net book values of the Company's property and equipment by geographic area were as follows (in thousands):

	December 31,	
	2018	2017
United States	\$ 17,862	\$ 17,576
Canada	4,076	1,740
Asia/Pacific	3,841	3,853
Europe	1,100	1,400
Other	163	211
	<u>\$ 27,042</u>	<u>\$ 24,780</u>

(9) INTANGIBLE ASSETS AND GOODWILL

The Company's intangible assets at December 31, 2018 and 2017 consisted of the following (in thousands):

<u>December 31, 2018</u>	Weighted average amortization period (years)	Cost	Accumulated amortization	Net carrying value
In-process research and development	*	\$ 5,600	\$ —	\$ 5,600
Developed technology	6.91	182,880	63,187	119,693
Customer relationships	9.44	146,940	22,218	124,722
Trade names	5.20	2,000	624	1,376
Internal use software	3.00	730	730	—
	7.88	<u>\$ 338,150</u>	<u>\$ 86,759</u>	<u>\$ 251,391</u>

RIBBON COMMUNICATIONS INC.
Notes to Consolidated Financial Statements (Continued)

<u>December 31, 2017</u>	Weighted average amortization period (years)	Cost	Accumulated amortization	Net carrying value
In-process research and development	*	\$ 5,600	\$ —	\$ 5,600
Developed technology	6.90	153,380	24,211	129,169
Customer relationships	9.32	120,840	12,015	108,825
Trade names	3.00	900	80	820
Internal use software	3.00	730	730	—
	7.77	<u>\$ 281,450</u>	<u>\$ 37,036</u>	<u>\$ 244,414</u>

* An in-process research and development intangible asset has an indefinite life until the product is generally available, at which time such asset is typically reclassified to developed technology.

Amortization expense for intangible assets for the years ended December 31, 2018, 2017 and 2016 was as follows (in thousands):

	<u>Year ended December 31,</u>			<u>Statement of operations classification</u>
	<u>2018</u>	<u>2017</u>	<u>2016</u>	
Developed technology	\$ 38,976	\$ 18,358	\$ 6,038	Cost of revenue - product
Customer relationships	10,203	4,145	1,462	Sales and marketing
Trade names	544	80	—	Sales and marketing
	<u>\$ 49,723</u>	<u>\$ 22,583</u>	<u>\$ 7,500</u>	

In connection with the preparation of its financial statements for the fourth quarter of 2017, the Company reviewed its intangible assets and other long-lived assets for impairment indicators. The Company determined that a triggering event had occurred relative to one of its developed technology intangible assets that had been previously acquired. During 2017, the Company discontinued its ongoing development of this technology and determined that there were no alternative uses of the technology within either its existing or future product lines. As a result, the Company recorded an impairment charge of \$5.5 million to write down the carrying value of the asset to zero. This expense is included as a component of Cost of revenue - product in the table above and in the Company's consolidated statements of operations for the year ended December 31, 2017.

Estimated future amortization expense for the Company's intangible assets at December 31, 2018 was as follows (in thousands):

<u>Years ending December 31,</u>	
2019	\$ 47,411
2020	46,552
2021	40,571
2022	34,156
2023	26,756
Thereafter	55,945
	<u>\$ 251,391</u>

Goodwill is recorded when the consideration for an acquisition exceeds the fair value of net tangible and identifiable intangible assets acquired. The changes in the carrying value of the Company's goodwill in the years ended December 31, 2018 and 2017 were as follows (in thousands):

RIBBON COMMUNICATIONS INC.
Notes to Consolidated Financial Statements (Continued)

	Year ended December 31,	
	2018	2017
Balance at January 1		
Goodwill	\$ 338,822	\$ 52,499
Accumulated impairment losses	(3,106)	(3,106)
	335,716	49,393
Acquisition of Edgewater	48,053	—
Acquisition of GENBAND	—	285,825
Acquisition of Taqua and subsequent purchase accounting adjustments	—	498
Write-off of goodwill attributable to dissolved subsidiary	(114)	—
Balance at December 31	\$ 383,655	\$ 335,716

(10) ACCRUED EXPENSES

Accrued expenses consisted of the following (in thousands):

	December 31,	
	2018	2017
Employee compensation and related costs	\$ 42,852	\$ 37,782
Professional fees	7,994	13,743
Deferred purchase consideration - Edgewater	15,000	—
Other	18,417	24,855
	\$ 84,263	\$ 76,380

(11) RESTRUCTURING ACCRUALS

The Company recorded restructuring expense aggregating \$17.0 million in the year ended December 31, 2018, \$9.4 million in the year ended December 31, 2017 and \$2.7 million in the year ended December 31, 2016.

Merger Restructuring Initiative

In connection with the Merger, the Company's management approved a restructuring plan in the fourth quarter of 2017 to eliminate certain redundant positions and facilities within the combined companies (the "Merger Restructuring Initiative"). In connection with this initiative, the Company recorded \$8.5 million of restructuring expense in 2017 for severance and related costs for approximately 120 employees. The Company recorded \$16.1 million of additional restructuring expense in 2018 in connection with this initiative, comprised of \$14.7 million for severance for approximately 275 additional employees and \$1.4 million for redundant facilities in the Czech Republic, Canada and the U.S. as it continues to combine the two businesses and benefit from operational synergies. The Company believes that the severance payments for the currently recorded accruals will be paid in 2019 and that the payments related to restructured facilities will be completed in 2029, when the last of the leases for these restructured facilities expires. The Company anticipates it will record additional future expense in connection with this initiative for headcount and redundant facilities aggregating approximately \$5 million.

Summaries of the Merger Restructuring Initiative accrual activity for the years ended December 31, 2018 and 2017 are as follows (in thousands):

RIBBON COMMUNICATIONS INC.
Notes to Consolidated Financial Statements (Continued)

Year ended December 31, 2018	Balance at January 1, 2018	Initiatives charged to expense	Adjustments for changes in estimate	Cash payments	Balance at December 31, 2018
Severance	\$ 7,595	\$ 14,735	\$ (5)	\$ (20,415)	\$ 1,910
Facilities	—	1,399	—	(628)	771
	<u>\$ 7,595</u>	<u>\$ 16,134</u>	<u>\$ (5)</u>	<u>\$ (21,043)</u>	<u>\$ 2,681</u>
Year ended December 31, 2017	Balance at January 1, 2017	Initiatives charged to expense	Adjustments for changes in estimate	Cash payments	Balance at December 31, 2017
Severance	\$ —	\$ 8,508	\$ —	\$ (913)	\$ 7,595

Assumed Restructuring Initiative

The Company assumed GENBAND's previously recorded restructuring liability, totaling \$4.1 million, on the Merger Date (the "GENBAND Restructuring Initiative"). Of this amount, \$3.7 million related to severance and related costs and \$0.4 million related to facilities. The Company recorded \$0.9 million of restructuring expense in 2018 and a credit of \$0.3 million credit to restructuring expense in 2017 for changes in estimated costs for this previously recorded and assumed restructuring initiative, primarily changes in negotiated severance to employees in certain international locations and changes in estimated sublease income for restructured facilities. The Company does not expect to record additional expense in connection with this initiative with the exception of any additional adjustments for changes in estimated costs. The Company expects that the payments related to this assumed liability will be completed in 2020.

Summaries of the GENBAND Restructuring Initiative accrual activity for the years ended December 31, 2018 and 2017 are as follows (in thousands):

Year ended December 31, 2018	Balance at January 1, 2018	Liability assumed in connection with Merger	Initiatives charged to expense	Adjustments for changes in estimate	Cash payments	Balance at December 31, 2018
Severance	\$ 1,916	\$ —	\$ —	\$ 487	\$ (2,403)	\$ —
Facilities	205	—	—	399	(487)	117
	<u>\$ 2,121</u>	<u>\$ —</u>	<u>\$ —</u>	<u>\$ 886</u>	<u>\$ (2,890)</u>	<u>\$ 117</u>
Year ended December 31, 2017	Balance at January 1, 2017	Liability assumed in connection with Merger	Initiatives charged to expense	Adjustments for changes in estimate	Cash payments	Balance at December 31, 2017
Severance	\$ —	\$ 3,663	\$ —	\$ (158)	\$ (1,589)	\$ 1,916
Facilities	—	431	—	(123)	(103)	205
	<u>\$ —</u>	<u>\$ 4,094</u>	<u>\$ —</u>	<u>\$ (281)</u>	<u>\$ (1,692)</u>	<u>\$ 2,121</u>

2016 Restructuring Initiative

In July 2016, the Company announced a program (the "2016 Restructuring Initiative") to further accelerate its investment in new technologies, as the communications industry migrates to a cloud-based architecture and as the Company pursues new strategic initiatives, such as new products and an expanded go-to-market footprint in selected geographies and discrete vertical markets. The Company recorded \$2.0 million of restructuring expense in the aggregate in connection with this initiative, comprised of \$1.9 million for severance and related costs and \$0.1 million to abandon its facility in Rochester, New York (the "Rochester Facility"). The actions under the 2016 Restructuring Initiative have been implemented and accordingly, the Company does not expect to record additional expense in connection with this initiative. The amounts accrued for severance and related costs had been fully paid by the end of the third quarter of 2017. The Company expects that the amounts accrued

RIBBON COMMUNICATIONS INC.
Notes to Consolidated Financial Statements (Continued)

for facilities will be paid by the end of October 2019, when the lease on the Rochester Facility expires.

In connection with the 2016 Restructuring Initiative, the Company recorded \$0.5 million of restructuring expense in the year ended December 31, 2017, including adjustments for changes in estimated costs, comprised of \$0.4 million for severance and related costs and \$0.1 million related to the Company's Rochester Facility. The Company recorded \$1.5 million of expense in the year ended December 31, 2016 related to headcount reductions.

Summaries of the 2016 Restructuring Initiative accrual activity for the years ended December 31, 2018 and 2017 are as follows (in thousands):

Year ended December 31, 2018	Balance at January 1, 2018	Initiatives charged to expense	Adjustments for changes in estimate	Cash payments	Balance at December 31, 2018
Facilities	\$ 95	\$ —	\$ —	\$ (37)	\$ 58
Year ended December 31, 2017					
Severance	\$ 497	\$ 405	\$ (26)	\$ (876)	\$ —
Facilities	—	126	—	(31)	95
	<u>\$ 497</u>	<u>\$ 531</u>	<u>\$ (26)</u>	<u>\$ (907)</u>	<u>\$ 95</u>

Taqua Restructuring Initiative

In connection with the acquisition of Taqua, the Company's management approved a restructuring plan in the third quarter of 2016 to eliminate certain redundant positions within the combined companies. On October 24, 2016, the Audit Committee of the Board of Directors of the Company approved a broader Taqua restructuring plan related to headcount and redundant facilities (both restructuring plans, the "Taqua Restructuring Initiative"). The Company recorded \$1.8 million of restructuring expense in the aggregate in connection with this initiative, comprised of \$1.2 million for severance and related costs and \$0.6 million related to the elimination of redundant facilities, including adjustments recorded for changes in cost estimates for the planned restructuring activities. The actions under the Taqua Restructuring Initiative have been implemented and accordingly, the Company does not expect to record additional expense in connection with this initiative. The amounts accrued for severance and related costs had been fully paid by the end of the third quarter of 2017. The Company expects that the amounts accrued for facilities will be paid by the end of 2019.

In connection with the Taqua Restructuring Initiative, the Company recorded \$0.7 million of restructuring expense, including adjustments for changes in estimated costs, in the year ended December 31, 2017, comprised of \$0.2 million for severance and related costs and \$0.5 million related to redundant facilities. The Company recorded \$1.2 million of restructuring expense for this initiative in the year ended December 31, 2016, comprised of \$1.0 million for severance and related costs and \$0.2 million related to redundant facilities.

Summaries of the Taqua Restructuring Initiative accrual activity for the years ended December 31, 2018 and 2017 are as follows (in thousands):

Year ended December 31, 2018	Balance at January 1, 2018	Initiatives charged to expense	Adjustments for changes in estimate	Cash payments	Balance at December 31, 2018
Facilities	\$ 365	\$ —	\$ —	\$ (332)	\$ 33

RIBBON COMMUNICATIONS INC.**Notes to Consolidated Financial Statements (Continued)**

Year ended December 31, 2017	Balance at January 1, 2017	Initiatives charged to expense	Adjustments for changes in estimate	Cash payments	Balance at December 31, 2017
Severance	\$ 384	\$ 245	\$ (49)	\$ (580)	\$ —
Facilities	218	508	—	(361)	365
	<u>\$ 602</u>	<u>\$ 753</u>	<u>\$ (49)</u>	<u>\$ (941)</u>	<u>\$ 365</u>

Balance Sheet Classification

The current portions of accrued restructuring are included as a component of Accrued expenses in the consolidated balance sheets. The long-term portions of accrued restructuring are included as a component of Other long-term liabilities in the consolidated balance sheets. The long-term portions of accrued restructuring were \$0.5 million at December 31, 2018 and \$0.2 million at December 31, 2017. These amounts represent future lease payments on restructured facilities.

(12) DEBT**Proposed Offering of Convertible Senior Note**

On November 13, 2018, the Company announced that it intended to offer, subject to market conditions and other factors, \$150.0 million aggregate principal amount of convertible senior notes due 2023 in a private offering to qualified institutional buyers pursuant to Rule 144A under the Securities Act of 1933, as amended. The Company expected to grant the initial purchasers a 30-day option to purchase up to an additional \$25.0 million aggregate principal amount of such notes, solely to cover over-allotments, if any. On that same day, the Company decided not to proceed with its previously-announced offering and consequently did not sell any securities as part of such offering. The Company believed that then-current market conditions were not conducive for an offering on terms that would be in the best interests of the Company's stockholders. In connection with this offering, the Company incurred \$1.0 million of expense, primarily for professional fees, which is included as a component of General and administrative expense in the Company's consolidated statement of operations for the year ended December 31, 2018.

Assumed Senior Secured Credit Agreement

On the Merger Date and in connection with the Merger, the Company assumed GENBAND's Senior Secured Credit Agreement (the "Prior Credit Agreement" with Silicon Valley Bank ("SVB"), which had outstanding borrowings and letters of credit totaling \$17.9 million and \$2.9 million, respectively, and an average interest rate of 4.67%. GENBAND had entered into the Prior Credit Agreement with SVB effective July 1, 2016, with two of its operating subsidiaries as borrowers and GENBAND as the guarantor. The Prior Credit Agreement had a maturity date of July 1, 2019 and provided for revolving loans, including letters of credit and swingline loans, not to exceed \$50 million in total, with potential further increases of \$75 million available for a total revolving line of credit of up to \$125 million. The Prior Credit Agreement was superseded by a Senior Secured Credit Facilities Credit Agreement, as amended, which was entered into on December 21, 2017 and is discussed below.

Senior Secured Credit Facility

On December 21, 2017, the Company entered into a Senior Secured Credit Facilities Credit Agreement (as amended, the "Credit Facility") by and among the Company, as a guarantor, Sonus Networks, Inc., as the borrower ("Borrower"), SVB, as administrative agent (in such capacity, the "Administrative Agent"), issuing lender, swingline lender and lead arranger and the lenders party thereto (each referred to individually as a "Lender", and collectively, the "Lenders"), which refinanced the Prior Credit Agreement. The Credit Facility includes \$100 million of commitments, the full amount of which is available for revolving loans, a \$15 million sublimit that is available for letters of credit and a \$15 million sublimit that is available for swingline loans. The Credit Facility is scheduled to mature in December 2021, subject to a springing maturity if, on or before July 14, 2020, the existing promissory note issued to certain shareholders is not converted or extended to March 2022 or later. The Credit Facility contains procedures for additional financial institutions to become lenders or for any existing lender to increase its commitment under the facility, subject to an available increase of \$50 million for all incremental commitments

RIBBON COMMUNICATIONS INC.

Notes to Consolidated Financial Statements (Continued)

under the Credit Facility. On June 24, 2018, the Company amended the Credit Facility to, among other things, permit the Edgewater Acquisition and related transactions.

The indebtedness and other obligations under the Credit Facility are unconditionally guaranteed on a senior secured basis by the Company and each other material U.S. domestic subsidiary of the Company (collectively, the "Guarantors"). The Credit Facility is secured by first-priority liens on substantially all of the assets of the Borrower and the Guarantors, including the Company.

The Credit Facility requires periodic interest payments on outstanding borrowings until maturity. The Borrower may prepay all revolving loans under the Credit Facility at any time without premium or penalty (other than customary LIBOR breakage costs), subject to certain notice requirements.

Revolving loans under the Credit Facility bear interest at the Borrower's option at either the Eurodollar (LIBOR) rate plus a margin ranging from 2.50% to 3.00% per year or the base rate (the highest of the Federal Funds rate plus 0.50%, or the prime rate announced from time to time in The Wall Street Journal) plus a margin ranging from 1.50% to 2.00% per year (such margins being referred to as the "Applicable Margin"). The Applicable Margin varies depending on the Company's consolidated leverage ratio (as defined in the Credit Facility). The base rate and the LIBOR rate are each subject to a zero percent floor.

The Borrower is charged a commitment fee ranging from 0.25% to 0.40% per year on the daily amount of the unused portions of the commitments under the Credit Facility. Additionally, with respect to all letters of credit outstanding under the Credit Facility, the Borrower is charged a fronting fee of 0.125% per year and an outstanding letter of credit fee equal to the Applicable Margin for base rate loans ranging from 1.50% to 2.00% times the amount of the outstanding letters of credit.

The Credit Facility requires compliance with certain financial covenants, including a minimum consolidated quick ratio, minimum consolidated interest coverage ratio and maximum consolidated leverage ratio, all of which are defined in the Credit Facility and tested on a quarterly basis. In addition, the Credit Facility contains various covenants that, among other restrictions, limit the Company's and its subsidiaries' ability to enter into certain types of transactions, including, but not limited to: incurring or assuming indebtedness, making acquisitions or engaging in mergers, making investments, repurchasing equity and paying dividends, selling or otherwise transferring assets, changing the nature of its business and amending or making prepayments on certain junior debt. The Company was in compliance with all covenants of the Credit Facility as of December 31, 2018 and 2017.

The Credit Facility contains events of default that are customary for a secured credit facility. If an event of default relating to bankruptcy or other insolvency events with respect to a borrower occurs, all obligations under the Credit Facility will immediately become due and payable. If any other event of default exists under the Credit Facility, the lenders may accelerate the maturity of the obligations outstanding under the Credit Facility and exercise other rights and remedies, including charging a default rate of interest equal to 2.00% per year above the rate that would otherwise be applicable. In addition, if any event of default exists under the Credit Facility, the lenders may commence foreclosure or other actions against the collateral.

If any default exists under the Credit Facility, or if the Borrower is unable to make any of the representations and warranties as stated in the Credit Facility at the applicable time, the Borrower will be unable to borrow funds or have letters of credit issued under the Credit Facility, which, depending on the circumstances prevailing at that time, could have a material adverse effect on the Borrower's liquidity and working capital.

At December 31, 2018, the Company had an outstanding debt balance of \$55.0 million at a weighted average interest rate of 5.96% and \$2.7 million of outstanding letters of credit at an interest rate of 1.75% under the Credit Facility. At December 31, 2017, the Company had an outstanding debt balance of \$20 million at an interest rate of 4.51% and \$2.9 million of outstanding letters of credit at an interest rate of 2.00% under the Credit Facility.

Promissory Note

In connection with the Merger, on October 27, 2017, the Company issued a promissory note for \$22.5 million to certain of GENBAND's equity holders (the "Promissory Note"). The Promissory Note does not amortize and the principal thereon is payable in full on the third anniversary of its execution. Interest on the Promissory Note is payable quarterly in arrears and

RIBBON COMMUNICATIONS INC.**Notes to Consolidated Financial Statements (Continued)**

accrued at a rate of 7.5% per year for the first six months after issuance, and thereafter at a rate of 10% per year. The failure to make any payment under the Promissory Note when due and, with respect to payment of any interest, the continuation of such failure for a period of thirty days thereafter, constitutes an event of default under the Promissory Note. If an event of default occurs under the Promissory Note, the payees may declare the entire balance of the Promissory Note due and payable (including principal and accrued and unpaid interest) within five business days of the payees' notification to the Company of such acceleration. Interest that is not paid on the interest payment date will increase the principal amount of the Promissory Note. At December 31, 2018, the Promissory Note balance was \$24.1 million, comprised of \$22.5 million of principal, plus \$1.6 million of interest converted to principal.

(13) LONG-TERM LIABILITIES

Long-term liabilities consisted of the following (in thousands):

	December 31,	
	2018	2017
Capital lease obligations	\$ 2,363	\$ 837
Deferred rent	3,039	1,359
Restructuring	979	10,176
Pension obligations	7,006	7,524
Taxes payable	1,818	2,079
Deferred purchase consideration	30,000	—
Other	2,425	2,544
	47,630	24,519
Current portion	(16,833)	(11,330)
Long-term liabilities, net of current portion	\$ 30,797	\$ 13,189

The current portions of long-term liabilities are included as components of Accrued expenses and other in the Company's consolidated balance sheets.

(14) REVENUE RECOGNITION

Effective January 1, 2018, the Company adopted the New Revenue Standard using the modified retrospective option and identified the necessary changes to its policies, processes, systems and controls. Under the modified retrospective method, the Company is applying the New Revenue Standard to all contracts not yet completed as of January 1, 2018, recognizing in beginning Accumulated deficit an adjustment for the cumulative effect of the change and providing additional disclosures comparing results to those as if the Company was still following the previous accounting standards. Under ASC 605, the Company concluded it did not have VSOE for certain elements in software bundled arrangements, which resulted in revenue being recognized ratably over the longest performance period. Additionally, under ASC 606 for arrangements with certain customers that include acceptance criteria, revenue is recognized when the customer obtains control, as the Company believes acceptance is perfunctory. Under ASC 605, revenue was deferred until acceptance was received. The Company is also capitalizing incremental commission fees as a result of obtaining contracts and will amortizing the asset based on the transfer of services to which the asset relates, which is approximately five years. The cumulative effect of capitalizing commission fees was not material at January 1, 2018. In connection with the adoption of ASC 606, as of January 1, 2018, the Company recorded an adjustment to decrease Accumulated deficit by \$12.2 million (net of tax, which was \$0 due to the full valuation allowance).

RIBBON COMMUNICATIONS INC.
Notes to Consolidated Financial Statements (Continued)

The Company's typical performance obligations include the following:

Performance Obligation	When Performance Obligation is Typically Satisfied	When Payment is Typically Due
<i>Software and Product Revenue</i>		
Software licenses (perpetual or term)	Upon transfer of control; typically, when made available for download (point in time)	Generally, within 30 days of invoicing except for term licenses, which may be paid for over time
Software licenses (subscription)	Upon activation of hosted site (over time)	Generally, within 30 days of invoicing
Appliances	When control of the appliance passes to the customer; typically, upon delivery (point in time)	Generally, within 30 days of invoicing
Software upgrades	Upon transfer of control; typically, when made available for download (point in time)	Generally, within 30 days of invoicing
<i>Customer Support Revenue</i>		
Customer support	Ratably over the course of the support contract (over time)	Generally, within 30 days of invoicing
<i>Professional Services</i>		
Other professional services (excluding training services)	As work is performed (over time)	Generally, within 30 days of invoicing (upon completion of services)
Training	When the class is taught (point in time)	Generally, within 30 days of services being performed

Significant Judgments

The Company's contracts with customers often include promises to transfer multiple products and services to the customer. Determining whether products and services are considered distinct performance obligations that should be accounted for separately versus together may require significant judgment.

Judgment is required to determine the standalone selling price for each distinct performance obligation. The Company typically has more than one SSP for individual products and services due to the stratification of those products and services by customers and circumstances. In these instances, the Company may use information such as the size of the customer and geographic region in determining the SSP.

Deferred Revenue

Deferred revenue is a contract liability representing amounts collected from or invoiced to customers in excess of revenue recognized. This results primarily from the billing of annual customer support agreements where the revenue is recognized over the term of the agreement. The value of deferred revenue will increase or decrease based on the timing of invoices and recognition of revenue.

Disaggregation of Revenue

The Company disaggregates its revenue from contracts with customers based on the nature of the products and services and the geographic regions in which each customer is domiciled.

RIBBON COMMUNICATIONS INC.
Notes to Consolidated Financial Statements (Continued)

The Company's total revenue for the years ended December 31, 2018, 2017 and 2016 was disaggregated geographically as follows:

Year ended December 31, 2018	Product revenue	Service revenue (maintenance)	Service revenue (professional services)	Total revenue
United States	\$ 169,510	\$ 132,282	\$ 35,832	\$ 337,624
Europe, Middle East and Africa	37,833	46,856	11,794	96,483
Japan	23,108	11,234	5,069	39,411
Other Asia Pacific	30,575	12,321	4,358	47,254
Other	17,988	31,273	7,872	57,133
	<u>\$ 279,014</u>	<u>\$ 233,966</u>	<u>\$ 64,925</u>	<u>\$ 577,905</u>

Year ended December 31, 2017	Product revenue	Service revenue (maintenance)	Service revenue (professional services)	Total revenue
United States	\$ 121,121	\$ 75,040	\$ 22,896	\$ 219,057
Europe, Middle East and Africa	23,352	17,471	3,742	44,565
Japan	10,252	10,282	3,855	24,389
Other Asia Pacific	14,693	5,901	1,952	22,546
Other	11,701	6,041	1,643	19,385
	<u>\$ 181,119</u>	<u>\$ 114,735</u>	<u>\$ 34,088</u>	<u>\$ 329,942</u>

Year ended December 31, 2016	Product revenue	Service revenue (maintenance)	Service revenue (professional services)	Total revenue
United States	\$ 100,589	\$ 60,760	\$ 12,630	\$ 173,979
Europe, Middle East and Africa	21,073	10,769	2,021	33,863
Japan	12,258	9,831	3,524	25,613
Other Asia Pacific	8,226	3,478	827	12,531
Other	4,235	2,157	213	6,605
	<u>\$ 146,381</u>	<u>\$ 86,995</u>	<u>\$ 19,215</u>	<u>\$ 252,591</u>

The Company's product revenue from its direct sales program and from indirect sales through its channel partner program for the years ended December 31, 2018, 2017 and 2016 was as follows (in thousands):

	Year ended December 31,		
	2018	2017	2016
Indirect sales through channel program	\$ 69,232	\$ 43,138	\$ 38,204
Direct sales	209,782	137,981	108,177
	<u>\$ 279,014</u>	<u>\$ 181,119</u>	<u>\$ 146,381</u>

The Company's product revenue from sales to enterprise customers and from sales to service provider customers for the years ended December 31, 2018, 2017 and 2016 was as follows (in thousands):

RIBBON COMMUNICATIONS INC.
Notes to Consolidated Financial Statements (Continued)

	Year ended December 31,		
	2018	2017	2016
Sales to enterprise customers	\$ 57,534	\$ 35,592	\$ 28,508
Sales to service provider customers	221,480	145,527	117,873
	<u>\$ 279,014</u>	<u>\$ 181,119</u>	<u>\$ 146,381</u>

Revenue Contract Balances

The timing of revenue recognition, billings and cash collections results in billed accounts receivable, unbilled receivables, which are contract assets, and customer advances and deposits, which are contract liabilities, in the Company's consolidated balance sheets. Amounts are billed as work progresses in accordance with agreed-upon contractual terms, either at periodic intervals or upon achievement of contractual milestones. Completion of services and billing may occur subsequent to revenue recognition, resulting in contract assets. The Company may receive advances or deposits from its customers before revenue is recognized, resulting in contract liabilities which are classified as deferred revenue. These assets and liabilities are reported in the Company's consolidated balance sheets on a contract-by-contract basis as of the end of each reporting period. Changes in the contract asset and liability balances during the year ended December 31, 2018 were not materially impacted by any factors other than billing and revenue recognition. Nearly all of the Company's deferred revenue balance is related to services revenue, primarily customer support contracts. Unbilled receivables stem primarily from engagements where services have been performed; however, billing cannot occur until services are completed.

In some arrangements, the Company allows customers to pay for term-based software licenses and products over the term of the software license. The Company also sells SaaS-based software under subscription arrangements, with payment terms over the term of the SaaS agreement. Amounts recognized as revenue in excess of amounts billed are recorded as unbilled receivables. Unbilled receivables that are anticipated to be invoiced in the next twelve months are included in Accounts receivable on the Company's consolidated balance sheets. The changes in the Company's accounts receivable, unbilled receivables and deferred revenue balances for the year ended December 31, 2018 were as follows (in thousands):

	Accounts receivable	Unbilled accounts receivable	Deferred revenue (current)	Deferred revenue (long- term)
Balance at January 1, 2018	\$ 149,122	\$ 16,034	\$ 100,571	\$ 14,184
Increase (decrease), net	25,188	(2,491)	4,516	3,388
Balance at December 31, 2018	<u>\$ 174,310</u>	<u>\$ 13,543</u>	<u>\$ 105,087</u>	<u>\$ 17,572</u>

The increase in accounts receivable was primarily due to the Edgewater Acquisition. The increase in deferred revenue was primarily due to the Edgewater Acquisition. The Company recognized approximately \$84 million of revenue in the year ended December 31, 2018 that was recorded as deferred revenue at December 31, 2017. Of the Company's deferred revenue reported as long-term in its consolidated balance sheet at December 31, 2018, the Company expects that approximately \$12 million will be recognized as revenue in 2020, approximately \$5 million will be recognized as revenue in 2021 and approximately \$1 million will be recognized as revenue in 2022 and beyond.

The Company elected to adopt the practical expedient related to the presentation of shipping and handling costs. Accordingly, all freight-related customer invoicing is being recorded as revenue, while the shipping and handling costs that occur after control of the promised goods or services transfer to the customer are being reported as fulfillment costs as a component of Cost of revenue - product in the Company's consolidated statements of operations.

Deferred Commissions Cost

Sales commissions earned by the Company's employees are considered incremental and recoverable costs of obtaining a contract with a customer. Under ASC 605, the costs associated with obtaining a customer contract were expensed in the period the revenue was earned. Under ASC 606, these payments have been deferred on our consolidated balance sheet and are being amortized over the expected life of the customer contract, which is five years. At December 31, 2018, the Company had \$2.7 million of deferred sales commissions capitalized.

RIBBON COMMUNICATIONS INC.
Notes to Consolidated Financial Statements (Continued)

Adoption of ASC 606

Under the modified retrospective method, the Company applied ASC 606 to those contracts which were not completed as of January 1, 2018. Results for reporting periods beginning January 1, 2018 are presented under ASC 606, and prior period amounts have not been adjusted and are reported in accordance with the Company's historical accounting treatment under ASC 605, *Revenue Recognition* ("ASC 605").

The Company recorded a net reduction to Accumulated deficit of \$12.2 million (net of tax, which was \$0 due to the full valuation allowance) at January 1, 2018 due to the cumulative impact of adopting ASC 606. Had the Company continued to recognize revenue under ASC 605, the Company would have recognized approximately \$16 million less revenue in the year ended December 31, 2018. Incremental costs that would have been recognized had the Company continued to recognize revenue under ASC 605 would not have been material to the Company's consolidated results of operations.

(15) COMMON STOCK REPURCHASES

On July 29, 2013, Sonus announced that its Board of Directors had authorized a stock buyback program to repurchase up to \$100 million of its common stock from time to time on the open market or in privately negotiated transactions. The timing and amount of any shares repurchased was determined by Sonus' management based on its evaluation of market conditions and other factors. The buyback program did not have a fixed expiration date but could be suspended or discontinued at any time. The buyback program was funded using Sonus' working capital. Ribbon did not assume the stock buyback program in connection with the Merger.

During the years ended December 31, 2018 and 2017, the Company did not repurchase any shares under the stock buyback program. During the year ended December 31, 2016, Sonus spent \$9.5 million, including transaction fees, to repurchase and retire 1.3 million shares of its common stock under the buyback program.

(16) STOCK-BASED COMPENSATION PLANS

Amended and Restated Stock Incentive Plan

The Company's Amended and Restated Stock Incentive Plan (the "Plan"), provides for the award of options to purchase the Company's common stock ("stock options"), stock appreciation rights ("SARs"), restricted stock awards ("RSAs"), restricted stock units ("RSUs"), performance-based stock awards ("PSAs"), performance-based stock units ("PSUs") and other stock-based awards to employees, officers, directors (including those directors who are not employees or officers of the Company), consultants and advisors of the Company and its subsidiaries. In connection with the Merger, the Company assumed the Plan with all of its then-current terms and conditions.

At December 31, 2018, there were 3.5 million shares available for future issuance under the Plan.

2002 Stock Option Plan

In connection with the Edgewater Acquisition, the Company assumed Edgewater's Amended and Restated 2002 Stock Option Plan (the "Edgewater Plan") for all outstanding options as of the Edgewater Acquisition Date (the "Edgewater Options"). The Edgewater Options were converted to Ribbon stock options (the "Ribbon Replacement Options") using a conversion factor of 0.17, which was calculated based on the acquisition consideration of \$1.20 per share of Edgewater common stock divided by the weighted average of the closing price of Ribbon common stock for the ten consecutive days ending with the trading day that preceded the Edgewater Acquisition Date. This conversion factor was also used to convert the exercise prices of the Edgewater Options to Ribbon Replacement Option exercise prices. The Ribbon Replacement Options are vesting under the same schedules as the respective Edgewater Options.

The fair values of the Edgewater Options assumed were estimated using a Black-Scholes option pricing model. The Company recorded \$0.7 million as additional purchase consideration for the fair value of the Edgewater Options. The fair

RIBBON COMMUNICATIONS INC.

Notes to Consolidated Financial Statements (Continued)

value of the Ribbon Replacement Options attributable to future service totaled \$1.0 million, which is being recognized over a weighted average period of approximately two years.

2012 Stock Incentive Plan

In connection with the acquisition of PT, the Company assumed PT's 2012 Amended Performance Technologies, Incorporated Omnibus Incentive Plan, and subsequently renamed it the 2012 Stock Incentive Plan (the "2012 Plan"). In December 2014, all of the unissued shares under the 2012 Plan were transferred to the Plan. Any outstanding awards under the 2012 Plan that in the future expire, terminate, are canceled, surrendered or forfeited, or are repurchased by the Company will be returned to the Plan. Accordingly, at December 31, 2018, there were no shares available for future issuance under the 2012 Plan.

2008 Stock Incentive Plan

In connection with the acquisition of NET, the Company assumed NET's 2008 Equity Incentive Plan and subsequently renamed it the 2008 Stock Incentive Plan (the "2008 Plan"). In December 2014, all of the unissued shares under the 2008 Plan were transferred to the Plan. Any outstanding awards under the 2008 Plan that in the future expire, terminate, are canceled, surrendered or forfeited, or are repurchased by the Company will be returned to the Plan. Accordingly, at December 31, 2018 there were no shares available for future issuance under the 2008 Plan.

Treatment of Equity Awards in Connection with the Merger

In connection with the Merger, the Company accelerated the vesting of all outstanding stock options and certain outstanding full value awards. In addition, the vesting schedules of certain remaining unvested full value awards were adjusted. Such vesting and adjustments are described below:

Stock options - each stock option outstanding as of five business days prior to the Merger Date became vested in full as of that date (to the extent not previously vested), and the holders of such stock options were permitted to exercise their stock options from October 20, 2017 through October 24, 2017, after which date all remaining stock options, with certain exceptions, were canceled. The Company accelerated the vesting of 0.3 million stock options and subsequently canceled 4.5 million vested unexercised stock options in connection with this transaction. Any stock options granted under the 2008 Plan and 2012 Plan were not canceled, as these plans do not permit such cancellations. These stock options will continue to be outstanding until they are either exercised or expire.

RSAs and RSUs - as prescribed by the Company's Plan, any unvested RSAs and RSUs that were scheduled to vest within one year from the Merger Date became vested in full as of the Merger Date. The vesting schedules of the remaining unvested RSAs and RSUs were then accelerated by one year. Certain executives had specific terms and conditions related to their RSAs detailed in their employment agreements or amendments thereto (the "employment terms"). The accelerated vesting of and future vesting schedule adjustments to the RSAs held by these individuals were completed in accordance with their individual employment terms. In accordance with the terms of their RSA grants, unvested RSAs held by the then-current members of the Board of Directors were accelerated on a pro rata basis based on the amount of time the unvested RSAs were outstanding compared to the originally scheduled vesting date. Unvested PSUs granted to the Company's former President and Chief Executive Officer, who separated from the Company effective December 13, 2017 (the "former CEO"), were converted to RSAs in accordance with his employment terms; certain of those converted grants were accelerated, and the remaining RSAs would continue to vest according to their terms, but with the elimination of any required satisfaction of the performance metrics associated with the awards when they were originally granted as PSUs. In total, the Company accelerated the vesting of and released 1.1 million RSAs and approximately 36,000 RSUs in connection with the Merger.

PSUs - any unvested PSUs were accelerated in accordance with the employment agreement of each individual PSU holder. The remaining unvested units would continue to vest according to their terms, with the exception of the PSU grants held by the former CEO, as discussed above. The Company accelerated the vesting of and released approximately 98,000 PSUs in connection with the Merger.

RIBBON COMMUNICATIONS INC.**Notes to Consolidated Financial Statements (Continued)****Executive Equity Arrangements*****Stock-for-Cash Bonus Election***

In connection with the Company's annual incentive program, certain executives of the Company were given the choice to receive a portion, ranging from 10% to 50% (the "Elected Percentage") of their fiscal year 2018 bonuses (the "2018 Bonus"), if any were earned, in the form of shares of the Company's common stock (the "2018 Bonus Shares" and such program, the "Stock Bonus Election Program"). Each executive could also elect not to participate in this program and to earn his or her 2018 Bonus, if any, in the form of cash. Any executive who elected to receive a portion of his or her 2018 Bonus in stock would also receive an uplift of 20% of the value of the 2018 Bonus Shares in additional shares of the Company's common stock (the "Uplift Shares"), with the exception of the Company's Chief Executive Officer and his senior leadership team. Under the Stock Bonus Election Program, the amount of the 2018 Bonus, if any, for each executive will be determined by the Compensation Committee of the Board of Directors (the "Compensation Committee"). The Company expects to grant the 2018 Bonus Shares and Uplift Shares on a date concurrent with the timing of the payout of the cash portion of the 2018 Bonus, if any is earned. The 2018 Bonus Shares and Uplift Shares will be fully vested on the grant date; however, each executive is restricted from trading the 2018 Bonus Shares and Uplift Shares for five months after the date of grant.

The number of shares of the Company's common stock that will be granted to those executives who elected to participate in the Stock Bonus Program but are not eligible for the Uplift Shares will be calculated by multiplying the amount of their 2018 Bonus by their individual 2018 Bonus Shares percentage election, divided by the closing price of the Company's common stock on the date of grant. The number of shares of the Company's common stock that will be granted to those executives who elected to participate in the Stock Bonus Program and are eligible for the Uplift Shares will be calculated by multiplying the amount of their 2018 Bonus by their Elected Percentage times 1.2, divided by the closing price of the Company's common stock on the date of grant. Under the Stock Bonus Election Program, an executive's eligibility to receive the 2018 Bonus Shares and Uplift Shares, if any, is contingent upon the executive's continued employment with the Company through the date of grant.

The Company determined that the grant date criteria for the 2018 Bonus Shares and Uplift Shares had not been met as of December 31, 2018, as the number of shares to be granted to each executive had not been determined. The Company recorded stock-based compensation expense totaling \$1.1 million in connection with the Stock Bonus Program in 2018 and recorded a liability in connection with the future issuance of the 2018 Bonus Shares and Uplift Shares. The Company will reclassify the liability to equity at the time the shares are granted, if any.

Performance-Based Stock Grants

In addition to granting RSAs and RSUs to its executives and certain of its employees, the Company also grants PSUs to certain of its executives.

In May 2018, the Company granted its President and Chief Executive Officer, Franklin (Fritz) Hobbs ("Mr. Hobbs"), 195,000 PSUs with both performance and service conditions (the "2018 PSUs"). Of the 195,000 2018 PSUs, one-half each would vest based on the achievement of two separate metrics related to the Company's 2018 financial performance (the "2018 Performance Conditions"). The Company's achievement of the 2018 Performance Conditions (and the shares of Company common stock to vest as a result thereof) were measured on a linear sliding scale in relation to specific threshold, target and stretch performance conditions. The number of shares of common stock to be received upon vesting of the 2018 PSUs would in no event exceed 150% of the 2018 PSUs. In the year ended December 31, 2018, the Company recorded stock-based compensation expense for the 20018 PSUs based on its assessment of the probability that each performance condition would be achieved and the level, if any, of such achievement. The Company recorded \$0.3 million of stock-based compensation expense in the year ended December 31, 2018 in connection with the 2018 PSUs. In February 2019, the Compensation Committee determined that the performance metrics for one-half of the 2018 PSUs had been achieved at the 106.49% achievement level and one-half of the 2018 PSUs had been achieved at the 150% level, for a total of 250,075 shares earned, pending Mr. Hobbs' continued employment with the Company through December 31, 2020, the vesting date of the 2018 PSUs (collectively, the "2018 Shares Earned"). The unamortized expense for the 2018 Shares Earned will be recorded through the remainder of the service period. The grant of the 2018 PSUs is recorded in the PSU table below.

From 2015 through 2017, the Company granted PSUs with both market and service conditions to certain of its

RIBBON COMMUNICATIONS INC.**Notes to Consolidated Financial Statements (Continued)**

executives. The terms of each PSU grant were such that up to one-third of the shares subject to the respective PSU grant would vest, if at all, on each of the respective first, second and third anniversaries of the date of grant, depending on the Company's total shareholder return ("TSR") compared to the TSR of the companies included in the Nasdaq Telecommunications Index for the same fiscal year, measured by the Compensation Committee after each of the fiscal years as defined by each grant (each, a "Performance Period"). The shares determined to be earned would vest on the anniversary of the grant date following each Performance Period. Shares subject to the PSUs that failed to be earned would be forfeited.

The PSUs that included a market condition required the use of a Monte Carlo simulation approach to model future stock price movements based upon the risk-free rate of return, the date of return, the volatility of each entity and the pair-wise covariance between each entity. These results were then used to calculate the grant date fair values of the respective PSUs. The Company is required to record expense for the PSUs with market conditions through their respective final vesting dates regardless of the number of shares that are ultimately earned.

On March 31, 2017, the Company granted an aggregate of 165,000 PSUs with both market and service conditions to five of its executives (the "2017 PSUs"). In March 2018, the Compensation Committee determined that the performance metrics for the 2017 PSUs for the 2017 Performance Period had been achieved at the 130% level and accordingly, 33,584 shares in the aggregate were released to the three remaining executives holding such outstanding grants, comprised of 25,834 shares, representing the 100% achievement target, granted on March 31, 2017 and 7,750 shares, representing the 30% achievement over target, granted on March 31, 2018. The grant of the additional shares and the release of the earned shares, both of which occurred on March 31, 2018, are included in the PSU table below. In February 2019, the Compensation Committee determined that the performance metrics for the 2017 PSUs for the 2018 Performance Period had been achieved at the 61.4% level and accordingly, 9,464 shares will be released to the three remaining executives holding such outstanding grants on March 31, 2019, subject to their continued employment with the Company through that date.

On April 1, 2016, the Company granted an aggregate of 131,250 PSUs with both market and service conditions to six of its executives (the "2016 PSUs"). In March 2018, the Compensation Committee determined that the performance metrics for the 2016 PSUs for the 2017 Performance Period had been achieved at the 130% level, and accordingly, 16,250 shares in the aggregate were released to the two remaining executives holding such outstanding grants, comprised of 12,500 shares, representing the 100% achievement target, granted on April 1, 2016 and 3,750 shares, representing the 30% achievement over target, granted on April 1, 2018. The grant of the additional shares and the release of the earned shares, both of which occurred on April 1, 2018, are included in the PSU table below. In February 2017, the Compensation Committee determined that the performance metrics for the 2016 PSUs for the 2016 Performance Period had been achieved at the 90.4% level, and accordingly, 24,106 shares in the aggregate were released to the four executives holding such outstanding grants on March 16, 2017. The unearned shares relating to the 2016 Performance Period, aggregating 2,560 shares, were forfeited on March 16, 2017. At December 31, 2018, there were no unvested 2016 PSUs outstanding.

On March 16, 2015, the Company granted an aggregate of 131,250 PSUs with both market and service conditions to eight of its executives (the "2015 PSUs"). In March 2018, the Compensation Committee determined that the performance metrics for the 2015 PSUs for the 2017 Performance Period had been achieved at the 112% level, and accordingly, 7,934 shares in the aggregate were released to the two remaining executives holding such outstanding grants, comprised of 7,084 shares, representing the 100% achievement target, granted on March 16, 2015 and 850 shares, representing the 12% achievement over target, granted on March 16, 2018. The grant of the additional shares and the release of the earned shares, both of which occurred on March 16, 2018, are included in the PSU table below. In February 2017, the Compensation Committee determined that the performance metrics for the 2015 PSUs for the 2016 Performance Period had been achieved at the 76.0% level, and accordingly, 23,750 shares in the aggregate were released to the four remaining executives holding such outstanding grants on April 1, 2017. The unearned shares relating to the 2016 Performance Period, aggregating 7,500 shares, were forfeited on April 1, 2017. At December 31, 2018, there were no unvested 2015 PSUs outstanding.

In connection with the Merger, as previously described above, PSUs held by the former CEO were converted to RSAs and certain other PSUs were accelerated and released in accordance with the individual employment terms of each PSU grantee. The vesting schedules of the remaining unvested PSUs were adjusted to continue to vest on their terms.

On December 14, 2017, the Company announced that, on and effective December 13, 2017, the Board of Directors appointed Franklin (Fritz) W. Hobbs as the Company's President and Chief Executive Officer, and the former CEO resigned his position as the Company's President and Chief Executive Officer and as a member of the Board of Directors. In connection

RIBBON COMMUNICATIONS INC.
Notes to Consolidated Financial Statements (Continued)

with the separation of the former CEO from the Company and in accordance with his employment agreement with the Company, as amended, the Company accelerated the vesting of his then-unvested RSAs (including those that had been converted from PSUs in connection with the Merger, as described above). These shares are reported as "Vested" in the RSA table below. However, due to the terms of the former CEO's separation agreement with the Company and applicable employment laws, the shares were not released until January 2018. Accordingly, these shares were not considered outstanding as of December 31, 2017.

Stock Options

Options are issued to purchase shares of common stock of the Company at prices that are equal to the fair market value of the shares on the date the option is granted. Options granted under the Stock Plan expire ten years from the date of grant. Outstanding options under the Edgewater Plan expire ten years from the date of grant. Outstanding options under the 2008 Plan expire either seven or ten years from the date of grant. Outstanding options under the 2012 Plan expire ten years from the date of grant. The grant date fair value of options, adjusted for estimated forfeitures, is recognized as expense on a straight-line basis over the requisite service period, which is generally the vesting period. Forfeitures are estimated based on historical experience.

The activity related to the Company's outstanding stock options during the year ended December 31, 2018 was as follows:

	Number of Shares	Weighted Average Exercise Price	Weighted Average Remaining Contractual Term (years)	Aggregate Intrinsic Value (in thousands)
Outstanding at January 1, 2018	435,187	\$ 14.71		
Granted	—	\$ —		
Edgewater outstanding options converted to Ribbon options	312,452	\$ 1.97		
Exercised	(15,935)	\$ 4.58		
Forfeited	(35,431)	\$ 1.81		
Expired	(114,212)	\$ 14.33		
Outstanding at December 31, 2018	<u>582,061</u>	\$ 9.01	4.82	\$ 774
Vested or expected to vest at December 31, 2018	560,325	\$ 9.27	4.67	\$ 720
Exercisable at December 31, 2018	428,097	\$ 11.47	3.60	\$ 366

The Company did not grant options during the year ended December 31, 2018. The grant date fair values of options to purchase common stock granted in the years ended December 31, 2017 and 2016 were estimated using the Black-Scholes valuation model with the following assumptions:

	Year ended December 31,	
	2017	2016
Risk-free interest rate	1.22% - 1.95%	1.00% - 1.61%
Expected dividends	—	—
Weighted average volatility	51.1%	54.8%
Expected life (years)	5.0	5.0-10.0

The risk-free interest rate used is the average U.S. Treasury Constant Maturities Rate for the expected life of the award. The expected dividend yield of zero is based on the fact that the Company has never paid dividends and has no present intention to pay cash dividends. The expected life for stock options is based on a combination of the Company's historical option patterns and expectations of future employee actions.

The weighted average grant-date fair values of options granted were \$3.05 for the year ended December 31, 2017 and \$4.39 for the year ended December 31, 2016.

RIBBON COMMUNICATIONS INC.**Notes to Consolidated Financial Statements (Continued)**

The total intrinsic values of options exercised were approximately \$39,000 for the year ended December 31, 2018, \$0.2 million for the year ended December 31, 2017 and approximately \$42,000 for the year ended December 31, 2016.

The Company received cash from option exercises of \$0.1 million in the year ended December 31, 2018, \$0.6 million in the year ended December 31, 2017 and \$0.2 million in the year ended December 31, 2016.

Restricted Stock Grants - Restricted Stock Awards and Restricted Stock Units

The Company's outstanding restricted stock grants consist of both RSAs and RSUs. Holders of unvested RSAs have voting rights and rights to receive dividends, if declared; however, these rights are forfeited if the underlying unvested RSA shares are forfeited. Holders of unvested RSUs do not have such voting and dividend rights. The grant date fair value of restricted stock grants, adjusted for estimated forfeitures, is recognized as expense on a straight-line basis over the requisite service period. The fair value of restricted stock grants is determined based on the market value of the Company's shares on the date of grant.

The activity related to the Company's RSAs for the year ended December 31, 2018 was as follows:

	Shares	Weighted Average Grant Date Fair Value
Unvested balance at January 1, 2018	1,696,582	\$ 7.68
Granted	1,123,956	\$ 6.90
Vested	(1,035,952)	\$ 8.05
Forfeited	(276,575)	\$ 7.36
Unvested balance at December 31, 2018	<u>1,508,011</u>	<u>\$ 6.90</u>

The activity related to the Company's RSUs for the year ended December 31, 2018 was as follows:

	Shares	Weighted Average Grant Date Fair Value
Unvested balance at January 1, 2018	17,932	\$ 6.90
Granted	908,300	\$ 6.27
Vested	(242,110)	\$ 5.57
Forfeited	(47,822)	\$ 6.76
Unvested balance at December 31, 2018	<u>636,300</u>	<u>\$ 6.52</u>

The total fair value of vested restricted stock grant shares was \$9.7 million in the year ended December 31, 2018, \$19.1 million in the year ended December 31, 2017 and \$10.1 million in the year ended December 31, 2016.

Performance-Based Stock Units

Holdes of unvested PSUs do not have voting and dividend rights. The Company recognizes stock-based compensation expense for PSUs without market conditions on a straight-line basis, with the amount recorded based upon the expected level of achievement as of each period-end, recording cumulative adjustments in the period when the expected level of achievement changes. The Company recognizes the grant date fair value of PSUs on a graded attribution basis through the vest date of the respective awards so long as it remains probable that the related service conditions will be satisfied.

The activity related to the Company's PSUs for the year ended December 31, 2018 was as follows:

RIBBON COMMUNICATIONS INC.
Notes to Consolidated Financial Statements (Continued)

	Shares	Weighted Average Grant Date Fair Value
Unvested balance at January 1, 2018	60,834	\$ 9.65
Granted	207,350	\$ 5.78
Vested	(57,768)	\$ 9.90
Forfeited	—	\$ —
Unvested balance at December 31, 2018	<u>210,416</u>	<u>\$ 5.77</u>

The total fair value of vested performance-based stock grant shares was \$0.6 million in the year ended December 31, 2018, \$1.4 million in the year ended December 31, 2017 and \$0.2 million in the year ended December 31, 2016.

ESPP

The ESPP is designed to provide eligible employees of the Company and its participating subsidiaries an opportunity to purchase common stock of the Company through accumulated payroll deductions.

The ESPP provides for six-month consecutive offering periods, with the purchase price of the stock equal to 85% of the lesser of the market price on the first or last day of the offering period. The maximum number of shares of common stock an employee may purchase during each offering period is 500, subject to certain adjustments pursuant to the ESPP.

In May 2017, the Compensation Committee determined to suspend all offering periods under the ESPP, effective September 1, 2017, until such time after the Merger Date as the Compensation Committee determined was best in its sole discretion. The Company's Board of Directors voted to re-implement the ESPP effective December 1, 2018 for employees in certain geographic regions, with the first purchase date of the re-implemented ESPP scheduled for May 31, 2019.

At December 31, 2018, 5.0 million shares, the maximum number of shares that may be issued under the ESPP, were authorized, and 1.4 million shares were available under the ESPP for future issuance.

Stock-Based Compensation

The consolidated statements of operations included stock-based compensation for the years ended December 31, 2018, 2017 and 2016 as follows (in thousands):

	Year ended December 31,		
	2018	2017	2016
Product cost of revenue	\$ 114	\$ 514	\$ 359
Service cost of revenue	345	1,448	1,314
Research and development	1,797	7,337	5,014
Sales and marketing	2,935	4,885	6,209
General and administrative	5,881	11,473	6,872
	<u>\$ 11,072</u>	<u>\$ 25,657</u>	<u>\$ 19,768</u>

There was no income tax benefit for employee stock-based compensation expense for the years ended December 31, 2018, 2017 and 2016 due to the valuation allowance recorded.

Stock-based compensation expense recorded for the year ended December 31, 2017 included \$8.6 million of incremental expense related to the acceleration of stock options and full value awards and subsequent adjustments to the vesting schedules of the remaining unvested full value awards in connection with the Merger. In addition, the Company recorded \$1.6 million of incremental expense related to the accelerated vesting of RSAs held by the former CEO in connection with his separation from the Company effective December 13, 2017. These incremental amounts were all recorded in the fourth quarter of 2017.

RIBBON COMMUNICATIONS INC.**Notes to Consolidated Financial Statements (Continued)**

During the three months ended March 31, 2017, the Company reversed \$1.0 million of incremental expense to correct an error in 2016 related to the acceleration of certain stock awards held by an executive who separated from the Company in 2016. Management had reviewed and considered the impact of the error and determined that it was not material to the Company's consolidated financial results for the third and fourth quarters of 2016, as well as the 2016 fiscal year. Management has also determined that the correction of this error is not material to the results of operations for the 2017 reporting periods.

At December 31, 2018, there was \$10.7 million, net of expected forfeitures, of unrecognized stock-based compensation expense related to unvested stock options, RSAs, RSUs, PSUs and the ESPP. This expense is expected to be recognized over a weighted average period of approximately two years.

Common Stock Reserved

Common stock reserved for future issuance at December 31, 2018 consists of the following:

Amended and Restated Stock Incentive Plan	3,501,214
ESPP	1,431,513
	<u>4,932,727</u>

The Company's policy is to issue authorized but unissued shares upon the exercise of stock options, to grant restricted common stock, to settle restricted stock units and performance-based stock units, and to authorize the purchase of shares of the Company's common stock under the ESPP.

(17) EMPLOYEE DEFINED CONTRIBUTION PLANS

The Company offers 401(k) savings plans to eligible employees. In June 2016, at the recommendation of the Compensation Committee, the Company's Board of Directors elected to reinstate a discretionary limited 401(k) match program of up to \$2,000 per year (\$1,000 per each half-year) per eligible employee, contingent upon the Company's achievement of certain financial metric targets set by the Compensation Committee. The matching contribution became effective July 1, 2016.

The Company assumed GENBAND's 401(k) savings plan in connection with the Merger.

Effective January 1, 2019, the previously separate former Sonus and former GENBAND 401(k) savings plans were combined into one plan.

Effective January 1, 2018, the Company began to match 50% of each employee's contributions to the 401(k) program up to 4% of the employee's eligible earnings, for a maximum match of 2% of eligible earnings.

The Company recorded expense related to its employee defined contribution plans aggregating \$3.2 million in the year ended December 31, 2018, \$1.4 million in the year ended December 31, 2017 and \$0.6 million in the year ended December 31, 2016.

(18) NON-U.S. EMPLOYEE DEFINED BENEFIT PLANS

In connection with the Merger, the Company assumed GENBAND's defined benefit retirement plans that cover some employees at various international locations. The Company adopted GENBAND's policy to contribute amounts at least sufficient to satisfy the minimum amount required by applicable law and regulations, or to directly pay benefits where appropriate. Benefits under the defined benefit plans are typically based either on years of service and the employee's compensation (generally during a fixed number of years immediately before retirement) or on annual credits. The range of assumptions that are used for the non-U.S. defined benefit plans reflect the different economic environments within the various countries.

RIBBON COMMUNICATIONS INC.
Notes to Consolidated Financial Statements (Continued)

During the year ended December 31, 2018, in conjunction with the Merger Restructuring Initiative, there were reductions in force that significantly reduced benefits that can be earned under the plans in several international locations that resulted in curtailment accounting. A curtailment gain of \$0.5 million was recognized in 2018 and included as a component of Other (expense) income, net, in the Company's consolidated statement of operations. In the year ended December 31, 2018, settlement accounting was triggered in only one of these locations, resulting in an immaterial settlement charge.

A reconciliation of the changes in the benefit obligations and fair value of the assets of the defined benefit plans for the year ended December 31, 2018 and for the period from the Merger Date to December 31, 2017, the funded status of the plans and the amounts recognized in the consolidated balance sheets as of December 31, 2018 and 2017 were as follows (in thousands):

	Year ended December 31, 2018	October 27, 2017 to December 31, 2017
Changes in projected benefit obligations:		
Projected benefit obligation, beginning of period	\$ 11,484	\$ 10,515
Service cost	449	68
Interest cost	150	25
Participant contributions	5	5
Benefits paid	(23)	(3)
Net actuarial loss on obligation	(414)	562
Curtailment	(553)	—
Settlement	(250)	—
Currency loss	—	312
Projected benefit obligation, end of year	<u>\$ 10,848</u>	<u>\$ 11,484</u>
Changes in plan assets:		
Fair value of plan assets, beginning of period	\$ 3,893	\$ 3,776
Actual return on plan assets	(53)	(8)
Employer contributions	292	22
Participant contributions	5	5
Administrative expenses	(22)	(4)
Benefits paid	(273)	(3)
Currency gain	—	105
Fair value of plan assets, end of year	<u>\$ 3,842</u>	<u>\$ 3,893</u>
Funded status at end of year	<u>\$ (7,006)</u>	<u>\$ (7,591)</u>
Amounts recognized in accumulated other comprehensive loss consist of:		
Net actuarial loss	<u>\$ 222</u>	<u>\$ 578</u>
Amounts recognized in the consolidated balance sheets consist of:		
Accrued expenses and other (current pension liability)	\$ (75)	\$ (67)
Other long-term liabilities (non-current pension liability)	(6,931)	(7,524)
Net amount recognized	<u>\$ (7,006)</u>	<u>\$ (7,591)</u>

Plans with underfunded or non-funded accumulated benefit obligations at December 31, 2018 and 2017 were as follows (in thousands):

	December 31, 2018	December 31, 2017
Aggregate projected benefit obligation	\$ 10,848	\$ 11,484
Aggregate accumulated benefit obligation	\$ 7,152	\$ 7,793
Aggregate fair value of plan assets	\$ 3,842	\$ 3,893

RIBBON COMMUNICATIONS INC.
Notes to Consolidated Financial Statements (Continued)

Net periodic benefit costs for the year ended December 31, 2018 and the period from the Merger Date to December 31, 2017 were as follows (in thousands):

	<u>Year ended December 31, 2018</u>	<u>October 27, 2017 to December 31, 2017</u>
Service cost	\$ 449	\$ 68
Interest cost	150	25
Expected return on plan assets	(45)	(8)
Plan asset expenses	22	4
Curtailment gain	(510)	—
Settlement loss	3	—
Net periodic benefit costs	<u>\$ 69</u>	<u>\$ 89</u>

The Company made benefit payments of \$273,000 in the year ended December 31, 2018, including \$250,000 of one-time lump sum payments to participants, and \$3,000 in the period from the Merger Date to December 31, 2017. Expected benefit payments for the next ten years are as follows:

Years ending December 31,

2019	\$ 75
2020	45
2021	94
2022	47
2023	231
2024 to 2028	643
	<u>\$ 1,135</u>

The changes in plan assets and benefit obligations recognized in other comprehensive income (loss) before tax for the year ended December 31, 2018 and the period from the Merger Date to December 31, 2017 were as follows (in thousands):

	<u>Year ended December 31, 2018</u>	<u>October 27, 2017 to December 31, 2017</u>
Net (gain) loss	\$ (356)	\$ 578

The Company defers all actuarial gains and losses resulting from variances between actual results and economic estimates or actuarial assumptions. The unrecognized actuarial gains and losses are recorded as unrealized pension actuarial gains (losses) in the Company's consolidated balance sheets as a component of Accumulated other comprehensive income. These unrecognized gains and losses are amortized as a component of net periodic benefit cost when the net gains and losses exceed 10% of the greater of the market value of plan assets or the projected benefit obligation at the beginning of the year. Amortization of the amount included in Accumulated other comprehensive income into net periodic benefit cost is expected to total \$4,000 for the year ended December 31, 2019.

The principal weighted average assumptions used to determine the benefit obligation at December 31, 2018 and 2017 were as follows:

	<u>December 31, 2018</u>	<u>December 31, 2017</u>
Discount rate	1.30%	1.31%
Rate of compensation increase	2.83%	3.38%

RIBBON COMMUNICATIONS INC.
Notes to Consolidated Financial Statements (Continued)

The principal weighted average assumptions used to determine net period benefit cost for the year ended December 31, 2018 and the period from the Merger Date to December 31, 2017 were as follows:

	Year ended December 31, 2018	October 27, 2017 to December 31, 2017
Discount rate	1.50%	1.49%
Expected long-term return on plan assets	1.34%	1.23%
Rate of compensation increase	3.38%	3.38%

Assumed discount rates are used in the measurement of the projected and accumulated benefit obligations, as well as the service and interest cost components of net periodic pension cost. Estimated discount rates reflect the rates at which the pension benefits could be effectively settled. For each defined benefit plan, the Company chooses an estimated discount rate from a readily available market index rate, based upon high-quality fixed income investments, specific to the country or economic zone in which the benefits are paid and taking into account the duration of the plan and the number of participants.

The plans in the Netherlands and Switzerland are funded through insurance contracts, which provide guaranteed interest credit. The fair value of the contract is derived from the insurance company's assessment of the minimum value of the benefits provided by the insurance contract. The methodology used to value the plan assets assumes that the value of the plan assets equals the guaranteed insured benefits. For consistency, the same discount rate used in the valuation of the benefit obligations is used to place a value on the plan assets. The assets are assumed to grow each year in line with the discount rate, and therefore, the expected return on the assets is set equal to the discount rate. The fair value of the combined plan assets was \$3.8 million at December 31, 2018 and \$3.9 million at December 31, 2017. The Company classifies the fair value of these plan assets as Level 2 in the fair value hierarchy as discussed in Note 5.

During the year ended December 31, 2018, employees in the Netherlands and Switzerland made contributions to the respective pension plans aggregating \$5,000. During the period from the Merger Date to December 31, 2017, employees in the Netherlands and Switzerland made contributions to the respective plans aggregating \$5,000. Employee contributions to these plans are based on a fixed 5% of the relevant pensionable earnings. The Company funds these plans by contributing at least the minimum amount required by applicable regulations and as recommended by an independent actuary. During the year ended December 31, 2018, the Company contributed \$292,000 to its pension plans. During the period from the Merger Date to December 31, 2017, the Company contributed \$22,000 to its pension plans. The Company expects to contribute \$0.2 million to its pension plans in 2019.

(19) INCOME TAXES

The components of loss from continuing operations before income taxes consisted of the following (in thousands):

	Year ended December 31,		
	2018	2017	2016
Income (loss) before income taxes:			
United States	\$ (52,569)	\$ (55,932)	\$ (11,973)
Foreign	(20,841)	2,240	557
	<u>\$ (73,410)</u>	<u>\$ (53,692)</u>	<u>\$ (11,416)</u>

The provision (benefit) for income taxes from continuing operations consisted of the following (in thousands):

RIBBON COMMUNICATIONS INC.
Notes to Consolidated Financial Statements (Continued)

	Year ended December 31,		
	2018	2017	2016
Provision (benefit) for income taxes:			
Current:			
Federal	\$ 561	\$ (200)	\$ 12
State	128	115	24
Foreign	2,198	1,960	1,378
Total current	2,887	1,875	1,414
Deferred:			
Federal	(8,481)	49,570	(301)
State	(1,414)	(4,833)	(1,007)
Foreign	(1,477)	(816)	338
Change in valuation allowance	11,885	(64,236)	2,072
Total deferred	513	(20,315)	1,102
Total	\$ 3,400	\$ (18,440)	\$ 2,516

A reconciliation of the Company's effective tax rate for continuing operations to the statutory federal rate is as follows:

	Year ended December 31,		
	2018	2017	2016
U.S. statutory income tax rate	21.0 %	35.0 %	35.0 %
State income taxes, net of federal benefit	(0.1)	1.2	—
Foreign income taxes	(5.7)	(0.5)	(7.9)
Foreign tax audit	—	—	(5.2)
Acquisition costs	(0.3)	(6.0)	—
Foreign deemed dividends	(3.4)	(3.8)	(5.0)
Stock-based compensation	(0.3)	26.8	(38.9)
Tax credits	0.6	(33.3)	11.6
Uncertain tax positions	1.3	(1.2)	—
NOL and credit limitations	—	(18.9)	—
Valuation allowance	(16.1)	29.0	(1.9)
Goodwill amortization	0.3	(1.7)	(6.7)
Meals and entertainment	(0.4)	(0.5)	(1.4)
Tax reform	—	8.8	—
Other, net	(1.5)	(0.6)	(1.6)
Effective income tax rate	(4.6)%	34.3 %	(22.0)%

RIBBON COMMUNICATIONS INC.
Notes to Consolidated Financial Statements (Continued)

The following is a summary of the significant components of deferred income tax assets and liabilities (in thousands):

	December 31,	
	2018	2017
Assets:		
Net operating loss carryforwards	\$ 76,278	\$ 58,624
Research and development tax credits	28,664	24,499
Deferred revenue	5,755	5,886
Accrued expenses	9,601	10,786
Inventory	4,906	5,980
Stock-based compensation	1,536	727
Fixed assets	7,716	7,452
Other temporary differences	1,943	1,556
	<u>136,399</u>	<u>115,510</u>
Valuation allowance	(101,484)	(89,600)
Total deferred tax assets	<u>34,915</u>	<u>25,910</u>
Liabilities:		
Purchased intangible assets	(26,014)	(17,092)
Unremitted foreign income	(4,487)	(3,171)
Total deferred tax liabilities	<u>(30,501)</u>	<u>(20,263)</u>
Total net deferred tax assets	<u>\$ 4,414</u>	<u>\$ 5,647</u>

The deferred tax assets and liabilities based on tax jurisdictions are presented in the Company's consolidated balance sheets as follows:

Deferred income taxes - noncurrent assets	\$ 9,152	\$ 8,434
Deferred income taxes - noncurrent liabilities	(4,738)	(2,787)
	<u>\$ 4,414</u>	<u>\$ 5,647</u>

At December 31, 2018, the Company had cumulative federal and state net operating losses ("NOLs") of \$289.1 million. The federal NOL carryforwards expire at various dates from 2020 through 2037. The state NOL carryforwards expire at various dates from 2018 through 2038.

The Company also has available federal, state and foreign income tax credit carryforwards of \$28.7 million that expire at various dates from 2019 through 2038.

Under the provisions of the Internal Revenue Code, the net operating losses and tax credit carryforwards are subject to review and possible adjustment by the Internal Revenue Service and state tax authorities. Net operating losses and tax credit carryforwards may become subject to an annual limitation in the event of certain cumulative changes in the ownership of significant shareholders over a three-year period in excess of 50%, as defined under Sections 382 and 383 of the Internal Revenue Code, as well as a similar state provision. As a result of the Edgewater Acquisition, the Company acquired approximately \$34 million of net operating loss carryforwards and approximately \$6 million of tax credit carryforwards. Edgewater incurred an ownership change as a result of its acquisition by the Company; however, the Company does not expect that any of the net operating losses or tax credits related to Edgewater will expire unused.

In connection with the Company's adoption of ASC 606, the Company recorded an adjustment to decrease its deferred tax assets by \$2.2 million. There was no impact to the Company's consolidated financial statements for this adjustment due to the Company's full valuation allowance against these assets.

On December 22, 2017, the U.S. government enacted comprehensive tax legislation commonly referred to as the Tax Act. The Tax Act makes broad and complex changes to the U.S. tax code, including, but not limited to: reducing the U.S. federal corporate tax rate from 35% to 21%; requiring companies to pay a one-time transition tax on certain unrepatriated earnings of foreign subsidiaries; generally eliminating U.S. federal income taxes on dividends from foreign subsidiaries; requiring a current inclusion in U.S. federal taxable income of certain earnings (the Global Intangible Low-taxed Income ("GILTI")) of controlled foreign corporations; eliminating the corporate alternative minimum tax ("AMT") and changing how existing AMT credits can

RIBBON COMMUNICATIONS INC.**Notes to Consolidated Financial Statements (Continued)**

be realized; creating the base erosion anti-abuse tax ("BEAT"); creating a new limitation on deductible interest expense; changing rules related to uses and limitations of net operating loss carryforwards created in tax years beginning after December 31, 2017; providing a tax deduction for foreign derived intangible income ("FDII"); and changing rules related to deductibility of compensation for certain officers. The consequences of the Tax Act were reflected in the Company's U.S. tax provision for the year ended December 31, 2018 and the Company has completed its accounting for the effects of the Tax Act within the measurement period. The Company did not have any FDII or GILTI adjustments, but recorded a BEAT tax expense of \$0.4 million and recorded an adjustment to the provisional amounts recorded at December 31, 2017 related to the Tax Act that decreased the Company's deferred tax assets by \$0.2 million. These adjustments were recorded in the year ended December 31, 2018.

During 2018 and 2017, the Company performed an analysis to determine if, based on all available evidence, it considered it more likely than not that some portion or all of the recorded deferred tax assets will not be realized in a future period. As a result of the Company's evaluation, the Company concluded that there was insufficient positive evidence to overcome the more objective negative evidence related to its cumulative losses and other factors. Accordingly, the Company has maintained a valuation allowance against its domestic deferred tax asset amounting to \$82.4 million at December 31, 2018 and \$73.1 million at December 31, 2017. A similar analysis and conclusion were made with regard to the valuation allowance on the deferred tax assets of the Company's Ireland subsidiary, acquired as part of the acquisition of GENBAND, resulting in a valuation allowance of \$9.5 million at December 31, 2018 and \$6.2 million at December 31, 2017. In analyzing the deferred tax assets related to the Company's Canada subsidiaries, the Company concluded that it was more likely than not that the Canadian federal credits would not be realized in a future period. This resulted in a valuation allowance of \$9.6 million. The deferred tax assets recognized with no valuation allowance at December 31, 2018 and 2017 relate to foreign subsidiaries where recoverability is concluded to be more likely than not based on the Company's cost plus compensation policy.

A reconciliation of the Company's unrecognized tax benefits is as follows (in thousands):

	2018	2017	2016
Unrecognized tax benefits at January 1	\$ 4,528	\$ 8,969	\$ 8,888
Increases related to current year tax positions	74	139	36
Increases related to prior period tax positions	122	430	723
Increases related to business acquisitions	—	2,012	—
Decreases related to prior period tax positions	(1,263)	(7,022)	(81)
Settlements	—	—	(597)
Unrecognized tax benefits at December 31	<u>\$ 3,461</u>	<u>\$ 4,528</u>	<u>\$ 8,969</u>

The Company recorded liabilities for potential penalties and interest of \$0.1 million for the year ended December 31, 2018, \$0.2 million for the year ended December 31, 2017 and \$0.1 million for the year ended December 31, 2016. The Company had cumulative deferred tax liabilities recorded related to interest and penalties of \$0.6 million for the year ended December 31, 2018, \$0.6 million for the year ended December 31, 2017 and \$0.2 million for the year ended December 31, 2016. Some of the unrecognized tax benefit items are expected to reverse in 2019 due to statute of limitation lapses.

The Company and its subsidiaries file income tax returns in the U.S. federal jurisdiction as well as various state and foreign jurisdictions. Generally, the tax years 2015 through 2018 remain open to examination by the major taxing jurisdictions to which the Company is subject. The Company's federal NOLs generated prior to 2015 could be adjusted on examination even though the year in which the loss was generated is otherwise closed by the statute of limitations.

As of December 31, 2018, the Company had ongoing income tax audits in certain foreign countries. Management believes that an adequate provision has been recorded for any adjustments that may result from tax examinations.

The Edgewater Acquisition was accounted for as a non-taxable business combination. Edgewater had previously been a single corporate filer for U.S. tax purposes. Consequently, U.S. federal and state deferred taxes were recorded as part of the business combination based on the differences between the tax basis of the acquired assets and assumed liabilities and their reported amounts for financial reporting purposes. The Company concluded that there was insufficient positive evidence to overcome the more objective negative evidence related to cumulative losses and other factors. The Company recorded identifiable intangible assets as part of the purchase accounting for the acquisition. For U.S. tax purposes, the future

RIBBON COMMUNICATIONS INC.**Notes to Consolidated Financial Statements (Continued)**

amortization of these intangibles will be non-deductible, thereby creating income. Since the Company will be filing a consolidated U.S. tax return, the benefit from these identifiable intangible assets will be utilizable. The Company is required to determine its ability to use the tax benefit against the valuation allowance previously established. The Company has determined that it is more likely than not that these benefits will be recognized. As a result, the valuation allowance has been reduced for the assumed net deferred tax liabilities, resulting in an income tax benefit of \$0.7 million. This benefit was included as a component of the Company's tax provision for the year ended December 31, 2018.

The 2017 acquisition of GENBAND was accounted for as a non-taxable business combination. GENBAND had previously been treated as a partnership for U.S. tax purposes. Consequently, U.S. federal and state deferred taxes were recorded as part of the business combination based on the differences between the tax basis of the acquired assets and assumed liabilities and their reported amounts for financial reporting purposes. The Company concluded that there was insufficient positive evidence to overcome the more objective negative evidence related to cumulated losses and other factors. The Company recorded a valuation allowance against the acquired deferred tax assets. The Company recorded identifiable intangible assets as part of the purchase accounting for the acquisition. For U.S. tax purposes, the future amortization of these intangibles will be non-deductible, thereby creating income. Since the Company will be filing a consolidated U.S. tax return, the benefit from these identifiable intangible assets will be utilizable. The Company is required to determine its ability to use the tax benefit against the valuation allowance previously established. The Company has determined that it is more likely than not that these benefits will be recognized. As a result, the valuation allowance has been reduced for the assumed net deferred tax liabilities, resulting in an income tax benefit of \$16.4 million. This benefit was included as a component of the Company's provision for income taxes for the year ended December 31, 2017.

The 2016 acquisition of Taqua was a taxable purchase of a business under Section 197 of the Internal Revenue Code. The tax amortization related to Taqua goodwill created a deferred tax liability.

(20) MAJOR CUSTOMERS

The following customers contributed 10% or more of the Company's revenue in at least one of the years ended December 31, 2018, 2017 and 2016:

	Year ended December 31,		
	2018	2017	2016
Verizon Communications Inc.	17%	17%	*
AT&T Inc.	*	*	12%

At December 31, 2018, two customers accounted for 10% or more of the Company's accounts receivable balance, representing approximately 32% in the aggregate of total accounts receivable. At December 31, 2017, two customers accounted for 10% or more of the Company's accounts receivable balance, representing approximately 31% in the aggregate of total accounts receivable. The Company performs ongoing credit evaluations of its customers and generally does not require collateral on accounts receivable. The Company maintains an allowance for doubtful accounts and such losses have been within management's expectations.

(21) RELATED PARTIES

As a portion of the consideration for the Merger, on October 27, 2017, the Company issued a promissory note for \$22.5 million to certain of GENBAND's equity holders who, following the Merger, owned greater than five percent of the Company's outstanding shares. As described in Note 12 above, the promissory note does not amortize and the principal thereon is payable in full on the third anniversary of its execution. Interest on the promissory note is payable quarterly in arrears and accrued at a rate of 7.5% per year for the first six months after issuance, and thereafter at a rate of 10% per year. The failure to make any payment under the promissory note when due and, with respect to payment of any interest, the continuation of such failure for a period of thirty days thereafter, constitutes an event of default under the promissory note. If an event of default occurs under the promissory note, the payees may declare the entire balance of the promissory note due and payable (including principal and accrued and unpaid interest) within five business days of the payees' notification to the Company of such acceleration. At December 31, 2018, the Promissory Note balance was \$24.1 million, comprised of \$22.5 million of principal, plus \$1.6 million

RIBBON COMMUNICATIONS INC.
Notes to Consolidated Financial Statements (Continued)

of interest converted to principal.

(22) COMMITMENTS AND CONTINGENCIES

Leases

The Company leases its facilities under operating leases, which expire at various times through 2029. The Company is responsible for certain real estate taxes, utilities and maintenance costs under these leases. The Company's corporate headquarters is located in a leased facility in Westford, Massachusetts, consisting of 97,500 square feet under a lease that expires in August 2028.

Escalation clauses, free rent and other lease concessions are recognized on a straight-line basis over the minimum lease term. Rent expense was \$11.9 million for the year ended December 31, 2018, \$5.9 million for the year ended December 31, 2017 and \$4.5 million for the year ended December 31, 2016.

Future minimum payments under operating lease arrangements as of December 31, 2018 were as follows (in thousands):

Years ending December 31,	
2019	\$ 10,705
2020	8,384
2021	7,455
2022	5,691
2023	5,430
Thereafter	19,818
	<u>\$ 57,483</u>

Litigation and Contingencies

The Company fully cooperated with an SEC inquiry regarding the development and issuance of Sonus' first quarter 2015 revenue and earnings guidance. The Company and the SEC reached an agreement to resolve this matter and on August 7, 2018, the SEC issued a Cease and Desist Order (the "SEC Cease and Desist Order"). As part of the Order, the findings of which the Company neither admitted to nor denied, the Company agreed to pay a \$1.9 million civil penalty and agreed not to violate the securities laws in the future. The Company recorded \$1.9 million in the year ended December 31, 2017 for then-potential fines in connection with this investigation and has paid such amount to the SEC.

The Company is involved in six lawsuits with Metaswitch Networks Ltd., Metaswitch Networks Corp. and Metaswitch Inc. (collectively, "Metaswitch"). In five of the lawsuits, the Company is the plaintiff and, in three of those five lawsuits, the Company is also a counterclaim defendant. In the sixth case, the Company is the defendant. On January 21, 2014, GENBAND and the Company's indirectly-owned subsidiary, GENBAND US LLC, filed a complaint in the Eastern District of Texas, Marshall Division, alleging that Metaswitch infringed certain patents owned by GENBAND. Following unsuccessful mediation, a trial took place and on January 15, 2016, the jury awarded \$8.2 million in past royalty damages to GENBAND, which neither GENBAND nor the Company has recorded. On September 29, 2016, the court confirmed the jury verdict following motions from both parties. On March 22, 2018, the district court entered final judgment awarding GENBAND \$8.9 million in royalties for damages through January 15, 2016 at rates set by the district court, excluding pre- and post-judgment interest and costs. On April 10, 2018, the clerk of the court set the awarded costs at \$0.4 million. On April 19, 2018, Metaswitch filed a notice of appeal on the judgment with United States Court of Appeals for the Federal Circuit, and filed its appeal brief on July 6, 2018. Oral argument on the appeal is set for March 8, 2019.

On April 18, 2018, through Sonus, the Company filed a complaint in the Eastern District of Texas, Marshall Division, alleging that Metaswitch is continuing to infringe the patents from the first lawsuit above through sales of Metaswitch's allegedly "redesigned" products. This suit seeks a finding that Metaswitch's infringement is willful. This suit also alleges false advertising and seeks monetary damages resulting from allegedly false and misleading statements Metaswitch made regarding the first lawsuit. The district court has set trial for September 9, 2019.

RIBBON COMMUNICATIONS INC.**Notes to Consolidated Financial Statements (Continued)**

Through Sonus and GENBAND US LLC, the Company is involved as plaintiff and counterclaim defendant in a lawsuit with Metaswitch regarding claims that Metaswitch misappropriated trade secrets of GENBAND, and the Company is seeking monetary damages. This case is pending in state court in Dallas County, Texas, and stems from claims originally brought in a patent lawsuit between GENBAND and Metaswitch. The state court action was filed on March 28, 2017. Metaswitch filed its answer on April 21, 2017, in which it asserted counterclaims against GENBAND. On July 11, 2018, Metaswitch filed its fifth amended answer and counterclaims against GENBAND. The Texas state court has set a special setting for a trial for this case on April 22, 2019.

Through Sonus, the Company is also involved as plaintiff and counterclaim defendant in two patent infringement lawsuits with Metaswitch asserting the infringement of a total of ten patents that came into the Company from Sonus, and the Company is seeking monetary damages. Sonus filed these two lawsuits in the Eastern District of Texas, Marshall Division, on March 8, 2018. Metaswitch filed its answers on May 15, 2018, in which it asserted counterclaims against Sonus, including alleged infringement by the Company and Sonus of a total of ten patents. The district court has set trials for these cases to occur on February 18, 2020 and June 15, 2020.

On November 19, 2018, Metaswitch filed a complaint against the Company and several of its subsidiaries in the Southern District of New York, alleging various antitrust violations based, in large part, on allegations that GENBAND should not have brought its successful patent infringement lawsuit against Metaswitch. Metaswitch is seeking monetary damages. The Company has not yet filed an answer, and the court has not yet set a schedule.

At this time, it is not possible to predict the outcome of the litigation matters with Metaswitch, but the Company does not expect the results of any of these actions to have a material adverse effect on the Company's business or consolidated financial results.

On November 8, 2018, Ron Miller, a purported stockholder of the Company, filed a Class Action Complaint (the "Miller Complaint") in the United States District Court for the District of Massachusetts (the "Massachusetts District Court") against the Company and three of its former officers, Raymond P. Dolan, Mark T. Greenquist and Michael Swade (collectively, the "Defendants"), claiming to represent a class of purchasers of Sonus common stock during the period from January 8, 2015 through March 24, 2015 and alleging violations of the federal securities laws. Similar to a previous complaint entitled Sousa et al. vs. Sonus Networks, Inc. et al., which was dismissed with prejudice by Order dated June 6, 2017, the Miller Complaint claims that the Defendants made misleading forward-looking statements concerning Sonus' expected fiscal first quarter of 2015 financial performance, which statements were also the subject of the SEC Cease and Desist Order, whose findings the Company neither admitted nor denied. The Miller plaintiffs are seeking monetary damages.

After the Miller Complaint was filed, several parties filed and briefed motions seeking to be selected by the Massachusetts District Court to serve as a Lead Plaintiff in the action. Briefing on the issue was completed on January 30, 2019 and the Massachusetts District Court is expected to issue a decision shortly. The Company has not yet filed an answer, and the Massachusetts District Court has not yet set a schedule.

In addition, the Company is often a party to disputes and legal proceedings that it considers routine and incidental to its business. Management does not expect the results of any of these actions to have a material effect on the Company's business or consolidated financial statements.

(23) SUBSEQUENT EVENT

On February 28, 2019, the Company acquired the business and technology assets of Anova Data, Inc. ("Anova"), a provider of advanced analytics solutions, for total purchase consideration of 3.3 million shares of the Company's common stock. Anova is based in the United States and its NextGen products provide a cloud-native, streaming analytics platform for network and subscriber optimization and monetization. The Company believes that the proposed acquisition reinforces and extends Ribbon's strategy to expand into network optimization, security and data monetization via big data analytics and machine learning. The Company does not expect that the acquisition will have a material effect on its consolidated financial statements in 2019.

RIBBON COMMUNICATIONS INC.
Notes to Consolidated Financial Statements (Continued)

(24) QUARTERLY RESULTS (UNAUDITED)

The following tables present the Company's quarterly operating results for the years ended December 31, 2018 and 2017. The information for each of these quarters is unaudited and has been prepared on the same basis as the audited consolidated financial statements. In the opinion of management, all necessary adjustments, consisting only of normal recurring adjustments, have been included to present fairly the unaudited consolidated quarterly results when read in conjunction with the Company's audited consolidated financial statements and related notes.

	First Quarter	Second Quarter	Third Quarter (1)	Fourth Quarter
(In thousands, except per share data)				
Fiscal 2018				
Revenue	\$ 121,180	\$ 137,361	\$ 152,468	\$ 166,896
Cost of revenue	65,907	62,250	70,234	71,182
Gross profit	\$ 55,273	\$ 75,111	\$ 82,234	\$ 95,714
(Loss) income from operations	\$ (42,383)	\$ (16,636)	\$ (7,566)	\$ 1,177
Net loss	\$ (44,904)	\$ (19,922)	\$ (10,158)	\$ (1,826)
Loss per share (3):				
Basic	\$ (0.44)	\$ (0.20)	\$ (0.10)	\$ (0.02)
Diluted	\$ (0.44)	\$ (0.20)	\$ (0.10)	\$ (0.02)
Shares used in computing loss per share:				
Basic	101,917	102,160	104,918	106,607
Diluted	101,917	102,160	104,918	106,607

	First Quarter	Second Quarter	Third Quarter	Fourth Quarter (2)
(In thousands, except per share data)				
Fiscal 2017				
Revenue	\$ 53,368	\$ 55,733	\$ 74,629	\$ 146,212
Cost of revenue	19,620	19,331	20,082	69,413
Gross profit	\$ 33,748	\$ 36,402	\$ 54,547	\$ 76,799
Loss (income) from operations	\$ (10,782)	\$ (12,703)	\$ 3,919	\$ (35,663)
Net (loss) income	\$ (10,646)	\$ (12,345)	\$ 3,453	\$ (15,714)
(Loss) earnings per share (3):				
Basic	\$ (0.22)	\$ (0.25)	\$ 0.07	\$ (0.18)
Diluted	\$ (0.22)	\$ (0.25)	\$ 0.07	\$ (0.18)
Shares used in computing (loss) diluted earnings per share:				
Basic	49,114	49,543	49,753	86,567
Diluted	49,114	49,543	50,131	86,567

(1) Includes the results of Edgewater for the period subsequent to August 3, 2018.

(2) Includes the results of GENBAND for the period subsequent to October 27, 2017.

(3) Income (loss) per share is calculated independently for each of the quarters presented; accordingly, the sum of the quarterly earnings (loss) per share amounts may not equal the total calculated for the year.

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

None.

Item 9A. Controls and Procedures

Disclosure Controls and Procedures

Our management, with the participation of our principal executive officer and principal financial officer, evaluated the effectiveness of our disclosure controls and procedures (as defined in Rules 13a-15(e) and 15d-15(e) under the Securities Exchange Act of 1934, as amended (the "Exchange Act")), as of the end of the period covered by this Annual Report on Form 10-K. Based on this evaluation, our principal executive officer and principal financial officer concluded that our disclosure controls and procedures were effective as of December 31, 2018.

Management's Annual Report on Internal Control over Financial Reporting

Our management, with the participation of our principal executive officer and principal financial officer, is responsible for establishing and maintaining adequate internal control over financial reporting as defined in Rules 13a-15(f) and 15d-15(f) under the Exchange Act. Our internal control system is designed to provide reasonable assurance to our management and Board of Directors regarding the preparation and fair presentation of published financial statements.

Our management assessed the effectiveness of our internal control over financial reporting as of December 31, 2018. In making its assessment of internal control over financial reporting, our management used the criteria set forth by the Committee of Sponsoring Organizations of the Treadway Commission in *Internal Control—Integrated Framework (2013)*. Based on this assessment, management concluded that, as of December 31, 2018, our internal control over financial reporting was effective.

Our evaluation excluded Edgewater, which was acquired on August 3, 2018. Our consolidated statement of operations for the year ended December 31, 2018 included gross revenue of \$21.5 million and \$4.3 million of net loss attributable to Edgewater. Our balance sheet as of December 31, 2018 included total assets of \$24.5 million and net assets of \$7.5 million attributable to Edgewater. In accordance with guidance issued by the Securities and Exchange Commission, companies are allowed to exclude acquisitions from their assessment of internal control over financial reporting during the first year subsequent to the acquisition while integrating the acquired operations.

Deloitte & Touche LLP, an independent registered public accounting firm that audited our financial statements included in this Annual Report on Form 10-K, has issued an attestation report on management's internal control over financial reporting, which is included in this Item 9A under the caption "Report of Independent Registered Public Accounting Firm."

Changes in Internal Control over Financial Reporting

As previously noted, we completed the Merger with GENBAND on October 27, 2017. During the quarter ended December 31, 2018, we completed the process of incorporating the internal controls for GENBAND into our internal control over financial reporting and extending our Section 404 compliance program under the Sarbanes-Oxley Act of 2002 and the applicable rules and regulations under such Act to include GENBAND.

Except as otherwise described above, there were no changes in our internal control over financial reporting during the fiscal quarter ended December 31, 2018 that have materially affected, or are reasonably likely to materially affect, our internal control over financial reporting.

REPORT OF INDEPENDENT REGISTERED PUBLIC ACCOUNTING FIRM

To the Board of Directors and Stockholders of Ribbon Communications Inc.

Opinion on Internal Control over Financial Reporting

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

We have also audited, in accordance with the standards of the Public Company Accounting Oversight Board (United States) (PCAOB), the consolidated financial statements as of and for the year ended December 31, 2018, of the Company and our report dated March 4, 2019, expressed an unqualified opinion on those financial statements, and includes an explanatory paragraph relating to the adoption of Accounting Standards Codification (ASC) Topic 606, "Revenue from Contracts with Customers," on January 1, 2018.

As described in Management's Annual Report on Internal Control over Financial Reporting, management excluded from its assessment the internal control over financial reporting of Edgewater Networks, which was acquired on August 3, 2018 and whose financial statements constitute \$24.5 million and \$7.5 million of total and net assets, respectively, \$21.5 million of revenues, and \$4.3 million of net loss of the consolidated financial statement amounts as of and for the year ended December 31, 2018. Accordingly, our audit did not include the internal control over financial reporting at Edgewater Networks.

Basis for Opinion

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

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

Definition and Limitations of Internal Control over Financial Reporting

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

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

/s/ Deloitte & Touche LLP
Boston, Massachusetts
March 4, 2019

Item 9B. Other Information

None.

PART III

Item 10. Directors, Executive Officers and Corporate Governance

The information required by this Item 10 is included in our definitive Proxy Statement with respect to our 2019 Annual Meeting of Stockholders to be filed with the SEC not later than 120 days after the end of the fiscal year ended December 31, 2018 and is incorporated herein by reference.

Item 11. Executive Compensation

The information required by this Item 11 is included in our definitive Proxy Statement with respect to our 2019 Annual Meeting of Stockholders to be filed with the SEC not later than 120 days after the end of the fiscal year ended December 31, 2018 and is incorporated herein by reference.

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

The information required by this Item 12 is included in our definitive Proxy Statement with respect to our 2019 Annual Meeting of Stockholders to be filed with the SEC not later than 120 days after the end of the fiscal year ended December 31, 2018 and is incorporated herein by reference.

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

The information required by this Item 13 is included in our definitive Proxy Statement with respect to our 2019 Annual Meeting of Stockholders to be filed with the SEC not later than 120 days after the end of the fiscal year ended December 31, 2018 and is incorporated herein by reference.

Item 14. Principal Accounting Fees and Services

The information required by this Item 14 will be included in our definitive Proxy Statement with respect to our 2019 Annual Meeting of Stockholders to be filed with the SEC and is incorporated herein by reference.

PART IV

Item 15. Exhibits, Financial Statement Schedules

1) Financial Statements

The consolidated financial statements of the Company are listed in the index under Part II, Item 8, of this Annual Report on Form 10-K.

2) Financial Statement Schedules

None. All schedules are omitted because they are not applicable, not required under the instructions or the information is contained in the consolidated financial statements, or notes thereto, included herein.

3) List of Exhibits

The Exhibits filed as part of this Annual Report on Form 10-K are listed in the Exhibit Index immediately preceding the signature page of this Annual Report, which Exhibit Index is incorporated herein by reference.

Item 16. Form 10-K Summary

None.

EXHIBIT INDEX

Exhibit No.	Description
2.1 **	Agreement and Plan of Merger, dated as of May 23, 2017, by and among the registrant, Sonus, Inc., Solstice Sapphire, Inc., Green Sapphire Investments LLC, Green Sapphire LLC, GENBAND Holdings Company, GENBAND Inc., and GENBAND II, Inc. (incorporated by reference to Exhibit 2.1 to Sonus, Inc.'s Current Report on Form 8-K, filed May 23, 2017 with the SEC).
2.2 **	Agreement and Plan of Merger, dated June 24, 2018, by and among the Registrant, Kansas Merger Sub, Inc., Edgewater Networks, Inc. and Shareholder Representative Services LLC (incorporated by reference to Exhibit 10.2 to the Registrant's Quarterly Report on Form 10-Q, filed August 1, 2018 with the SEC).
3.1	Restated Certificate of Incorporation of the Registrant (incorporated by reference to Exhibit 3.2 to the Registrant's Current Report on Form 8-K12B, filed October 30, 2017 with the SEC).
3.2	Certificate of Amendment of the Restated Certificate of Incorporation of the Registrant (incorporated by reference to Exhibit 3.1 to the Registrant's Current Report on Form 8-K, filed November 28, 2017 with the SEC).
3.3	Amended and Restated By-Laws of the Registrant (incorporated by reference to Exhibit 3.3 to the Registrant's Annual Report on Form 10-K, filed March 8, 2018 with the SEC).
10.1	Principal Stockholders Agreement, dated October 27, 2017, by and among the Registrant, Heritage PE (OEP) II, L.P. and Heritage PE (OEP) III, L.P. (incorporated by reference to Exhibit 99.1 to the Registrant's Current Report on Form 8-K12B, filed October 30, 2017 with the SEC).
10.2	Registration Rights Agreement, dated as of October 27, 2017, by and among the Registrant, Heritage PE (OEP) II, L.P. and Heritage PE (OEP) III, L.P. (incorporated by reference to Exhibit 99.2 to the Registrant's Current Report on Form 8-K12B, filed October 30, 2017 with the SEC).
10.3	Promissory Note, dated as of October 27, 2017 (incorporated by reference to Exhibit 99.3 to the Registrant's Current Report on Form 8-K12B, filed October 30, 2017 with the SEC).
10.4	Senior Secured Credit Facilities Credit Agreement, dated as of December 21, 2017, among the Registrant, as a Guarantor, Sonus Networks, Inc., as the Borrower, Silicon Valley Bank, as Administrative Agent, Issuing Lender, Swingline Lender and Lead Arranger, and the other lenders party thereto (incorporated by reference to Exhibit 10.1 to the Registrant's Current Report on Form 8-K, filed December 26, 2017 with the SEC).
10.5	First Amendment, dated June 24, 2018, to the Credit Agreement, dated as of December 21, 2017, by and among the Registrant as a guarantor, Sonus Networks, Inc. as the Borrower, the other guarantors party thereto, Silicon Valley Bank, as Administrative Agent, Issuing Lender, Swingline Lender and Lead Arranger, and the other lenders party thereto (incorporated by reference to Exhibit 10.1 to the Registrant's Current Report on Form 8-K, filed June 28, 2018 with the SEC).
10.6 +	Form of Indemnity Agreement for Officers and Directors (incorporated by reference to Exhibit 10.5 to the registrant's Annual Report on Form 10-K, filed March 8, 2018 with the SEC).
10.7 +	Amended and Restated 2000 Employee Stock Purchase Plan, (incorporated by reference to Exhibit 10.1 to the Registrant's Quarterly Report on Form 10-Q, filed October 31, 2018 with the SEC).
10.8 +	Senior Management Cash Incentive Plan, dated October 27, 2017 (incorporated by reference to Exhibit 10.7 to the Registrant's Annual Report on Form 10-K, filed March 8, 2018 with the SEC).
10.9 +	Amended and Restated Employment Agreement between the Registrant and Raymond P. Dolan, accepted on February 23, 2015 (incorporated by reference to Exhibit 10.17 to Sonus, Inc.'s Annual Report on Form 10-K, filed February 25, 2015 with the SEC).
10.10 +	Letter Agreement, dated as of December 13, 2017, between the Registrant and Raymond P. Dolan (incorporated by reference to Exhibit 99.1 to the Registrant's Current Report on Form 8-K, filed December 14, 2017 with the SEC).
10.11	Lease, dated August 11, 2010, between Michelson Farm-Westford Technology Park IV Limited Partnership and the Registrant with respect to the property located at 4 Technology Park Drive, Westford, Massachusetts (incorporated by reference to Exhibit 10.1 to Sonus, Inc.'s Quarterly Report on Form 10-Q, filed November 2, 2010 with the SEC).
10.12	First Amendment to Lease, dated October 27, 2010, between Michelson Farm-Westford Technology Park IV Limited Partnership and the Registrant with respect to the property located at 4 Technology Park Drive, Westford, Massachusetts (incorporated by reference to Exhibit 10.2 to Sonus, Inc.'s Quarterly Report on Form 10-Q, filed November 2, 2010 with the SEC).

- 10.13 [Second Amendment to Lease, dated as of June 16, 2017, by and between Michelson Farm-Westford Technology Park IV Limited Partnership and the Registrant with respect to the property located at 4 Technology Park Drive, Westford, Massachusetts \(incorporated by reference to Exhibit 10.1 to Sonus, Inc.'s Current Report on Form 8-K, filed June 21, 2017 with the SEC\).](#)
- 10.14 [Third Amendment to Lease between Michelson Farm-Westford Technology Park IV Limited Partnership and Sonus Networks, Inc., dated March 12, 2018 \(incorporated by reference to Exhibit 10.1 to the Registrant's Quarterly Report on Form 10-Q, filed April 30, 2018 with the SEC\).](#)
- 10.15 + [2008 Stock Incentive Plan of the Registrant \(incorporated by reference to Exhibit 99.1 to the Registrant's Registration Statement on Form S-8, filed October 31, 2017 with the SEC\).](#)
- 10.16 + [Form of Nonstatutory Stock Option Award Agreement Granted under the 2008 Stock Incentive Plan \(incorporated by reference to Exhibit 10.29 to Sonus, Inc.'s Annual Report on Form 10-K, filed March 6, 2013 with the SEC\).](#)
- 10.17 + [2012 Amended Performance Technologies Incorporated Omnibus Incentive Plan \(incorporated by reference to Exhibit 99.2 to the Registrant's Registration Statement on Form S-8, filed with the SEC effective October 31, 2017\).](#)
- 10.18 + [Form of Non-Qualified Stock Option Award Agreement Granted under the 2012 Amended Performance Technologies, Incorporated Omnibus Incentive Plan \(incorporated by reference to Exhibit 10.7 to Sonus, Inc.'s Quarterly Report on Form 10-Q, filed April 29, 2014 with the SEC\).](#)
- 10.19 + [Amended and Restated Employment Agreement by and between with Jeffrey Snider, accepted May 22, 2017 \(incorporated by reference to Exhibit 10.1 to Sonus, Inc.'s Quarterly Report on Form 10-Q, filed August 4, 2017 with the SEC\).](#)
- 10.20 + [Consulting Agreement, dated as of October 31, 2017, between the Registrant and Jeffrey M. Snider \(incorporated by reference to Exhibit 10.1 to the Registrant's Current Report on Form 8-K, filed October 31, 2017 with the SEC\).](#)
- 10.21 + [Employment Agreement between the Registrant and Kevin Riley, dated July 30, 2014 \(incorporated by reference to Exhibit 10.1 to Sonus, Inc.'s Quarterly Report on Form 10-Q, filed April 29, 2016 with the SEC\).](#)
- 10.22 + [Employment Agreement between the Registrant and Michael Swade, accepted September 29, 2014 \(incorporated by reference to Exhibit 10.2 to Sonus, Inc.'s Quarterly Report on Form 10-Q, filed April 29, 2016 with the SEC\).](#)
- 10.23 +* [Letter Agreement between the Registrant and Michael Swade, accepted January 13, 2019.](#)
- 10.24 + [Employment Agreement between the Registrant and Susan Villare, accepted on February 3, 2012 \(incorporated by reference to Exhibit 10.1 to Sonus, Inc.'s Amendment No. 1 to Current Report on Form 8-K/A, filed July 8, 2016 with the SEC\).](#)
- 10.25 + [Letter Agreement between the Registrant and Susan Villare, accepted on July 7, 2016 \(incorporated by reference to Exhibit 10.2 to Sonus, Inc.'s Amendment No. 1 to Current Report on Form 8-K/A, filed July 8, 2016 with the SEC\).](#)
- 10.26 + [Amended and Restated Stock Incentive Plan of the Registrant \(incorporated by reference to Exhibit 99.3 to the Registrant's Registration Statement on Form S-8, filed with the SEC on October 31, 2017\).](#)
- 10.27 + [Form of Nonstatutory Stock Option Award Agreement Granted under the Amended and Restated Stock Incentive Plan \(incorporated by reference to Exhibit 10.2 to Sonus, Inc.'s Quarterly Report on Form 10-Q filed July 29, 2016 with the SEC\).](#)
- 10.28 + [Form of Restricted Stock Award Agreement Granted under the Amended and Restated Stock Incentive Plan \(incorporated by reference to Exhibit 10.3 to Sonus, Inc.'s Quarterly Report on Form 10-Q, filed July 29, 2016 with the SEC\).](#)
- 10.29 + [Form of Restricted Stock Unit Award Agreement \(Performance-Based Vesting\) for Awards Granted under the Amended and Restated Stock Incentive Plan \(incorporated by reference to Exhibit 10.4 to Sonus, Inc.'s Quarterly Report on Form 10-Q, filed July 29, 2016 with the SEC\).](#)
- 10.30 + [Form of Restricted Stock Unit Award Agreement \(Time-Based Vesting\) for Awards Granted under the Amended and Restated Stock Incentive Plan \(incorporated by reference to Exhibit 10.3 to the Registrant's Quarterly Report on Form 10-Q, filed August 1, 2018 with the SEC\).](#)
- 10.31 + [Employment Agreement, entered into as of April 20, 2018 between the Registrant, Sonus Networks, Inc. and Franklin W. Hobbs \(incorporated by reference to Exhibit 10.1 to the Registrant's Current Report on Form 8-K/A, filed April 26, 2018 with the SEC\).](#)
- 10.32 + [Severance Agreement, entered into as of April 20, 2018, between the Registrant, Sonus Networks, Inc. and Franklin W. Hobbs \(incorporated by reference to Exhibit 10.2 to the Registrant's Current Report on Form 8-K/A, filed April 26, 2018 with the SEC\).](#)

10.33	+	Amended and Restated Employment Agreement between the Registrant and Daryl Raiford, effective as of December 24, 2010, as amended on December 13, 2016 (incorporated by reference to Exhibit 10.30 to the Registrant's Annual Report on Form 10-K, filed March 8, 2018 with the SEC).
10.34	+	Retention Bonus Agreement between the Registrant and Daryl Raiford, dated as of December 12, 2016 (incorporated by reference to Exhibit 10.31 to the Registrant's Annual Report on Form 10-K, filed March 8, 2018 with the SEC).
10.35	+	Form of Letter Agreement between the Registrant and each of Franklin W. Hobbs, Daryl E. Raiford, Kevin Riley, Michael Swade and Susan Villare (incorporated by reference to Exhibit 10.1 to the Registrant's Current Report on Form 8-K, filed December 17, 2018 with the SEC).
10.36	++	Employment Agreement, dated August 12, 2013, between the Registrant and David Walsh.
10.37	++	Amendment No. 1 to Employment Agreement, effective October 23, 2017, between the Registrant and David Walsh.
10.38	++	Letter Agreement between the Registrant and David Walsh, accepted January 13, 2019.
10.39	++	Independent Consultancy Agreement, effective February 2, 2019, between the Registrant and David Walsh.
10.40	+	Edgewater Networks, Inc. Amended and Restated 2002 Stock Option Plan, effective as of April 8, 2010 (incorporated by reference to Exhibit 99.1 to the Registrant's Registration Statement on Form S-8, filed August 6, 2018 with the SEC).
10.41	+	Amendment to the Edgewater Networks, Inc. Amended and Restated 2002 Stock Option Plan, dated December 7, 2016 (incorporated by reference to Exhibit 99.2 to the Registrant's Registration Statement on Form S-8, filed August 6, 2018 with the SEC).
21.1	*	Subsidiaries of the Registrant.
23.1	*	Consent of Independent Registered Public Accounting Firm, Deloitte & Touche LLP
31.1	*	Certificate of Ribbon Communications Inc. Chief Executive Officer Pursuant to Section 302 of the Sarbanes-Oxley Act of 2002.
31.2	*	Certificate of Ribbon Communications Inc. Chief Financial Officer Pursuant to Section 302 of the Sarbanes-Oxley Act of 2002.
32.1	#	Certificate of Ribbon Communications Inc. Chief Executive Officer Pursuant to Section 906 of the Sarbanes-Oxley Act of 2002.
32.2	#	Certificate of Ribbon Communications Inc. Chief Financial Officer Pursuant to Section 906 of the Sarbanes-Oxley Act of 2002.
101.INS		XBRL Instance Document
101.SCH		XBRL Taxonomy Extension Schema
101.CAL		XBRL Taxonomy Extension Calculation Linkbase
101.DEF		XBRL Taxonomy Extension Definition Linkbase
101.LAB		XBRL Taxonomy Extension Label Linkbase
101.PRE		XBRL Taxonomy Extension Presentation Linkbase

* Filed herewith.

Furnished herewith.

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

** Certain schedules and exhibits have been omitted pursuant to Item 601(b)(2) of Regulation S-K. The Registrant hereby undertakes to furnish copies of any of the omitted schedules and exhibits upon request by the U.S. Securities and Exchange Commission.

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.

RIBBON COMMUNICATIONS INC.

By: /s/ Franklin W. Hobbs

Franklin W. Hobbs
President and Chief Executive Officer

March 4, 2019

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

<u>Signature</u>	<u>Title</u>	<u>Date</u>
<u>/s/ Franklin W. Hobbs</u> Franklin W. Hobbs	President, Chief Executive Officer and Director (Principal Executive Officer)	March 4, 2019
<u>/s/ Daryl E. Raiford</u> Daryl E. Raiford	Executive Vice President and Chief Financial Officer (Principal Financial Officer)	March 4, 2019
<u>/s/ Eric S Marmurek</u> Eric S. Marmurek	Senior Vice President, Finance (Principal Accounting Officer)	March 4, 2019
<u>/s/ Richard J. Lynch</u> Richard J. Lynch	Chairman	March 4, 2019
<u>/s/ Kim S. Fennebresque</u> Kim S. Fennebresque	Director	March 4, 2019
<u>/s/ Bruns H. Grayson</u> Bruns H. Grayson	Director	March 4, 2019
<u>/s/ Beatriz V. Infante</u> Beatriz V. Infante	Director	March 4, 2019
<u>/s/ Kent J. Mathy</u> Kent J. Mathy	Director	March 4, 2019
<u>/s/ Scott E. Schubert</u> Scott E. Schubert	Director	March 4, 2019
<u>/s/ Rick W. Smith</u> Rick W. Smith	Director	March 4, 2019



STRICTLY PERSONAL AND CONFIDENTIAL

January 13, 2019
Michael Swade
Via email

Re: Agreement concerning your separation

Dear Mike,

This letter (“Letter Agreement”) confirms that, effective January 14, 2019 (the “Transition Date”), you will no longer be the Global Head of Sales for the Company and, following the Transition Date, your employment with Ribbon Communications Operating Company, Inc. will terminate as of the close of business on March 31, 2019 (the “Termination Date”), in accordance with Section 7 of that certain Employment Agreement, dated September 19, 2014, between you and Sonus Networks, Inc. (“Employment Agreement”). Between the Transition Date and the Termination Date, you will continue to be employed by the Company and agree to use your best efforts to provide transition assistance to the Sales organization as directed by the Company to ensure a smooth and fulsome transition of your duties and knowledge to Steven Bruny or such other person designated by the Company. This Letter Agreement sets forth certain agreements that have been reached between you and the Company (as hereinafter defined) in connection with the foregoing transition.

For purposes of this Letter Agreement, the “Company” or “Ribbon” means Ribbon Communications Operating Company, Inc. and its parents and affiliates and their respective successors, predecessors, and assigns. Except as expressly stated all capitalized terms used herein have the meaning set out in the Employment Agreement.

Subject to your continued services in accordance with this Letter Agreement through the Termination Date, your employment will be terminated by the Company without Cause effective on the Termination Date and you will be entitled to: (i) a severance payment equal to USD\$1,087,500, less applicable deductions, such being payable in a single lump sum within 60 days following the Termination Date in accordance with Section 7(a) of the Employment Agreement; and (ii) 18 months’ group health plan coverage under COBRA in accordance with Section 7(b) of the Employment Agreement. During your employment following the Transition Date, you shall continue to be eligible to receive your 2018 annual corporate bonus (as determined by the Compensation Committee), if any, in accordance with (and subject to) the terms of the 2018 Bonus Program under the Senior Management Cash Incentive Plan and your 2018 Bonus Election letter, subject to your continued employment through the applicable bonus payment date. Consistent with the Employment Agreement, your receipt of the payments and benefits described in Sections 7(a) through (d) of the Employment Agreement (the “Severance Payments”) are contingent on your compliance with the Restrictive Covenants Agreement (as defined below) and your execution and delivery of a Release Agreement (and the lapse of any revocation period related thereto) prior to the 30th day following the Termination Date and you will be provided with a copy of the Release Agreement on the Termination Date. To the extent you do not comply with the Restrictive Covenants Agreement or fail to timely execute and deliver the Release Agreement (or revoke the Release Agreement), you will not be entitled to the Severance Payments.



Following the Termination Date, you agree to cooperate fully with the Company, including any attorney or other consultant retained by Ribbon, in connection with any pending or future mediation, litigation, arbitration, business, or investigatory matter. Such cooperation related to any pending or future mediation, litigation, arbitration, business, or investigatory matter may include you being available for interview by Ribbon, or any attorney or other consultant retained by Ribbon, and providing the Company with relevant documents in your possession or under your control. Ribbon agrees to provide you with reasonable notice of the need for assistance when feasible. The Company also agrees to schedule such assistance in such a manner as not to unreasonably interfere with any alternative employment you obtain when possible.

You acknowledge and agree that the terms, conditions and restrictive covenants of your Confidentiality, Non-Competition and Assignment of Inventions Agreement executed by you on April 14, 2014 (the "Restrictive Covenants Agreement") will remain in full force and effect following the Termination Date. You also understand and agree that you remain subject to all applicable Company policies between the date hereof and the Termination Date including, without limitation, the Company's Code of Conduct. You acknowledge and agree that (a) except as set forth in this Letter Agreement or any Accrued Benefits, you have no rights to severance or other similar payments or benefits in connection with the termination of your employment and (b) no changes to the terms and conditions of your employment between the Transition Date and the Termination Date shall, individually or in the aggregate, constitute "Good Reason" under the Employment Agreement and you hereby waive any right to terminate your employment for Good Reason on or following the Transition Date.

Please execute this Letter Agreement in the space provided below by January 13, 2019 to evidence your agreement with its terms.

Feel free to contact Petrena Ferguson or me if you have any questions.

[Signature page follows]



Very truly yours,

/s/ Fritz Hobbs

By:
Fritz Hobbs
President and CEO

ACKNOWLEDGED AND AGREED:

/s/ Mike Swade
Mike Swade

EMPLOYMENT AGREEMENT

THIS EMPLOYMENT AGREEMENT (this "**Agreement**") is made and entered into as of August 12, 2013, by and between GENBAND Management Services Corp., a Delaware corporation (the "**Company**"), GENBAND Holdings Company, a Cayman Islands exempted company limited by shares ("**Cayman Holdings**"), GENBAND US LLC, a Delaware limited liability company ("**GENBAND LLC**"), GENBAND Inc., a Delaware corporation ("**Holdco**"), and together with the Company, Cayman Holdings and GENBAND LLC, the "**GENBAND Parties**"), and David A. Walsh (the "**Executive**").

WHEREAS, each of the GENBAND Parties desires to employ the Executive as its Chief Executive Officer, and the Executive desires to be employed by each such entity in such capacity; and

WHEREAS, the Executive and the GENBAND Parties desire to set forth the terms and conditions of the Executive's employment relationship with the GENBAND Parties;

NOW, THEREFORE, in consideration of the premises and mutual covenants herein and for other good and valuable consideration, the parties agree as follows:

I. Certain Defined Terms. In addition to terms defined elsewhere herein, the following capitalized terms have the following meanings when used in this Agreement:

(a) "**Base Pay**" means the Executive's annual fixed or base compensation, as determined from time to time by Cayman Holdings, whether acting through its Board of Directors (the "**Cayman Board**") or a committee thereof, regardless of whether all or any portion thereof may be deferred under any deferred compensation plan or program of the GENBAND Entities.

(b) "**Change in Control**" shall mean the consummation of any transaction or series of related transactions, pursuant to which any Person or group (within the meaning of the Securities Exchange Act of 1934, as amended), other than OEP or another GENBAND Entity, acquires (i) directly or indirectly more than 50% of the equity securities of any GENBAND Principal Entity entitled to vote (whether such transaction is effected by merger, consolidation, recapitalization, sale or transfer of the applicable GENBAND Principal Entity's equity or otherwise) or (ii) directly or indirectly all or substantially all of the assets of any GENBAND Principal Entity and its subsidiaries, in each case the occurrence of which shall be determined by the board of directors, the board of managers or the managing member, as applicable, of such GENBAND Principal Entity; *provided*, that for the purposes of clause (i), voting securities of Cayman Holdings shall be deemed to refer to the fully diluted beneficial ownership of the outstanding voting securities of Cayman Holdings taking into account the equity ownership of Cayman Holdings and Holdco. By way of example, for the purposes of clause (i) of the immediately preceding sentence, if Holdco holds 25% of the outstanding voting securities of Cayman Holdings, and if Person X holds 20% of the outstanding voting equity securities of Holdco on a fully diluted basis, then Person X shall be deemed to hold 5% of the outstanding Cayman Holdings voting securities.

(c) "**Code**" means the Internal Revenue Code of 1986, as amended.

(d) "**Disability**" means (i) the Executive's inability to regularly perform the essential functions of the Executive's position, with or without accommodation, due to physical or mental incapacity or illness, for a period of ninety (90) days in the aggregate in any consecutive twelve (12) month period, unless otherwise prohibited by federal, state, or local law or ordinance, (ii) for a reason specified in clause (i), the Executive is receiving income replacement benefits for a period of not less than three months under a GENBAND Entity accident or health plan, (iii) a determination by the Social Security Administration that the Executive is totally disabled or (iv) a determination that the Executive is eligible for disability benefits under a long-term disability plan of a GENBAND Entity, but only if such plan bases disability eligibility on criteria that comply with clauses (i), (ii) or (iii) above.

(e) "**Equity Award**" means a stock option, share option, share award, restricted stock award, restricted stock unit award, partnership unit award, profits interest award, deferred stock award, stock appreciation right or other equity-based compensation award related to the equity securities of any GENBAND Entity.

(f) "**For Cause**" means, termination of the employment of the Executive by the Company if the Executive is guilty of (i) engaging in acts in the course of his employment with any GENBAND Party that constitute theft, fraud or embezzlement, (ii) intentional or negligent misconduct which materially and adversely affects any GENBAND Entity and which is not cured within thirty (30) days following receipt of written notice of such misconduct, (iii) unauthorized disclosure of proprietary information of a material and confidential nature relating to any GENBAND Entity, which unauthorized disclosure has a material adverse effect on any GENBAND Entity, (iv) material violation of any GENBAND Party policy, agreement or procedure which is not cured within thirty (30) days following receipt of written notice of same, (v) excessive absenteeism, (vi) material neglect of duty, (vii) insubordination or failure to perform and carry out any directive of the Cayman Board, (viii) alcohol or substance abuse, (ix) being convicted of a felony or pleading "no contest" to a felony charge, or (x) failing to cooperate with the GENBAND Entities and/or their professional advisors in any investigation (whether internal or external) or any formal legal or investigative proceeding. The determination of whether a termination of the Executive is For Cause shall be made by the Cayman Board or a committee thereof and written notice specifying the reason(s) therefore shall be delivered to the Executive as promptly as practicable following such determination. Notwithstanding any provision hereof to the contrary for purposes of this Agreement, no act or failure to act on the part of the Executive (other than any act or failure to act which violates any law) shall be considered to be reason for termination For Cause if done, or omitted to be done, by the Executive in good faith and with the reasonable belief that the action or omission was in the best interests of the GENBAND Entities.

(g) "**GENBAND Entity**" means the Company, Holdco, Cayman Holdings, and, as the context may require, their direct and indirect wholly-owned subsidiaries.

(h) "**GENBAND Principal Entity**" means Holdco, Cayman Holdings, or GENBAND LLC.

(i) "**Investment Services**" means (i) advising as to the advisability of investing in, purchasing or selling assets held by Cayman Holdings; (ii) managing, acquiring or disposing of assets held by Cayman Holdings; (iii) arranging financing with respect to acquiring assets

held by Cayman Holdings; or (iv) any activity in support of any service described in the foregoing subsections (i) through (iii) of this definition.

(j) "**Non-Compete Period**" means the period beginning on the Termination Date and ending on the twelve (12) month anniversary of the Termination Date.

(k) "**OEP**" means (i) One Equity Partners III, L.P., OEP III Co- Investors L.P. and OEP II Partners Co-Invest L.P. and OEP GB Holdings (together, the "**OEP Holders**"), and (ii) any corporation, partnership, limited liability company or other entity that is an affiliate of any OEP Holder (including without limitation any applicable co- invest vehicle).

(l) "**Person**" means an individual corporation, a company, a voluntary association, a partnership, a joint venture, a limited liability company, a trust, an estate, an unincorporated organization, a governmental authority or other entity.

(m) "**Proprietary Information**" means trade secrets, confidential knowledge, data, or any other proprietary information of the GENBAND Entities and each of their subsidiaries or affiliated companies. By way of illustration but not limitation, "Proprietary Information" includes (i) inventions, trade secrets, ideas, processes, formulas, data, programs, other works of authorship, know-how, improvements, discoveries, developments, designs, and techniques relating to the business or proposed business of the GENBAND Entities and that were learned or discovered by the Executive during the term of his employment with the GENBAND Parties, except as expressly permitted by the Cayman Board during the term of the Executive's employment, at the time of the Executive's termination, or subsequent to the Executive's termination; (ii) information regarding plans for research, development, new products and services, marketing and selling, business plans, budgets and unpublished financial statements, licenses, prices and costs, suppliers, and customers that were learned or discovered by the Executive during the term of his employment with the GENBAND Parties, except as expressly permitted by the Cayman Board during the term of the Executive's employment, at the time of the Executive's termination, or subsequent to the Executive's termination; and (iii) information regarding the skills and compensation of other employees of the GENBAND Parties.

(n) "**Section 409A**" means Section 409A of the Code, as amended, and the Department of Treasury Regulations and other interpretive guidance issued thereunder.

(o) "**Separation from Service Date**" means the date of termination of the Executive's employment (within the meaning of the Department of Treasury Regulation 1.409A-1(h)(1)(ii)).

(p) "**Specified Employee**" means a key employee of a GENBAND Entity, within the meaning of the Department of Treasury Regulations 1.409A-1(i), on the individual's Separation from Service Date. The determination of whether the Executive is a Specified Employee shall be made by the Cayman Board (or its designee) in accordance with the terms of Section 409A and applicable guidance thereunder (including, without limitation, the Department of Treasury Regulation 1.409A-1(i) and any successor provision thereto).

(q) "**Termination Date**" means the date of the termination of the Executive's employment.

2. **Employment.** Effective as of August 12, 2013 (the "**Effective Date**"), the Company hereby agrees to employ the Executive as an employee and an executive officer of the Company, and the Executive hereby agrees to remain in the employ of the Company as an employee and an executive officer, for the Employment Term (as defined in Section 3) on the terms and conditions set forth in this Agreement. The Executive shall serve as President and Chief Executive Officer of the Company, and shall also serve as President and Chief Executive Officer for each of the other GENBAND Parties. The Executive shall have such authority and responsibilities as are consistent with the offices from time to time held by him; provided, however, that in no event shall the Executive's authority and responsibilities include providing any Investment Services with respect to the assets held (directly or indirectly) by Cayman Holdings. During the term of this Agreement, the Executive shall serve each GENBAND Party faithfully and to the best of his ability, and devote his full time, attention and efforts to the business and affairs of the collective GENBAND Parties during normal business hours (and outside normal business hours as reasonably required).

3. **Term.** Subject to the provisions of Section 10 of this Agreement, the Executive shall be employed by the Company and hold the executive officer positions with the Company and the other GENBAND Parties for a period (the "**Employment Term**") commencing on August 12, 2013 and ending on July 1, 2015, on the terms and subject to the conditions set forth in this Agreement; *provided, however*, that commencing with July 1, 2015 and on each July 1 thereafter (each, an "**Extension Date**"), the Employment Term shall be automatically extended for an additional one-year period, unless the Company or Executive provides the other party hereto 90 days' prior written notice before the next Extension Date that the Employment Term shall not be so extended. For the avoidance of doubt, the Employment Term shall include any extensions of the term of the Executive's employment pursuant to this Section 3.

4. **Location.** The Executive shall be based in, and shall perform his duties in, the New York metropolitan area. The Executive shall, however, travel to Dallas, Texas and other locations as may be reasonably required for the performance of his duties under this Agreement.

5. **Compensation and Benefits.** During the Employment Term, the Company shall provide the following compensation and benefits to the Executive:

(a) **Base Salary.** The Company shall pay to the Executive a base salary at the rate of not less than \$850,000.00 per annum ("**Base Salary**"). Such Base Salary shall be paid in equal installments on the Company's regular pay roll dates during the Employment Term. The Executive's Base Salary shall be reviewed annually.

(b) **Bonuses and Incentive Compensation.**

(i) With respect to each full fiscal year during the Employment Term, the Executive shall be eligible to earn an annual bonus award (an "**Annual Bonus**") based upon the achievement of an annual targets established by the Cayman Board. The Executive's

target-level Annual Bonus shall be equal to \$400,000; *provided* that, because the Annual Bonus award is subject to the attainment of performance criteria, it may be paid, to the extent earned or not earned, at below target levels, or above target levels. Subject to the Executive's continued employment through the applicable bonus payment date, the Annual Bonus, if any, shall be paid to the Executive as soon as reasonably practicable following the date on which Cayman Holding's financial statements for the fiscal year to which such Annual Bonus relates are no longer subject to material modification (as determined in the good faith discretion of the Board), but in no event later than 10 business days following Cayman Holding's receipt from its independent auditors of the audited financial statements for the fiscal year to which such Annual Bonus relates. To the extent permitted pursuant to the preceding sentence, the applicable bonus payment date shall be the date on which similar annual bonuses are paid to similarly-situated employees of the GENBAND Parties. Notwithstanding the foregoing, the Executive's Annual Bonus for fiscal year 2013, if any, shall not be prorated during the first year of the Executive's employment under this Agreement.

(ii) The Executive shall be eligible to participate in bonus or performance based incentive compensation plans that are established by the GENBAND Parties for their other senior executives.

(c) Benefits. The Executive shall be entitled to participate in all employee benefit plans or programs established by the GENBAND Entities from time to time that are generally provided to other senior executives of the Company or the other GENBAND Parties to the extent that he is eligible to participate. The Executive's participation in any such plan or program shall be subject to the provisions, rules and regulations applicable to such plan or program. Without limiting the generality of the foregoing, the Executive shall be provided with coverage for medical, disability and term life insurance to the extent it is available at a reasonable cost from reputable providers. In the event that any of the prerequisites provided by the Company to the Executive subject the Executive to any tax liability, the Company agrees to pay the Executive an amount of cash equal to such tax liability and an additional amount of cash equal to the tax liability that the Executive will be subject to as a result of the total cash payment described in this sentence.

6. Vacation. During the Employment Period, the Executive shall be entitled to at least twenty (20) days of paid time off annually in accordance with the Company's applicable vacation policy, scheduled in a manner reasonably acceptable to the Company.

7. Expenses. The Company shall pay or reimburse the Executive for all reasonable and necessary out-of-pocket expenses incurred by him in the performance of his duties under this Agreement, subject to the presentment of appropriate vouchers in accordance with the Company's normal policies for expense verification.

8. GENBAND Holdings Equity. The Executive shall be granted 188,236,789 Class E Shares under the GENBAND Holdings Company 2013 Equity Incentive Plan (the "**Plan**"), subject to adjustment as will be set forth in the Class E Share Agreement (the "**Share Agreement**"). Except as otherwise provided in this Agreement, the terms of this grant will be set forth in the Plan (the "**Plan**") and the Share Agreement.

9. Key Contributor Bonus. The Company (or another appropriate GENBAND Party) shall pay the Executive a key contributor bonus pursuant to that certain Key Contributor Bonus Agreement, dated as of the date hereof, subject to the terms and conditions therein.

10. Termination.

(a) The Executive's employment may be terminated by the Company at any time and for any reason. If the Executive's employment is terminated by the Company (other than For Cause or as a result of the Executive's death or Disability), the Executive will be entitled to the compensation and benefits provided under Section 11 hereof.

(b) The Executive may terminate his employment with the Company at any time and for any reason. Upon the occurrence of one or more of the following events (hereinafter, a "**Good Reason**") (regardless of whether any other reason for such termination exists or has occurred, including without limitation, other employment), the Executive may terminate his employment with the Company and receive the compensation and benefits provided under Section 11 hereof:

(i) (A) A material diminution in the nature or scope of the authorities, powers, functions, responsibilities or duties attached to the position(s) held by the Executive (including without limitation, a change in offices, titles, scope of the business or other activities for which the Executive is responsible for the Company or any other GENBAND Party); or (B) a material reduction in the Executive's Base Pay, except in cases where any such reduction is applicable to substantially all executive officers of the Company in substantially the same manner and to substantially the same degree; or (C) the termination, elimination or denial of the Executive's rights to material employee benefits or any material reduction in the scope or value thereof (in the case of any such reduction, with scope and value considered in the aggregate), except in cases where any such termination, elimination, denial or reduction is applicable to substantially all executive officers of the Company in substantially the same manner and to substantially the same degree; or

(ii) Without limiting the generality or effect of the foregoing, any material breach of this Agreement by the Company or any other GENBAND Party or any successors thereto.

(c) A termination of the Executive's employment for Good Reason shall not be deemed to occur unless the Executive (i) provides written notice to the Company, or any successor, of the existence of the occurrence of an event or condition described in Section 10(b) not later than 60 days after the initial existence of the event or condition, which notice shall provide the Company, or any successor, a period of at least 30 days to remedy the event or condition before a Good Reason basis for termination shall exist hereunder and (ii) terminates his employment for Good Reason based on the event or condition described in Section 10(b) prior to the second anniversary following the initial existence of such event or condition.

(d) Notwithstanding Sections 10(b) and (c), a termination of the Executive's employment by the Executive for any reason (and without regard to the procedural

requirements in Section 10(c)) at any time following a Change in Control shall be deemed a termination by the Executive for Good Reason pursuant to Section 10(b) for purposes of this Agreement.

(e) A termination by the Company pursuant to Section 10(a) or by the Executive for Good Reason pursuant to Section 10(b) will not affect any rights the Executive may have pursuant to any agreement, policy, plan, program or arrangement of any GENBAND Entity providing employee benefits, which rights shall be governed by the terms thereof.

11. Severance.

(a) Subject to Section 12, if the Company terminates the Executive's employment (other than For Cause or as a result of the Executive's death or Disability) pursuant to Section 10(a), or the Executive terminates his employment for Good Reason pursuant to Section 10(b):

(i) The Company shall (subject to Section 11(b) below):

(A) pay or cause to be paid to the Executive a lump-sum payment, within ten (10) calendar days of the Termination Date, in an amount equal to the sum of (x) any unpaid Base Pay through the Termination Date, (y) payment in respect of any accrued but unused paid time off or sick pay, and (z) payment in respect of any business expenses reimbursable under Section 7 of this Agreement that have been incurred but not reimbursed prior to the Termination Date;

(B) pay or cause to be paid to the Executive an amount equal to the sum of (I) 100% of the Executive's Base Pay in effect on the Termination Date (or in effect immediately prior to any reduction contemplated by Section 10 (b)(i)(B) hereof, whichever is higher) and (II) \$400,000, such sum payable in twelve (12) monthly installments on the Company's last payroll date of each of the first twelve (12) calendar months commencing immediately following the 60th day following the Termination Date; and

(C) pay or cause to be paid to the Executive, under all circumstances, any other compensation or benefits which may be owed or provided to or in respect of the Executive in accordance with the terms and provisions of any plans or programs of the GENBAND Entities (the applicable payments under this Section 11 (a) collectively, the "**Severance Payment**"); *provided, however*, that if the Executive is a Specified Employee, except to the extent that any amounts payable to the Executive as a Severance Payment are not treated as deferred compensation under Section 409A, such as, for example, certain payments pursuant to a separation pay plan, the Severance Payment shall not be provided to the Executive until the earlier of (I) the expiration of the six-month period measured from the Separation from Service Date and (II) the date of the Executive's death. All payments delayed pursuant to this paragraph shall be paid, with interest thereon calculated at the "prime rate," as quoted from time to time during the relevant period in the Southwest Edition of The Wall Street Journal, on the first day of the seventh month following the Executive's Separation from Service Date (or

the date of the Executive's death, if earlier), and all remaining payments due pursuant to this Agreement shall be paid as otherwise provided herein;

(ii) The Executive shall be entitled to reimbursement for, or payment by or on behalf of the GENBAND Entities or any successor entities of, the premium cost for such group health plan coverage for which the Executive is entitled under the Consolidated Omnibus Budget Reconciliation Act of 1985 as amended ("**COBRA**") (and which the Executive properly and timely elects to receive with respect to the Executive or any Qualified Beneficiary (as defined in COBRA) whose continued coverage under such GENBAND Entity group health plan is continued and whose coverage derives from being the spouse or a dependent of the Executive) for so long as the Executive or, as appropriate, such Qualified Beneficiary, remains eligible for continuation coverage as contemplated pursuant to COBRA and the relevant group health plan of the GENBAND Entities, but in no event longer than twelve (12) months (such period of continued coverage, the "**Continuation Period**"). The GENBAND Parties shall at the same time as any such action (including payment of any reimbursement) make any payment that may be necessary to ensure that the Executive's after-tax position with respect to any health and welfare benefits or cash payments received pursuant to this Section 11(a)(ii) is not worse than the Executive's after-tax position in the event such benefits had been provided to the Executive while he was employed by the Company. Any such reimbursement or in-kind benefits provided under this Agreement shall be made or provided by the GENBAND Parties on or before the last day of the Executive's taxable year following the taxable year in which the expenses are incurred, and shall also satisfy all other requirements of the regulations under Section 409A with respect to any such reimbursements. The amount of any such expenses reimbursed or in-kind benefits provided in one year shall not affect the expenses or in-kind benefits eligible for reimbursement or payment in any subsequent year, and the Executive's right to such reimbursement or payment of any such expenses will not be subject to liquidation or exchange for any other benefit. Any tax gross-up payment provided under this Agreement shall be made or provided by the GENBAND Parties on or before the last day of the Executive's taxable year following the taxable year in which the Executive remits the related taxes, and shall also satisfy all other requirements of the regulations under Section 409A with respect to any such tax gross-ups; and

(iii) If such termination of the Executive's employment occurs within twelve (12) months after a Change in Control, notwithstanding anything to the contrary in any applicable equity award agreement or equity plan, each Equity Award (including, but not limited to, any Equity Awards of Cayman Holdings, including the Class E Shares) granted to the Executive that is outstanding as of the Termination Date shall, without further action, become immediately fully vested, any automatic repurchase rights will fully lapse, and all restrictions with respect thereto shall lapse to the extent such Equity Awards have not otherwise vested, automatic repurchase rights have not lapsed, or any other restrictions with respect thereto have not otherwise lapsed on or prior to the Termination Date.

(b) The GENBAND Parties' obligations pursuant to this Section 11 shall be conditioned upon (i) the Executive's termination of employment constituting a "separation from service" within the meaning of Section 1.409A-1(h) of the Department of Treasury Regulations and (ii) the Executive's execution and delivery of a release, in substantially the form attached hereto as **Exhibit A**, on or prior to the 60th day following the Termination Date, which has not been revoked by the Executive prior to, and cannot be revoked by the Executive after, such 60th day. Further, for purposes of Section 409A, the Executive's right to receive installment payments pursuant to this Section 11 shall be treated as a right to receive a series of separate and distinct payments.

(c) Notwithstanding any other provision of this Agreement to the contrary, the parties' respective rights and obligations under this Section 11 and under Sections 12 through 30 will survive the expiration of this Agreement, any expiration of the Employment Term and the termination of the Executive's employment for any reason whatsoever.

12. Certain Additional Benefits and Payments by the GENBAND Parties.

(a) To the extent permitted under applicable law, the GENBAND Parties shall use their commercially reasonable efforts to obtain shareholder approval in a manner consistent with Section 280G of the Code upon a change in ownership or control (within the meaning of Section 280G) of any GENBAND Entity that results in the Executive receiving payments that would result in an excess parachute payment (within the meaning of Section 280G) as a result of such change in ownership or control, and the Executive shall reasonably cooperate with the GENBAND Parties in connection therewith.

(b) Immediately prior to the occurrence of a Change in Control (and subject to the consummation of such Change in Control), notwithstanding anything to the contrary in any applicable equity award agreement or equity plan, each Equity Award granted to the Executive that is outstanding as of the date of such Change in Control (including, but not limited to, any Equity Awards of Cayman Holdings, including the Class E Shares), shall, without further action, become immediately vested and/or any automatic repurchase rights will lapse, as to fifty percent (50%) of the equity or equity-based interests of each such Equity Award that have not otherwise vested and/or for which automatic repurchase rights have not lapsed as of such date, and all equity or equity-based interests underlying the Equity Awards that remain unvested and/or for which automatic repurchase rights have not lapsed shall continue to vest and/or lapse according to the terms of the applicable Equity Award.

13. Confidentiality.

(a) Confidential Information. The Executive acknowledges and agrees that during his employment with the Company, he will have access to and acquire Confidential Information regarding the business of the GENBAND Entities that is not generally available to the public. In order to assist the Executive with his duties, the GENBAND Parties promise to provide the Executive with Confidential Information regarding the business of the GENBAND Entities that is not generally available to the public and that, if disclosed, could put the Company at an unfair competitive disadvantage. For purposes of this Agreement, "**Confidential Information**" means any information or material (i) generated, collected, or used by any GENBAND Entity that relates to its actual or anticipated business or research and development, or (ii) suggested by or resulting from work assigned to and/or performed by the Executive for or on behalf of any GENBAND Entity, including without limitation Proprietary information, information and materials relating to their financial performance, financial statements and reports, "financial projections, accounting methods and information, business plans, strategic plans, plans regarding their future growth, development and projects, marketing plans, sales methods and strategies, products, pricing strategies, price lists, customer contacts, customer lists, customer information (including, without limitation, customer methods of operation, requirements, preferences and history of dealings with the GENBAND Entities), vendor lists, vendor information (including, without limitation, their history of dealings with the GENBAND Entities), employee files, employee compensation, skills, performance and qualifications of personnel of the GENBAND Entities, trade secrets, inventions (whether patented or unpatented), copyrights, service marks, know-how, al

gorithms, computer programs, computer code and related documentation, processes, methods, formulas, research, development, licenses, permits, and compilations of any of the foregoing information relating to the actual or anticipated business of the GENBAND Entities. The Executive agrees and acknowledges that substantial time, labor, skill and money have been and will be invested in developing the Confidential Information and that the protection and maintenance of this Confidential Information constitute legitimate interests to be protected by the GENBAND Entities and by the covenants set forth in this Section 13 and in Section 14.

(b) Non-Disclosure. As a material inducement to the GENBAND Parties to enter into this Agreement, and to pay to the Executive the compensation set forth herein, the Executive agrees that, both during the Executive's employment with the Company and at any time thereafter, the Executive shall preserve in strictest confidence, and shall not disclose, copy or take away, either directly or indirectly, or use for the Executive's own benefit or the benefit of any third party, any Confidential Information of the GENBAND Entities, or any confidential or proprietary information or material received by the GENBAND Entities, except as required in the ordinary course of the Executive's employment for the benefit of the GENBAND Entities. All documents, records, files, computer programs, electronic data, and tangible items and materials containing or embodying any Confidential Information, including all copies thereof, whether prepared by the Executive or by others, are the property of the applicable GENBAND Entity and shall immediately be returned to such GENBAND Entity upon termination of the Executive's employment with the Company (voluntary or otherwise), or at any time upon a GENBAND Entity's request, and no copies thereof shall be kept by the Executive.

(c) Non-Disclosure of Confidential Information of Third Parties. The Executive shall not use or disclose to other employees of any GENBAND Entity, during or following his employment with the Company, confidential information belonging to any third parties unless written permission has been given by such third parties to the applicable GENBAND Entity, and been accepted by such GENBAND Entity, to allow the GENBAND Entity to use and/or disclose such information. The Executive shall indemnify any GENBAND Entity for any losses, costs or damages that result from any breach of the covenant contained in the preceding sentence.

14. Non-Competition and Non-Solicitation. The Executive agrees as follows:

(a) Non-Competition. For purposes of this Section 14, a "**Competitive Business**" shall mean Sonus Networks, Inc., the Acme Packet business unit of Oracle Corporation, Metaswitch Networks, BroadSoft, Inc. or any Person, firm, corporation, partnership, association or other entity the majority of the business of which is related to Session Border Controllers (SBCs), Softswitches, Media Gateways or unified communication platforms.

The Executive acknowledges that the services the Executive is to render are of a special and unusual character with a unique value to the GENBAND Parties, the loss of which cannot adequately be compensated by damages in action at law. In view of the unique value to the GENBAND Parties of the services of the Executive, in consideration of the GENBAND Parties' agreement to provide the Executive with Confidential Information and other consideration specified herein, and as a material inducement for the GENBAND Parties to enter into this Agreement, the Executive agrees that, during the term of the Executive's employment with a GENBAND Party, and during the Non-Compete Period, for whatever reason, the Executive shall not, within North America, Europe or the area commonly called the "Asia-Pacific" region, directly or indirectly:

(i) provide personal services, as an officer, director, executive, manager, employee, consultant, advisor, independent contractor or otherwise, to a Competitive Business; or

(ii) offer, develop, or provide any products or services that would constitute a Competitive Business.

(b) Non-Solicitation. For purposes of this Section 14, the term "*Customer*" shall mean any Person, firm, corporation, partnership, association or other entity to which any GENBAND Entity provided, or took active steps to attempt to provide, products or services during the twelve (12) months prior to the Termination Date with respect to which the Executive possesses information that is proprietary or confidential to any GENBAND Entity. During the term of the Executive's employment with a GENBAND Party and during the NonCompete Period, for whatever reason, of such employment, the Executive shall not, on behalf of any Competitive Business, directly or indirectly:

(i) take any action to, or do anything reasonably intended to divert business from any GENBAND Entity or any of their subsidiaries, solicit any Customer or prospective Customer of any GENBAND Entity, or influence or attempt to influence any existing or prospective Customers of any GENBAND Entity to cease doing business with a GENBAND Entity; or

(ii) hire, employ, solicit for employment, or attempt to hire, employ, or solicit for employment any employee of any GENBAND Entity or any of its subsidiaries.

(c) Judicial Amendment. The GENBAND Parties and the Executive acknowledge the reasonableness of the agreements set forth in subsections (a) and (b) of this Section 14, including the reasonableness of the geographic area, duration of time and scope of activity restrained that are specified in this Section 14. The Executive further acknowledges that his skills are such that he can be gainfully employed in noncompetitive employment and that the agreement not to compete will in no way prevent him from earning a living. Notwithstanding the foregoing, if it is judicially determined that any of the limitations contained in subsections (a) or (b) of this Section 14 are unreasonable, illegal or offensive under applicable law(s) (statute, common law or otherwise) and may not be enforced as herein agreed, the Executive and the GENBAND Parties agree that the unreasonable, illegal, or offensive portions of

subsections (a) and (b) of this Section 14 shall be and hereby are redrafted to conform with those applicable laws, while leaving the remaining portions of subsections (a) and (b) of this Section 14 intact. By agreeing to this contractual modification prospectively at this time, the Executive and the GENBAND Parties intend to make the agreements contained in subsections (a) and (b) of this Section 14, including but not limited to the covenant not to compete contained in subsection (a) of this Section 14, legal under the law(s) of all applicable jurisdictions so that the entire agreement not to compete and/or this entire Section 14 as prospectively modified shall remain in full force and effect and shall not be rendered void or illegal. Such modifications shall not affect any payments made to the Executive under this Agreement.

(d) Notice to Prospective or Subsequent Employers. The Executive shall notify any Person or entity employing the Executive after the Termination Date, or evidencing an intention of employing the Executive after the Termination Date, of the existence and provisions of subsections (a) and (b) of *this* Section 14 of this Agreement. In addition, the Executive agrees that the GENBAND Parties may notify any Person or entity employing the Executive or evidencing an intention of employing the Executive of the existence and provisions of this Agreement.

15. Inventions.

(a) Assignment of Inventions.

(i) The Executive hereby assigns to GENBAND LLC all his right, title, and interest in and to any and all inventions (and all patent rights, copyrights, trade secret rights, and all other rights throughout the world ("**Proprietary Rights**") with respect thereto), whether or not patentable or registrable under copyright or similar statutes, that were made or conceived or reduced to practice or learned by the Executive, either alone or jointly with others, (i) at the direction of the GENBAND Entities, (ii) during the performance of the Executive's duties of employment, (iii) on a GENBAND Entity's time, (iv) using a GENBAND Entity's equipment, materials, supplies, facilities or Proprietary Information, or (v) that, at the time of conception or reduction to practice of the invention, relate to the business of a GENBAND Entity as conducted (or as proposed to be conducted) or the actual or demonstrably anticipated research or development of a GENBAND Entity, during the period of the Executive's employment with the GENBAND Parties ("**Inventions**"). The only inventions excluded from this provision are those which are set forth in **Exhibit B** to this Agreement, or the assignment of which are prohibited pursuant to applicable law.

(ii) The Executive acknowledges that all original works of authorship that are made by him (solely or jointly with others) during the term of his employment with the GENBAND Parties and that are within the scope of his employment and protectable by copyright are "works made for hire," as that term is defined in the United States Copyright Act (17 U.S.C. § 101). Inventions assigned to GENBAND LLC by this Section 15(a) are hereinafter referred to as "**Company Inventions**."

(iii) The Executive acknowledges and agrees that the GENBAND Entities are not obligated to commercialize any Company Invention, and that if the Executive desires to independently commercialize any of said Company Inventions, the

Executive must request and obtain a written license from GENBAND LLC beforehand, which license request may be declined by GENBAND LLC in their sole discretion.

(b) Enforcement of Proprietary Rights. During the Executive's employment and after his separation from GENBAND Parties for any reason whatsoever, the Executive agrees that:

(i) The Executive will assist the GENBAND Entities in every proper way to obtain and from time to time enforce United States and foreign Proprietary Rights relating to Company Inventions in any and all countries. To that end the Executive will execute, verify, and deliver such documents and perform such other acts (including appearances as a witness) as the GENBAND Entities may reasonably request for use in applying for, obtaining, perfecting, evidencing, sustaining, and enforcing such Proprietary Rights and the assignment thereof. In addition, the Executive will execute, verify, and deliver assignments of such Proprietary Rights to the GENBAND Entities or their designees. The Executive's obligation to assist the GENBAND Entities with respect to Proprietary Rights relating to such Company Inventions in any and all countries shall continue beyond the termination of the Executive's employment, but the GENBAND Entities shall compensate the Executive at a reasonable rate after his termination for the time actually spent by him at the GENBAND Entities' request on such assistance. In addition, the GENBAND Entities will provide the Executive with reasonable notice of the need for assistance when feasible and agrees to schedule such assistance in such a manner as not to interfere with any alternative employment obtained by the Executive when possible.

(ii) In the event the GENBAND Entities are unable for any reason, after reasonable effort, to secure the Executive's signature on any document needed in connection with the actions specified in the preceding paragraph, the Executive hereby irrevocably designates and appoints GENBAND LLC and its duly authorized officers and agents as the Executive's agent and attorney in fact, to act for and in the Executive's behalf to execute, verify, and file any such documents and to do all other lawfully permitted acts to further the purposes of the preceding paragraph thereon with the same legal force and effect as if executed by the Executive. The Executive hereby waives and quitclaims to the GENBAND Entities any and all claims, of any nature whatsoever, that the Executive now or may hereafter have for infringement of any Proprietary Rights assigned hereunder to the GENBAND Entities.

(c) Obligation to Keep GENBAND Entities Informed. During the period of the Executive's employment, the Executive will promptly disclose to the GENBAND Entities fully and in writing and will hold in trust for the sole right and benefit of the GENBAND Entities any and all Company Inventions. In addition, the Executive will disclose all patent applications filed by him during the three (3) years after termination of his employment with the GENBAND Parties.

(d) Prior Inventions. Inventions, if any, patented or unpatented, that the Executive made prior to the commencement of his employment with the GENBAND Parties are excluded from the scope of this Agreement. To preclude any possible uncertainty, the Executive has set forth on **Exhibit B** attached hereto a complete list of all Inventions that he has, alone or jointly with others, conceived, developed, or reduced to practice or caused to be conceived, developed, or reduced to practice prior to commencement of his employment with the GENBAND Parties, that he consider to be his property or the property of third parties and that he wishes to have excluded from the scope of this Agreement.

If disclosure of any such Invention on **Exhibit B** would cause the Executive to violate any prior confidentiality agreement, the Executive understands that he is not to list such Inventions in **Exhibit B** but is to inform the GENBAND Entities that all Inventions have not been listed for that reason.

16. **Representations of the Executive and the Company.** The Executive represents that his execution of this Agreement, and performance of the Executive's obligations hereunder, will not conflict with, or result in a violation of or breach of, any other agreement to which the Executive is a party or any judgment, order or decree to which the Executive is subject. The Executive certifies that he has no outstanding agreement or obligation that is in conflict with any of the provisions of this Agreement, or that would preclude the Executive from complying with the provisions hereof, and further certifies that he will not enter into any such conflicting agreement while employed by the Company.

17. **Remedies.** The Executive acknowledges that his abilities and the services he will provide to the GENBAND Parties are unique and that his failure to perform his obligations under Sections 13 and 14 of this Agreement would cause the GENBAND Parties irreparable harm and injury. The Executive further acknowledges that damages at law will not be an adequate remedy for breach of the covenants contained in Sections 13 and 14, and that the only adequate remedy is one that would prevent him from breaching the terms of Sections 13 and 14. As a result, the Executive and the GENBAND Parties agree that the GENBAND Parties' remedies may include specific performance, a temporary restraining order, preliminary and permanent injunctive relief, or other equitable relief against any threatened or actual breach of Sections 13 or 14 by the Executive. The termination of the Executive for any reason shall not be deemed a waiver by the GENBAND Parties of any breach by the Executive of this Agreement or any other obligation owed to the GENBAND Parties, and notwithstanding such a termination, the Executive shall be liable for all damages attributable to such a breach. Nothing contained in this Section 17 shall prohibit the GENBAND Parties from seeking and obtaining any other remedy, including monetary damages, to which it may be entitled.

18. **Non-Disparagement.** The Executive agrees not to, directly or indirectly, either orally or in writing, disparage any other party hereto or any of their respective equity holders, affiliates, directors, managers, officers, employees, agents or representatives, or any of their respective financial conditions or operations, or any of their respective products, services or practices. The GENBAND Parties agree to instruct their officers and directors not to, directly or indirectly, either orally or in writing, disparage the Executive.

19. **No Mitigation Obligation.** The GENBAND Parties hereby acknowledge that it will be difficult and may be impossible for the Executive to find reasonably comparable employment within a reasonable time period following the Termination Date. In addition, the GENBAND Parties acknowledge that the GENBAND Entities' severance pay plans and policies applicable in general to their respective salaried employees typically do not provide for mitigation, offset or reduction of any severance payments received thereunder. Accordingly, the payment of the severance compensation by or on behalf of the GENBAND Parties to the Executive in accordance with the terms of this Agreement is hereby acknowledged by the GENBAND Parties to be reasonable, and the Executive will not be required to mitigate the amount of any payment provided for in this Agreement by seeking other employment or otherwise, nor will any profits, income, earnings or other benefits from any source whatsoever create any m

itigation, offset, reduction or any other obligation on the part of the Executive hereunder or otherwise.

20. Employment Rights. Nothing expressed or implied in this Agreement will create any right or duty on the part of the GENBAND Parties or the Executive to have the Executive remain in the employment of any GENBAND Entity at any time, including, without limitation, prior to or following any Change in Control. Any event or occurrence described in Section 10(b)(i) or (ii) hereof following the commencement of a discussion with a third person that ultimately results in a Change in Control shall be deemed to have occurred after a Change in Control for the purposes of Section 11(a)(iii) of this Agreement.

21. Withholding of Taxes. The Company shall be entitled to withhold from any amounts payable under this Agreement all federal, state, city or other taxes that the Company is required to withhold pursuant to any law or government regulation or ruling.

22. Successors and Binding Agreement.

(a) The GENBAND Parties will require any successor (whether direct or indirect, by purchase, merger, consolidation, reorganization or otherwise) to all or substantially all of the business or assets of the respective GENBAND Parties, expressly to assume and agree to perform this Agreement in the same manner and to the same extent the GENBAND Parties would be required to perform if no such succession had taken place. This Agreement will be binding upon and inure to the benefit of the GENBAND Parties and any successor to the respective GENBAND Parties, including without limitation any Persons acquiring directly or indirectly all or substantially all of the business or assets of a GENBAND Party whether by purchase, merger, consolidation, reorganization or otherwise (and such successor shall thereafter be deemed a "**GENBAND Party**" for the purposes of this Agreement), but will not otherwise be assignable, transferable or delegable by a GENBAND Party other than to a subsidiary or affiliate of the such GENBAND Party.

(b) This Agreement will inure to the benefit of and be enforceable by the Executive and the Executive's personal or legal representatives, executors, administrators, successors, heirs, distributees and legatees.

(c) This Agreement is personal in nature and none of the parties hereto shall, without the consent of the other, assign, transfer or delegate this Agreement or any rights or obligations hereunder except as expressly provided in Sections 22(a) and 22(b). Without limiting the generality or effect of the foregoing, the Executive's right to receive payments hereunder will not be assignable, transferable or delegable, whether by pledge, creation of a security interest, or otherwise, other than by a transfer by the Executive's will or by the laws of descent and distribution and, in the event of any attempted assignment or transfer contrary to this Section 22(c), the GENBAND Entities shall have no liability to pay any amount so attempted to be assigned, transferred or delegated.

23. Notices. For all purposes of this Agreement (except as otherwise expressly provided in this Agreement with respect to notice periods), all communications, including without limitation, notices, consents, requests or approvals, required or permitted to be given hereunder will be in writing, and will be deemed to have been duly given when hand delivered or dispatched by electronic facsimile transmission (with receipt thereof orally confirmed), or ten business days after having been mailed by United States registered or certified mail, return receipt requested, postage prepaid, or five business days after having been sent by a nationally recognized overnight courier service such as Federal Express or UPS, addressed to the Company (for the GENBAND Parties) at 2801 Network Boulevard, Suite 300, Frisco, Texas 75034 (to the attention of the General Counsel of the Company) and to the Executive at the Company's address, with a copy to the Executive at his principal residence, or to such other address as any party may have furnished to the other in writing and in accordance herewith, except that notices of changes of address shall be effective only upon receipt.

24. Governing Law. The validity, interpretation, construction and performance of this Agreement will be governed by and construed in accordance with the substantive laws of the State of New York, without giving effect to the principles of conflict of laws of such State or any other jurisdiction.

25. Validity. If any provision of this Agreement or the application of any provision hereof to any Person or circumstances is held invalid, unenforceable or otherwise illegal, the remainder of this Agreement and the application of such provision to any other Person or circumstances will not be affected, and the provision so held to be invalid, unenforceable or otherwise illegal will be reformed to the extent (and only to the extent) necessary to make it enforceable, valid or legal.

26. Miscellaneous. No provision of this Agreement may be modified, waived or discharged unless such waiver, modification or discharge is agreed to in writing signed by the Executive and the GENBAND Parties. No waiver by any party hereto at any time of any breach by another party hereto or compliance with any condition or provision of this Agreement to be performed by such other party will be deemed a waiver of similar or dissimilar provisions or conditions at the same or at any prior or subsequent time. No agreements or representations, oral or otherwise, expressed or implied with respect to the subject matter hereof have been made by any party which are not set forth expressly in this Agreement. References to Sections are to references to Sections of this Agreement. For the avoidance of doubt, the parties acknowledge and agree that the Company shall be the legal employer of the Executive and this Agreement shall be interpreted accordingly.

27. Arbitration. Any dispute, controversy or claim arising out of or in connection with or relating to this Agreement or any breach or alleged breach thereof shall be submitted to and settled by binding arbitration in New York, New York, in accordance with the Commercial Arbitration Rules of the American Arbitration Association (or at any other place or under any other form of arbitration mutually acceptable to the parties so involved). Any dispute, controversy or claim submitted for resolution shall be submitted to one neutral arbitrator agreed to by the parties, who shall have the authority to render a decision in terms of findings of fact and conclusions of law. No arbitration shall be commenced after the date when institution of legal or equitable proceedings based upon such subject matter would be barred by the applicable

statute of limitations. Any party may bring an action in any court of competent jurisdiction to compel arbitration under this Agreement, to enforce an arbitration award, and to vacate an arbitration award. However, in actions seeking to vacate an award the standard of review to be applied to the arbitrator's findings of fact and conclusions of law will be the same as that applied by an appellate court reviewing a decision of a trial court sitting without a jury. The parties agree that in any arbitration commenced pursuant to this Agreement, the parties shall be entitled to such discovery (including depositions, requests for the production of documents and interrogatories) as is allowed by the arbitrator after the arbitrator hears arguments for and against limits which shall be imposed on discovery by each party in arbitration. The arbitrator shall have full power and authority to limit discovery. In the event that any party fails to comply with its discovery obligations hereunder, the arbitrator shall have full power and authority to compel disclosure or impose sanctions to the full extent of Rule 37, Federal Rules of Civil Procedure. Unless the parties agree otherwise, the parties, the arbitrator, and the American Arbitration Association shall treat the arbitration proceedings, any related discovery, and the decision of the Arbitrator, as confidential, except in connection with judicial proceedings ancillary to the arbitration, such as a judicial challenge to, or enforcement of, an award, and unless otherwise required by law to protect a legal right of a party. To the extent possible, any specific issues of confidentiality should be raised with and resolved by the neutral arbitrator. The arbitrator(s) shall, in their award, allocate between the parties the costs of arbitration, which shall include reasonable attorneys' fees of the parties, in such proportions as the arbitrator deems just. The GENBAND Parties shall pay the arbitrator's fees and expenses.

28. Section 409A. The GENBAND Parties and the Executive acknowledge and agree that, to the extent applicable, this Agreement shall be interpreted in accordance with Section 409A, including without limitation any such regulations or other guidance that may be issued after the date hereof. Notwithstanding any provision of this Agreement to the contrary, in the event that the GENBAND Parties and the Executive determine that any compensation or benefits payable or provided hereunder may be subject to Section 409A, the GENBAND Parties and the Executive agree to cooperate in taking all reasonable measures to amend or modify this Agreement, including amendments with retroactive effect, that the GENBAND Parties and the Executive reasonably determine are necessary or appropriate to minimize or avoid any adverse tax treatment under Section 409A without materially impairing the Executive's economic rights; *provided, however*, that the GENBAND Entities shall in no event be obligated to provide the Executive with any payment in connection with (or otherwise indemnify the Executive for) any taxes imposed on the Executive pursuant to Section 409A.

29. Counterparts. This Agreement may be executed in one or more counterparts, each of which shall be deemed to be an original but all of which together will constitute one and the same agreement.

30. Entire Agreement. This Agreement and any agreements referenced herein set forth the entire agreement of the parties concerning the subject matter hereof and supersedes all prior agreements, arrangements and understandings with respect to such subject matter.

[Remainder of page intentionally left blank-- signature page follows.]

IN WITNESS WHEREOF, the parties have caused this Agreement to be duly executed and delivered as of the date first above written.

GENBAND MANAGEMENT SERVICES CORP.

Name: Title:

GENBAND US LLC

Name: Title:

GENBAND HOLDINGS COMPANY

Name: Title:

GENBAND INC.

Name: Title:

/s/ David A. Walsh
David A. Walsh

Signature Page for Employment Agreement for David Walsh

**AMENDMENT 1 TO
EMPLOYMENT AGREEMENT**

GENBAND Management Services Corp., a Delaware Corporation (“the **“Company”**”), GENBAND Holdings Company, a Cayman Islands exempted company limited by shares (“**Cayman Holdings**”), GENBAND US LLC, a Delaware limited liability company (“**GENBAND LLC**”), GENBAND Inc., a Delaware Corporation (“**Holdco**”), and together with the Company, Cayman Holdings and GENBAND LLC (the “**GENBAND Parties**”), and David Walsh (the “**Executive**”) (collectively, “Parties”) are entering into this Amendment 1 (“Amendment”) to that Employment Agreement between the Parties dated August 12, 2013 (“Agreement”), effective as of the 23rd day of October, 2017. Capitalized terms that are used and not otherwise defined in this Amendment shall have the respective meanings ascribed to such terms in the Agreement (as defined below).

WHEREAS, the GENBAND Parties and the Executive desire to amend the Agreement on the terms and subject to the conditions set forth herein and pursuant to Section 26 of the Agreement.

NOW, THEREFORE, in consideration of the premises set forth above and other good and valuable consideration, the receipt and sufficiency of which are hereby acknowledged, the parties agree as follows:

1.1 Amendment of Section 10(d). Section 10(d) of the Agreement is hereby amended by adding the following sentence after the last sentence of Section 10(d): “For the sake of clarity, the Executive’s acceptance of or agreement to any of the circumstances contemplated in Section 10(b)(i)(A)-(B) following a Change of Control shall not affect any rights the Executive may have pursuant to this Section 10(d).”

1.2 Amendment of Section 11(a)(i)(B)(I). Section 11(a)(i)(B)(I) of the Agreement is hereby amended by adding the following sentences to the end of such provision: “For the sake of clarity, the Parties understand and agree that in no event shall the severance contemplated in this Section 11(a)(i)(B)(I) be less than the Executive’s Base Pay as of the effective date of this Amendment. The Executive’s agreement to or acceptance of any reduction contemplated in Section 10(b)(i)(B) following a Change of Control shall not constitute a waiver of any rights the Executive may have under this Section 11(a)(i)(B)(I); and (II)...”

1.3 Amendment of Section 11(a)(i)(B). Section 11(a)(i)(B) of the Agreement is hereby amended by adding the following sentence to the end of such section: “The Parties understand and agree that in no event shall the Executive receive less than USD\$1,250,000 pursuant to and in accordance with this Section 11(a)(i)(B).”

1.4 Limited Effect. Except as expressly provided hereby, all of the terms and provisions of the Agreement shall remain in full force and effect. The amendments contained herein shall not be construed as a waiver or amendment of any other provision of the Agreement or for any purpose except as expressly set forth herein.


1.5 Governing Law. Except to the extent preempted by Federal law, this Amendment and all claims and controversies hereunder shall be governed by and construed in accordance with the internal laws of the State of Texas, without regard to the choice of law provisions thereof or of any other jurisdiction.

1.6 Counterparts. This Amendment may be executed in any number of counterparts, all of which shall constitute one and the same agreement, and any party hereto may execute this Amendment by signing and delivering one or more counterparts. Delivery of an executed counterpart of this Amendment electronically or by facsimile shall be effective as delivery of an original executed counterpart of this Amendment.


[Remainder of page intentionally left blank -- signature page follows.]

IN WITNESS WHEREOF, the parties have executed this Amendment effective as of the date first set forth above.


GENBAND MANAGEMENT SERVICES CORP.

By: 
Name: Daryl E. Raiford
Title: EVP & CFO


GENBAND HOLDINGS COMPANY

By: 
Name: Daryl E. Raiford
Title: EVP & CFO

GENBAND US LLC

By: 
Name: Daryl E. Raiford
Title: EVP & CFO

GENBAND INC.

By: 
Name: Daryl E. Raiford
Title: EVP & CFO

EXECUTIVE

Signature of Executive

David Walsh Printed Name of Executive

October 24, 2017 Date



STRICTLY PERSONAL AND CONFIDENTIAL

January 13, 2019

David Walsh
Via email

Re: Agreement concerning your separation

Dear David,

This letter (“Letter Agreement”) confirms that your employment with Ribbon Communications Operating Company, Inc. will terminate as of the close of business on February 1, 2019 (the “Termination Date”), in accordance with Section 10(a) of that certain Employment Agreement by and between you, GENBAND Management Services Corp., GENBAND Holdings Company, GENBAND US LLC and GENBAND Inc., dated August 12, 2013, as amended on October 23, 2017 (hereinafter, the “Employment Agreement”), and sets forth certain agreements that have been reached between you and the Company (as hereinafter defined) in connection therewith.

For purposes of this Letter Agreement, the “Company” or “Ribbon” means Ribbon Communications Operating Company, Inc. and its parents and affiliates and their respective successors, predecessors, and assigns. Except as expressly stated all capitalized terms used herein have the meaning set out in the Employment Agreement.

Subject to your continued services in accordance with this Letter Agreement through the Termination Date, your employment will be terminated by the Company without Cause effective on the Termination Date and you will be entitled to: (i) a severance payment equal to USD\$1,250,000, less applicable deductions, pursuant to Section 11(a)(i)(B) of the Employment Agreement, such being payable in twelve (12) monthly installments in accordance with Section 11(a)(i)(B) of the Employment Agreement, subject to any delay required by the proviso to Section 11(a)(i); (ii) continued group health plan coverage under COBRA in accordance with Section 11(a)(ii) of the Employment Agreement (provided that, notwithstanding the Employment Agreement, the Continuation Period will be up to 18 months); (iii) USD\$350,000, less applicable deductions, in lieu of any 2018 bonus to which you may have been entitled under the 2018 Bonus Program under the Senior Management Cash Incentive Plan had you remained a full-time employee following the Termination Date, payable within 60 days following the Termination Date; and (iv) full vesting of all of your unvested restricted shares and/or restricted stock units on the Termination Date. Your receipt of the payments and benefits described in Section 11(a) of the Employment Agreement (as modified by subsection (ii) above) and the payment and vesting described in subsection (iii) and (iv) above are contingent on compliance with Section 11(b) of the Employment Agreement, and your execution and delivery of a release of claims in favor of the Company (the “Release Agreement”) (and the lapse of any revocation period related thereto) prior to the 60th day following the Termination Date and you will provided with a copy of the Release Agreement on the Termination Date. To the extent you do not comply with Section 11(b) of the Employment Agreement or fail to timely execute and deliver the Release Agreement (or revoke the Release Agreement), you will not be entitled to any of the foregoing payments and benefits (and any



restricted shares and restricted stock units referenced in subsection (iv) (and any shares received upon settlement of such restricted stock units and any proceeds received upon sale of any such shares) shall be forfeited to the Company).

Following the Termination Date, you agree to cooperate fully with the Company, including any attorney or other consultant retained by Ribbon, in connection with any pending or future mediation, litigation, arbitration, business, or investigatory matter. Such cooperation related to any pending or future mediation, litigation, arbitration, business, or investigatory matter may include you being available for interview by Ribbon, or any attorney or other consultant retained by Ribbon, and providing the Company with relevant documents in your possession or under your control. Ribbon agrees to provide you with reasonable notice of the need for assistance when feasible. The Company also agrees to schedule such assistance in such a manner as not to unreasonably interfere with any alternative employment you obtain when possible.

You acknowledge and agree that the terms, conditions and restrictive covenants set out in Sections 13 (Confidentiality), 14 (Non-Competition and Non-Solicitation), 15 (Inventions), 17 (Remedies) and 18 (Non-Disparagement) of the Employment Agreement will remain in full force and effect following the Termination Date. You also understand and agree that you remain subject to all applicable Company policies between the date hereof and the Termination Date including, without limitation, the Company's Code of Conduct. You acknowledge and agree that, except as set forth in this Letter Agreement and Section 11(a)(i)(A) of the Employment Agreement, you have no rights to severance or other similar payments or benefits in connection with the termination of your employment.

Please execute this Letter Agreement in the space provided below by January 13, 2019 to evidence your agreement with its terms.

Feel free to contact Petrena Ferguson or me if you have any questions.

[Signature page follows]



Very truly yours,

/s/ Fritz Hobbs

By:
Fritz Hobbs
President and CEO

ACKNOWLEDGED AND AGREED:

/s/ David Walsh
David Walsh



INDEPENDENT CONSULTANCY AGREEMENT

This **INDEPENDENT CONSULTANCY AGREEMENT** (the “**Agreement**”) is entered into by and among Ribbon Communications Operating Company, Inc., a Delaware corporation (“**RCOC**” and together with its affiliates, successors and assigns “**Ribbon**” or the “**Company**”) and David Walsh (“**Consultant**”), and sets forth the terms under which Consultant will provide, and the Company will engage Consultant for, certain professional services as described herein. RCOC and Consultant are hereinafter jointly referred to as the “**Parties**”, with each individually being referred to as a “**Party**”.

In consideration of the premises and mutual promises and undertakings set forth below and intending to be legally bound, RCOC and Consultant agree as follows:

1. Consulting Relationship.

- (a) *Term.* The term of this Agreement shall commence effective February 2, 2019 (the “**Effective Date**”) and shall terminate on January 31, 2020 (the “**End Date**”) unless sooner terminated as described in Section 8 below. At the expiration of the term, this Agreement shall automatically terminate without notice and no tacit extension will be applied.
- (b) *Independent, Non-Exclusive Appointment.* Consultant will perform the Services (as defined in Appendix A hereto) independently and will not be subject to the hierarchy, directive and disciplinary powers of Ribbon. Consultant will not be bound by Ribbon’s working hours, employee policies nor will Consultant be required to regularly carry out the Services at Ribbon offices. Any such visits should be strictly in accordance with the Services mentioned in Appendix A. Consultant will not be eligible to participate in any Ribbon benefit programs. If Consultant is reclassified by a state or federal agency or court as an employee, Consultant will become a reclassified employee and will receive no benefits except those mandated by state or federal law, even if by the terms of the Company’s benefit plans in effect at the time of such reclassification Consultant would otherwise be eligible for such benefits. The Parties understand that the Agreement is a non-exclusive consultancy contract and that Consultant is available to perform services for other companies in addition to Ribbon. Similarly, Ribbon may appoint other independent consultants to provide similar or any other services. The Parties expressly confirm their intention to establish a non-exclusive, arms’ length consultancy relationship with the exclusion of any other or further working relationship different from what the Parties are willing to agree to under the present Consultancy Agreement. Consultant is not an agent of the Company and is not authorized to obligate or commit Ribbon in any manner in dealings with Ribbon customers, potential customers, other persons or entities, or

government units. Consultant also acknowledges that he is not an employee of Ribbon, and will not make any claims to employment with Ribbon, whether during the term of this Agreement or otherwise. Consultant agrees to furnish all materials necessary to accomplish the Services and assumes all of the risk for Consultant's own profit or loss with respect to the Services provided hereunder. Consultant acknowledges and agrees that the Company shall not direct or control Consultant with respect to the manner in which the Services are provided. Consultant represents that Consultant is not economically dependent upon the Company in any way with respect to the fees payable hereunder and that he generally carries on and is engaged in a business of providing services similar to the Services.

- (c) *Compensation and Tax.* In exchange for providing the Services, Company will pay Consultant USD 25,000 per month during the term of this Agreement according to the terms in Appendix A for providing the Services (prorated for any partial month during the term of this Agreement). Consultant acknowledges and agrees that Consultant is obligated to report as income all compensation received by Consultant pursuant to this Agreement, and Consultant agrees to and acknowledges the obligation to pay all self-employment and other Taxes (as defined below) thereon. Ribbon shall not be liable at any time for any of Consultant's Taxes incurred in connection with or related to amounts paid under this Agreement. If Taxes are required to be withheld under applicable law on any amounts otherwise to be paid by Ribbon to Consultant hereunder, Ribbon shall deduct and set off such Taxes from the amount otherwise due and owed to Consultant. "**Tax**" means, federal, state and local taxes with respect to any compensation or other payments under this Agreement.
- (d) *Consulting Services.* Consultant agrees to use his best efforts to perform the Services. Consultant warrants and covenants to Ribbon that the Services will be performed with such standard of care and diligence that can be expected of a skilled professional engaged in a similar business of provision of Services. The Parties acknowledge and agree that it is reasonably anticipated that the level of bona fide services provided by Consultant to Ribbon during the term of this Agreement will be no more than 20% of the average level of bona fide services provided performed by Consultant for Ribbon during the 36-month period immediately preceding the Effective Date and, unless otherwise agreed in writing between the Parties, the level of bona fide services required to provide the Services shall not exceed 20% of the average level of bona fide services provided by Consultant for Ribbon during the 36-month period immediately preceding the Effective Date.
- (e) *Expenses.* Ribbon shall reimburse Consultant for all pre-approved ordinary, necessary, and reasonable travel expenses Consultant incurs for purposes of performing the Services. Ribbon will only reimburse travel expenses which it has approved in writing in advance of the expenses being incurred by Consultant. In order to be reimbursed, Consultant must evidence that the expenses were necessary and reasonable to perform the Services for Ribbon. Reimbursement of expenses will be subject to Consultant providing to Ribbon proof of incurring such expenditure, including by way of invoices and bills, where applicable.
- (f) *Payment.* All approved amounts shall be paid by Ribbon on the first scheduled payment day following the 30th day of the end of each month.

2. **Confidential Information.**

- (a) *Access to Confidential Information.* In the course of performing Services under this Agreement, Ribbon shall provide, and Consultant will have access to, confidential information that is either owned by Ribbon or entrusted to Ribbon by its customers or other third parties (the “**Confidential Information**”). The Confidential Information may include, but is not limited to, Inventions (as defined herein), all work products mentioned in Section 4, legal, technical, administrative, management, financial, and/or marketing information (such as design, manufacturing and procurement specifications, procedures, manufacturing processes, information processing processes, marketing plans and strategies, customer names, financial data,) and physical embodiments of such information (such as source code, object code, flow charts circuits, drawings, specification sheets, recording media for machine information processing systems, documentation, contracts, reports, customer lists, manuals, quotations, correspondence, and samples).
- (b) *Treatment of Confidential Information.* Consultant will maintain the Confidential Information in strictest confidence. Consultant acknowledges that the Confidential Information is a valuable commercial asset and that its unauthorized disclosure, or use, of the Confidential Information would be extremely damaging to Ribbon. Both during and after the term of this Agreement, Consultant covenants that he will not disclose the Confidential Information to any other individual(s) or entity(s) directly or indirectly, intentionally or inadvertently, through its agents, employees, officers, representatives or otherwise, without Ribbon’s express written authorization, or as otherwise required to carry out the purpose and intent of this Agreement. Consultant will not use any Confidential Information in any way other than in performing Services hereunder. These restrictions do not (i) apply to any information generally available to the public or any information properly obtained from a completely independent source, provided such source is not in receipt of such information as a result of Consultant’s breach or the breach of any obligation of any other person or entity to Ribbon; or (ii) apply to prohibit Consultant from reporting possible violations of federal law or regulation to any United States governmental agency or entity in accordance with the provisions of and rules promulgated under Section 21F of the Securities Exchange Act of 1934 or Section 806 of the Sarbanes-Oxley Act of 2002, or any other whistleblower protection provisions of state or federal law or regulation (including the right to receive an award for information provided to any such government agencies). In the event of a breach of this Section 2(b) by Consultant, Ribbon and Consultant agree that the remedy at law available to Ribbon may be inadequate and that Ribbon shall be entitled to an injunction, without the necessity of posting bond or other security therefor, restraining Consultant from disclosing, in whole or in part, the Confidential Information. Nothing herein shall be construed as prohibiting Ribbon from pursuing any other remedies, in addition to the injunctive relief available under this Section 2(b), for such breach or threatened breach, including the recovery of damages from Consultant. This confidentiality obligation shall survive the expiration or termination of this Agreement.

To the extent Consultant is an “individual” under Section 7 of the Defend Trade Secrets Act of 2016 (“**Act**”), Consultant understands and acknowledges that his non-disclosure obligations described above are subject to the following immunity provisions of the Act:

- I. Immunity. An individual shall not be held criminally or civilly liable under any Federal or State trade secret law for the disclosure of a trade secret that:
 - (A) is made
 - (i) in confidence to a Federal, State, or local government official, either directly or indirectly, or to an attorney; and
 - (ii) solely for the purpose of reporting or investigating a suspected violation of law; or
 - (B) is made in a complaint or other document filed in a lawsuit or other proceeding, if such filing is made under seal.
 - II. Use of Trade Secret Information in an Anti-Retaliation Lawsuit. An individual who files a lawsuit for retaliation by the Company for reporting a suspected violation of law may disclose the trade secret to the attorney of the individual and use the trade secret information in the court proceeding, if the individual:
 - (A) files any document containing the trade secret under seal; and
 - (B) does not disclose the trade secret, except pursuant to court order.
- (c) *Removal and Return of Confidential Information*. Except as expressly authorized in writing by Ribbon, Consultant will not make copies (hard copy or electronic) of Confidential Information. Consultant will immediately return to Ribbon all Confidential Information in Consultant's possession or under Consultant's control upon the request of Ribbon and upon expiration or termination of this Agreement.
 - (d) *Use of Confidential Information*. Consultant will use the Confidential Information only to perform Services for Ribbon and will not use the Confidential Information for any other purpose, including without limitation, to conduct (or assist others in conducting) any business or activity that directly or indirectly competes with Ribbon.
 - (e) *Outside Information*. If Consultant is subject to an agreement or obligation to protect another's confidential or proprietary information from improper disclosure or use, Consultant will not disclose the protected confidential or proprietary information to Ribbon and will not induce Ribbon to use the confidential or proprietary information in breach of Consultant's agreement or obligation.

3. Inventions.

- (a) *Ownership*. During the term of this Agreement, Consultant may conceive, discover, create, develop or reduce to practice (either solely or jointly with others) inventions, processes, methods, designs, concepts, or other intellectual property or similar proprietary rights, whether patentable or not, that: (i) relate either to Ribbon's current or contemplated business or to the Services performed by Consultant for Ribbon; (ii) relate to Ribbon's actual or demonstrably anticipated research or development; (iii) result from any work performed by Consultant for Ribbon; (iv) involve the use of Ribbon's equipment, supplies, facilities or trade secrets; (v) result from or are suggested by any work done by Ribbon or at Ribbon's request, or any projects specifically assigned to Consultant; or (vi) result from Consultant's access to any of Ribbon's memoranda, notes, records, processes, technical information, source code, business plans, product road maps, drawings, sketches, models, customer lists, research results, data, formulae, specifications, inventions, equipment or other

materials (“**Inventions**”). Consultant agrees that Ribbon exclusively, perpetually and worldwide owns all such Inventions.

- (b) *Disclosure and Assignment of Inventions.* Consultant agrees to promptly and fully disclose all Inventions to Ribbon. Consultant hereby assigns and agrees to assign the Inventions, solely, exclusively, unconditionally, irrevocably, worldwide and in perpetuity to Ribbon.
- (c) *Trade Secret Protection of Inventions.* Consultant agrees that Ribbon has the right to keep and protect the Inventions as trade secrets. Further, Consultant has a duty of confidentiality with respect to all Inventions to Ribbon under Section 2(b) of this Agreement and under applicable law.
- (d) *Patent Protection of Inventions.* Consultant agrees that Ribbon also has the right to patent the Inventions. During or after the term of this Agreement, Consultant shall assist Ribbon in obtaining and enforcing United States, Canadian and foreign patents on any or all Inventions. Consultant shall provide all testimony and execute all documents (including declarations, forms, affidavits, and assignments) necessary to obtain and perfect all ownership and other rights, including patents, in and to the Inventions, to vest Ribbon with exclusive title to the Inventions, worldwide, and to protect the Inventions against infringement by others. Consultant hereby irrevocably appoints Ribbon as Consultant’s attorney to execute and undertake all acts, deeds and things in connection with the assignment of Inventions, including without limitation, the execution of all documents as may be required to give effect to the assignment set out above.

4. **Works of Authorship.**

- (a) *Ownership.* Consultant acknowledges that all works of authorship, (including, without limitation, software programs, computer database rights, algorithms, programming codes, flow-charts, diagram, designs, artistic works, literary works, notes, source codes) relating to Consultant’s Services for Ribbon during the term of this Agreement are works “made for hire”, whether or not Consultant develops the works using Ribbon’s resources and facilities or at Ribbon’s direction. As a result, Ribbon owns all rights to the works of authorship, automatically, immediately, solely, exclusively, worldwide and in perpetuity, including any copyrights. Consultant recognizes and accepts that Ribbon may edit, copy, add to, take from, adapt, alter and translate the works (including the items mentioned above) and the product of the Services, at its sole discretion, in any manner whatsoever, in any format, medium or mode, now known or discovered in future.
- (b) *Disclosure and Assignment of Copyrights.* Consultant agrees to promptly and fully disclose all works of authorship to Ribbon. If, by operation of law or agreement, any of the works of authorship may not be considered a work “made for hire” (or if ownership of all rights in any of the works of authorship do not automatically vest exclusively in Ribbon), Consultant agrees to assign all rights to the work, including any copyrights, to Ribbon, irrevocably, unconditionally, worldwide and in perpetuity. In addition, Consultant irrevocably relinquishes and waives any moral rights in the works of authorship to and in favor of Ribbon.
- (b) *Registration and Enforcement of Copyrights.* During or after the term of this Agreement, Consultant agrees to assist Ribbon in obtaining and enforcing United

States, Canadian and foreign copyrights in the works of authorship. Consultant shall provide all testimony and execute all documents (including declarations, affidavits, and assignments) necessary to obtain or register copyrights for the works of authorship, to vest Ribbon with exclusive title to the copyrights, and to protect the copyrights against infringement by others. Consultant hereby irrevocably appoints Ribbon as Consultant's attorney to execute and undertake all acts, deeds and things in connection with the assignment of copyrights, including without limitation, the execution of all documents as may be required to give effect to the assignment set out above.

- (d) *Publication.* Consultant will not disclose or submit any writings for publication or deliver any speech that contains any information relating to Ribbon's business or to the Confidential Information without the advanced, written approval from an authorized representative of Ribbon.

5. **Non-Solicitation.**

- (a) *Non-Solicitation of Employees.* During the term of this Agreement and for a period of one year following the expiration or termination of the Agreement, Consultant shall not hire, seek to hire, or in any way participate in an attempt to hire any Ribbon employee on Consultant's own behalf or on behalf of another, and Consultant shall not in any other manner attempt to directly or indirectly influence, induce, or encourage a Ribbon employee to leave the employment of Ribbon.
- (a) *Non-Solicitation of Customers and Business Relationships.* During the term of this Agreement and for a period of one year following expiration or termination of the Agreement, Consultant will not directly or indirectly solicit, for the purpose of engaging in any business that is similar to Ribbon's business, any individual or entity with whom Ribbon has or had a customer or business relationship during the term of the Agreement and with whom Consultant had contact by virtue of Consultant's relationship position with Ribbon.
- (b) *Interpretation.* If any restriction set forth in Sections 5(a) and 4(b) is found by any court of competent jurisdiction to be unenforceable because it extends for too long a period of time or over too great a range of activities or in too broad a geographic area, it shall be interpreted to extend only over the maximum period of time, range of activities or geographic area as to which it may be enforced.

6. **Compliance with Laws and Ribbon's Anti-Corruption Policy.**

In all of Consultant's activities pursuant to this Agreement, Consultant shall strictly comply with all laws, decrees, statutes, rules, regulations, codes and ordinances which may be applicable to Consultant's activities under this Agreement.

Consultant represents and warrants to, and covenants with, Ribbon that, in connection with Consultant's activities to be performed for Ribbon hereunder, Consultant will not, directly or indirectly, offer, promise, grant, request, agree to receive or accept, anything of value to or from anyone — including representatives of government/non-government owned commercial enterprises and government officials — in order to gain an improper, illegal or unethical advantage for Ribbon or to encourage a government official to perform an official function or to obtain an improper advantage for Ribbon.

If Ribbon determines or reasonably suspects that Consultant has or intends to violate this Section 6, Ribbon will immediately terminate this Agreement pursuant to Section 8 hereof, and will seek (and Consultant will be obligated to provide) indemnification against Consultant for any damages, losses, fines, penalties, attorney's fees and costs it suffers as a direct or indirect result of Consultant's actions.

[Consultant acknowledges that Consultant has received Ribbon's Supplier Code of Conduct and agrees to abide by its terms including, but not limited to, its Anti-Bribery provision.] If Consultant is granted access to Ribbon equipment, facilities and/or Intranet ("**Ribbon Resources**"), Consultant shall use such Ribbon Resources solely as required for the performance of the Services and in accordance with the applicable Ribbon policies.

7. **Indemnity.**

Consultant shall indemnify and hold harmless Ribbon, its shareholders, directors, officers and employees (hereafter collectively, the "**Ribbon Indemnitees**"), against any and all liability, loss, damages, fines, penalties, costs and expenses (including, without limitation, court costs and reasonable attorneys' fees) incurred by any of the Ribbon Indemnitees as a result of any breach or violation by Consultant or others acting on Consultant's behalf of any of Consultant's obligations, covenants, representations, or warranties under this Agreement including, but not limited to, a claim by Consultant that he is an employee or agent of Ribbon. The indemnity obligation of Consultant shall survive the expiration or termination of this Agreement.

8. **Termination.**

(a) This Agreement may be terminated at any time before the End Date under the following conditions:

(i) by the mutual agreement of the Parties;

(ii) by either Party upon thirty (30) days written notice to the other Party. If written notice under this subsection is sent by overnight courier, termination shall be effective on the date that the notice is sent. If written notice under this subsection is sent by certified mail, termination shall be effective three (3) days after the date of mailing. If it is hand delivered then the termination would be effective on the date it is delivered to, and acknowledged by, that Party as having received the said notice. Consultant shall be entitled only to compensation accruing to and including the date of termination, and shall not be entitled to any other payments of any kind from Ribbon;

(iii) by either Party with immediate effect, in the event of a breach, violation or default or any provision of this Agreement by the other Party which has not been cured within ten (10) days after written notice specifying such breach, violation or default has been given to that Party; or

(iv) by automatic termination. This Agreement terminates automatically, with no further action from either Party, if Consultant is adjudicated bankrupt, files a voluntary petition of bankruptcy, makes a general assignment for the benefit of creditors, or is unable to meet its obligations in the normal course of business, or if a receiver is appointed on account of Consultant's insolvency.

(b) *Immediate Termination.* Notwithstanding the above, Ribbon shall be entitled to immediately terminate this Agreement effective upon the giving of notice to Consultant (i) in the event that Ribbon has reasonable cause to believe that Consultant or others acting on his behalf have committed, or plan to commit, a violation of the UK Bribery Act or Foreign Corrupt Practices Act or similar local law (“Anti-Bribery Legislation”) or (ii) in the event that Consultant has been convicted of any felony (or any other crime that could reasonably be expected to adversely affect the Company). In such event described in subsection (i), any right of Consultant to receive any payments from Ribbon relating to any such committed or planned violation of any Anti-Bribery Legislation will be forfeited, and with respect to such amounts Ribbon shall have no further liability to Consultant under this Agreement. Consultant further agrees that at any time during the term of this Agreement, Ribbon shall be entitled to terminate this Agreement, without liability to Consultant, if, at the sole discretion of Ribbon, the results of any background check conducted on Consultant and/or Consultant’s employees are not satisfactory to Ribbon.

(c) Consultant agrees that following the expiration or termination of this Agreement, he will not access the Company’s computer systems, download files or any information from the Company’s computer systems or in any way interfere, disrupt, modify or change any computer program used by the Company or any data stored on the Company’s computer systems.

(d) *Election of Remedies.* The termination of this Agreement by Ribbon shall not be deemed an election of remedies, and all other remedies provided by this Agreement or available at law or in equity shall survive any termination.

(e) *Effect of Expiration or Termination.* Upon the expiration or termination of this Agreement for any reason, each Party will be released from all obligations to the other arising after the date of expiration or termination (including, without limitation, any payments pursuant to Section 1(c)), except:

- (i) expiration or termination will not relieve Consultant of its obligations under Sections 2, 3, 4, 5 and 7; and
- (ii) expiration and termination will not relieve either Consultant or Ribbon from any liability arising from any breach of this Agreement antecedent to such expiration /termination.

9. **Enforcement.**

- (a) *Choice of Law.* This Agreement shall be governed by the laws of the Commonwealth of Massachusetts without reference to any rules of conflict of laws thereof or of any other jurisdiction.
- (b) *Forum.* Any action arising from this agreement shall be brought in the state or federal courts having jurisdiction in Collin County, Texas. Both Parties agree to submit to jurisdiction in Collin County and agree that venue is proper in Collin County.
- (c) *Injunctive Relief.* Consultant recognizes that the obligations contained in this Agreement are reasonable and necessary to protect Ribbon’s business interests and that faithful observance of all terms of this Agreement is an essential condition to Consultant’s relationship with Ribbon. Because any breach of this Agreement would

of a duly authorized officer of Ribbon. Ribbon may assign this Agreement without Consultant's consent.



IN WITNESS WHEREOF, the Parties have signed this Agreement by their duly authorized representatives to be effective as of the Effective Date.

Ribbon Communications Operating Company, Inc. David Walsh

By: /s/ Justin Ferguson By: /s/ David Walsh

Name: Justin Ferguson Name: David Walsh

Title: EVP, General Counsel Title:



APPENDIX A
To
Independent Consultancy Agreement

Ribbon and Consultant agree that Consultant shall render business advisory services to Ribbon at such times as Consultant and Ribbon agree (the “**Services**”). Consultant shall coordinate the provision of the Services through the following principal contact at Ribbon: Chief Executive Officer, Franklin “Fritz” Hobbs. By way of example, the Services may include, without limitation, the following:

1. Description of Work:
 - Provide input on product and company strategy as requested
 - Support merger and acquisition activities as directed
 - Provide input on investor relations strategy
 - Provide market and competitive insight as it relates to company strategy
2. Term: February 2, 2019 to January 31, 2020
3. Fee Schedule: USD \$25,000 per month (prorated for any partial month) for providing the Services described in herein and during the term of the Agreement. No fees are payable for any period following the end of the term of the Agreement.
4. Special Conditions: The Parties acknowledge and agree that it is reasonably anticipated that the level of bona fide services provided by Consultant to Ribbon following the Effective Date will be no more than 20% of the average level of bona fide services provided performed by Consultant for Ribbon during the 36-month period immediately preceding the Effective Date and, unless otherwise agreed in writing between the Parties, the level of bona fide services required to provide the Services shall not exceed 20% of the average level of bona fide services provided by Consultant for Ribbon during the 36-month period immediately preceding the Effective Date.

RIBBON COMMUNICATIONS INC.
SUBSIDIARIES OF THE REGISTRANT

<u>Name</u>	<u>Jurisdiction of Incorporation</u>
Sonus Networks, Inc.	Delaware
Ribbon Communications International Inc.	Delaware
Ribbon Communications Federal Inc.	Delaware
Network Equipment Technologies Inc.	Delaware
N.E.T. APLA, Inc.	Delaware
Quintum Technologies LLC	Delaware
GENBAND US LLC	Delaware
KANDY Communications LLC	Delaware
Ribbon Communications Securities Corp.	Massachusetts
Edgewater Networks, Inc.	Delaware
GENBAND SRL	Argentina
Sonus Networks Australia Pty. Ltd.	Australia
GENBAND Telecommunications (Australia) Pty Ltd	Australia
GENBAND Belgium SPRL	Belgium
GENBAND Telecommunications do Brasil Ltda	Brazil
Ribbon Communications Canada ULC	Canada
GENBAND Holdings Company	Cayman Islands
GENBAND International Holding Company	Cayman Islands
GENBAND NS Company	Cayman Islands
Sonus Networks (Shanghai) Limited	China
GENBAND Telecommunication and Technology (Shanghai) Co., Ltd.	China
Sonus Networks s.r.o.	Czech Republic
Sonus Networks EURL	France
GENBAND Télécommunications (France) Sarl	France
Ribbon Communications Germany GmbH	Germany
Ribbon Communications Hong Kong Limited	Hong Kong
GENBAND Telecommunications (Hong Kong) Ltd	Hong Kong
Sonus Networks India Private Limited	India
GENBAND Telecommunications Private Limited	India
GENBAND Ireland Limited	Ireland
GENBAND Israel Limited	Israel
GENBAND Italy SRL	Italy
Nihon Sonus Networks K.K.	Japan
GENBAND Japan GK	Japan

Sonus Networks Korea LLC	Korea
GENBAND Korea Yuhan Huesa	Korea
Sonus Networks Malaysia Sdn. Bhd.	Malaysia
Westford Networks Mexico, S. de R.L. de C.V.	Mexico
GENBAND Mexico, S. de R.L. de C.V.	Mexico
CANADA Canada B.V.	Netherlands
GENBAND Coöperatie U.A.	Netherlands
GENBAND Holdings B.V.	Netherlands
GENBAND Netherlands B.V.	Netherlands
GENBAND NS B.V.	Netherlands
Ribbon Communications B.V.	Netherlands
GENBAND New Zealand Company	New Zealand
GENBAND RUS LLC	Russia
GENBAND Saudi Arabia Limited	Saudi Arabia
Ribbon Communications Singapore Pte. Ltd.	Singapore
Sonus Networks Espana SRL	Spain
GENBAND Spain, S.L.	Spain
Ribbon Communications Switzerland GmbH	Switzerland
GENBAND Taiwan Ltd Co	Taiwan
Sonus Networks Limited	United Kingdom
N.E.T. Europe Ltd.	United Kingdom
GENBAND Telecommunications (UK) Limited	United Kingdom

CONSENT OF INDEPENDENT REGISTERED PUBLIC ACCOUNTING FIRM

We consent to the incorporation by reference in Registration Statement Nos. 333-221240 and 333-226624 on Form S-8 of our reports dated March 4, 2019, relating to the consolidated financial statements of Ribbon Communications Inc. and subsidiaries (which report expresses an unqualified opinion and includes an explanatory paragraph relating to the adoption of Accounting Standards Codification (ASC) Topic 606, "Revenue from Contracts with Customers" on January 1, 2018), and the effectiveness of Ribbon Communications Inc. and subsidiaries' internal control over financial reporting, appearing in this Annual Report on Form 10-K of Ribbon Communications Inc. for the year ended December 31, 2018.

/s/ Deloitte & Touche LLP

Boston, Massachusetts
March 4, 2019

CERTIFICATION

I, Franklin W. Hobbs, certify that:

1. I have reviewed this Annual Report on Form 10-K of Ribbon Communications Inc.;
2. Based on my knowledge, this report does not contain any untrue statement of a material fact or omit to state a material fact necessary to make the statements made, in light of the circumstances under which such statements were made, not misleading with respect to the period covered by this report;
3. Based on my knowledge, the financial statements, and other financial information included in this report, fairly present in all material respects the financial condition, results of operations and cash flows of the registrant as of, and for, the periods presented in this report;
4. The registrant's other certifying officer and I are responsible for establishing and maintaining disclosure controls and procedures (as defined in Exchange Act Rules 13a-15(e) and 15d-15(e)) and internal control over financial reporting (as defined in Exchange Act Rules 13a-15(f) and 15d-15(f)) for the registrant and have:
 - (a) Designed such disclosure controls and procedures, or caused such disclosure controls and procedures to be designed under our supervision, to ensure that material information relating to the registrant, including its consolidated subsidiaries, is made known to us by others within those entities, particularly during the period in which this report is being prepared;
 - (b) Designed such internal control over financial reporting, or caused such internal control over financial reporting to be designed under our supervision, to provide reasonable assurance regarding the reliability of financial reporting and the preparation of financial statements for external purposes in accordance with generally accepted accounting principles;
 - (c) Evaluated the effectiveness of the registrant's disclosure controls and procedures and presented in this report our conclusions about the effectiveness of the disclosure controls and procedures, as of the end of the period covered by this report based on such evaluation; and
 - (d) Disclosed in this report any change in the registrant's internal control over financial reporting that occurred during the registrant's most recent fiscal quarter (the registrant's fourth fiscal quarter in the case of an annual report) that has materially affected, or is reasonably likely to materially affect, the registrant's internal control over financial reporting; and
5. The registrant's other certifying officer and I have disclosed, based on our most recent evaluation of internal control over financial reporting, to the registrant's auditors and the audit committee of the registrant's board of directors (or persons performing the equivalent functions):
 - (a) All significant deficiencies and material weaknesses in the design or operation of internal control over financial reporting which are reasonably likely to adversely affect the registrant's ability to record, process, summarize and report financial information; and
 - (b) Any fraud, whether or not material, that involves management or other employees who have a significant role in the registrant's internal control over financial reporting.

Date: March 4, 2019

/s/ Franklin W. Hobbs

Franklin W. Hobbs
President and Chief Executive Officer
(Principal Executive Officer)

CERTIFICATION

I, Daryl E. Raiford, certify that:

1. I have reviewed this Annual Report on Form 10-K of Ribbon Communications Inc.;
2. Based on my knowledge, this report does not contain any untrue statement of a material fact or omit to state a material fact necessary to make the statements made, in light of the circumstances under which such statements were made, not misleading with respect to the period covered by this report;
3. Based on my knowledge, the financial statements, and other financial information included in this report, fairly present in all material respects the financial condition, results of operations and cash flows of the registrant as of, and for, the periods presented in this report;
4. The registrant's other certifying officer and I are responsible for establishing and maintaining disclosure controls and procedures (as defined in Exchange Act Rules 13a-15(e) and 15d-15(e)) and internal control over financial reporting (as defined in Exchange Act Rules 13a-15(f) and 15d-15(f)) for the registrant and have:
 - (a) Designed such disclosure controls and procedures, or caused such disclosure controls and procedures to be designed under our supervision, to ensure that material information relating to the registrant, including its consolidated subsidiaries, is made known to us by others within those entities, particularly during the period in which this report is being prepared;
 - (b) Designed such internal control over financial reporting, or caused such internal control over financial reporting to be designed under our supervision, to provide reasonable assurance regarding the reliability of financial reporting and the preparation of financial statements for external purposes in accordance with generally accepted accounting principles;
 - (c) Evaluated the effectiveness of the registrant's disclosure controls and procedures and presented in this report our conclusions about the effectiveness of the disclosure controls and procedures, as of the end of the period covered by this report based on such evaluation; and
 - (d) Disclosed in this report any change in the registrant's internal control over financial reporting that occurred during the registrant's most recent fiscal quarter (the registrant's fourth fiscal quarter in the case of an annual report) that has materially affected, or is reasonably likely to materially affect, the registrant's internal control over financial reporting; and
5. The registrant's other certifying officer and I have disclosed, based on our most recent evaluation of internal control over financial reporting, to the registrant's auditors and the audit committee of the registrant's board of directors (or persons performing the equivalent functions):
 - (a) All significant deficiencies and material weaknesses in the design or operation of internal control over financial reporting which are reasonably likely to adversely affect the registrant's ability to record, process, summarize and report financial information; and
 - (b) Any fraud, whether or not material, that involves management or other employees who have a significant role in the registrant's internal control over financial reporting.

Date: March 4, 2019

/s/ Daryl E. Raiford

Daryl E. Raiford
Executive Vice President and Chief Financial Officer (Principal Financial
Officer)

**CERTIFICATION PURSUANT TO 18 U.S.C. SECTION 1350,
AS ADOPTED PURSUANT TO
SECTION 906 OF THE SARBANES-OXLEY ACT OF 2002**

In connection with the Annual Report on Form 10-K of Ribbon Communications Inc. (the "Company") for the period ended December 31, 2018 as filed with the Securities and Exchange Commission on the date hereof (the "Report"), the undersigned, Franklin W. Hobbs, President and 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 his knowledge:

- (1) the Report fully complies with the requirements of Section 13(a) or 15(d) of the Securities Exchange Act of 1934; and
- (2) the information contained in the Report fairly presents, in all material respects, the financial condition and results of operations of the Company.

Date: March 4, 2019

/s/ Franklin W. Hobbs

Franklin W. Hobbs
President and Chief Executive Officer
(Principal Executive Officer)

**CERTIFICATION PURSUANT TO 18 U.S.C. SECTION 1350,
AS ADOPTED PURSUANT TO
SECTION 906 OF THE SARBANES-OXLEY ACT OF 2002**

In connection with the Annual Report on Form 10-K of Ribbon Communications Inc. (the "Company") for the period ended December 31, 2018 as filed with the Securities and Exchange Commission on the date hereof (the "Report"), the undersigned, Daryl E. Raiford, 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 his knowledge:

- (1) the Report fully complies with the requirements of Section 13(a) or 15(d) of the Securities Exchange Act of 1934; and
- (2) the information contained in the Report fairly presents, in all material respects, the financial condition and results of operations of the Company.

Date: March 4, 2019

/s/ Daryl E. Raiford

Daryl E. Raiford
Executive Vice President and Chief Financial Officer (Principal Financial
Officer)