

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

FORM 10-K

(Mark One)

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

For the fiscal year ended December 31, 2019

OR

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

For the transition period from _____ to _____

Commission file number 000-51829

COGENT COMMUNICATIONS HOLDINGS, INC.

(Exact Name of Registrant as Specified in Its Charter)

Delaware
(State or Other Jurisdiction of
Incorporation or Organization)

46-5706863
(I.R.S. Employer
Identification No.)

2450 N Street N.W.
Washington, D.C.
(Address of Principal Executive Offices)

20037
(Zip Code)

(202) 295-4200

Registrant's Telephone Number, Including Area Code

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

<u>Title of each class</u>	<u>Trading Symbol</u>	<u>Name of exchange on which registered:</u>
Common Stock, par value \$0.001 per share	CCOI	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 Exchange Act. Yes No

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

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

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

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

If an emerging growth company, indicate by check mark if the registrant has elected not to use the extended transition period for complying with any new or revised financial accounting standards 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 number of shares outstanding of the registrant's common stock, par value \$0.001 per share, as of January 31, 2020 was 46,850,718.

The aggregate market value of the Common Stock held by non-affiliates of the registrant, based on the closing price of \$59.36 per share on June 28, 2019 as reported by the NASDAQ Global Select Market was approximately \$2.5 billion.

DOCUMENTS INCORPORATED BY REFERENCE

Portions of the registrant's definitive proxy statement on Schedule 14A for the registrant's 2020 annual shareholders meeting are incorporated by reference in Part III of this Form 10-K.

COGENT COMMUNICATIONS HOLDINGS, INC.
ANNUAL REPORT ON FORM 10-K
FOR THE YEAR ENDED DECEMBER 31, 2019

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SPECIAL NOTE REGARDING FORWARD-LOOKING STATEMENTS

This report may contain forward-looking statements within the meaning of Section 21E of the Securities Exchange Act of 1934, as amended. Forward-looking statements are not statements of historical facts, but rather reflect our current expectations concerning future results and events. You can identify these forward-looking statements by our use of words such as “anticipates,” “believes,” “continues,” “expects,” “intends,” “likely,” “may,” “opportunity,” “plans,” “potential,” “project,” “will,” and similar expressions to identify forward-looking statements, whether in the negative or the affirmative. We cannot guarantee that we actually will achieve these plans, intentions or expectations. These forward-looking statements are subject to risks and uncertainties including those discussed in Item 1A “Risk Factors” and other factors, some of which are beyond our control, which could cause actual results to differ materially from those forecasts or anticipated in such forward-looking statements.

You should not place undue reliance on these forward-looking statements, which reflect our view only as of the date of this report. We undertake no obligation to update these statements or publicly release the result of any revisions to these statements to reflect events or circumstances after the date of this report or to reflect the occurrence of unanticipated events.

PART I

ITEM 1. BUSINESS

We are a facilities-based provider of low-cost, high-speed Internet access, private network services, and data center colocation space. Our network is specifically designed and optimized to transmit packet switched data. We deliver our services primarily to small and medium-sized businesses, communications service providers and other bandwidth-intensive organizations in North America, Europe, Asia, Latin America and Australia. We are a Delaware corporation and we are headquartered in Washington, DC.

We offer on-net Internet access services exclusively through our own facilities, which run from our network to our customers' premises. We are not dependent on local telephone companies or cable TV companies to serve our customers for our on-net Internet access and private network services because of our integrated network architecture. We offer our on-net services to customers located in buildings that are physically connected to our network. Our on-net service consists of high-speed Internet access and private network services offered at speeds ranging from 100 Megabits per second to 100 Gigabits per second. We provide our on-net Internet access and private network services to our corporate and net-centric customers. Our corporate customers are located in multi-tenant office buildings and typically include law firms, financial services firms, advertising and marketing firms and other professional services businesses. Our net-centric customers include bandwidth-intensive users such as other Internet access providers, telephone companies, cable television companies, web hosting companies, content delivery network companies and commercial content and application service providers. These net-centric customers obtain our services in carrier neutral data centers and in our data centers. We operate data centers throughout North America and Europe that allow our customers to collocate their equipment and access our network.

In addition to providing our on-net services, we provide Internet access and private network services to customers that are not located in buildings directly connected to our network. We provide this off-net service primarily to corporate customers using other carriers' circuits to provide the "last mile" portion of the link from the customers' premises to our network. We also provide certain non-core services that resulted from acquisitions. We continue to support but do not actively sell these non-core services.

Competitive Advantages

We believe we address many of the data communications needs of small and medium-sized businesses, communications service providers and other bandwidth-intensive organizations by offering them high-quality, high-speed Internet access and private network services at attractive prices.

Low Cost of Operation. We offer a streamlined set of products on an integrated network. Our network design allows us to avoid many of the costs that our competitors incur associated with circuit-switched, TDM and hybrid fiber coaxial networks related to provisioning, monitoring and maintaining multiple transport protocols. We believe that our low cost of operation also gives us greater pricing flexibility and a significant advantage in a competitive environment characterized by falling Internet access prices. We believe our value proposition is equal or superior to our competitors' in all of the on-net multi-tenant office buildings and carrier neutral data centers in which we operate.

Network. Our on-net service does not rely on circuits terrestrially that must be provisioned by a third party carrier. In on-net multi-tenant office buildings we provide our customers the entire network, including the "last mile" and the in-building wiring connecting to our customer's suite. In carrier neutral data centers we are collocated with our customers so only a connection, known as a cross connect, within the data center is required to provide our services. This gives us more control over our service, quality and pricing. It also allows us to provision services more quickly and efficiently than provisioning services on a third-party carrier network. We are typically able to activate service to our customers in one of our on-net buildings in approximately thirteen business days.

High Quality, Reliable Service. We are able to offer high-quality Internet service due to our metro and intercity network. Its design increases the speed and throughput of our network and reduces the number of data packets dropped during transmission compared to traditional circuit-switched networks. We believe that we

deliver a high level of technical performance because our network is optimized for packet switched traffic. We believe that our network is more reliable and carries traffic at lower cost than networks built as overlays to traditional circuit-switched, or TDM networks.

High Traffic Network Footprint. We have strategically chosen locations, such as 1,767 large multi-tenant office buildings in major North American cities and 980 carrier neutral data center buildings in North America and Europe with high levels of Internet traffic, to maximize our revenue opportunities and expand our margins. Our network is connected to our on-net multi-tenant office buildings where we offer our services to a diverse set of high-quality, low churn corporate customers within close physical proximity of each other. Our network is directly connected to 980 carrier neutral colocation and unique data center buildings where our net-centric customers directly interconnect with our network. We also operate 54 data centers across the United States and in Europe which comprise over 609,000 square feet of floor space and are directly connected to our network.

Low Capital Cost to Grow Our Business. We have a history of efficient network expansion and integration execution. We believe that we have incurred relatively lower costs in growing our business than our competitors because we use Internet routers without additional legacy equipment, we offer a streamlined set of products, and we have acquired optical fiber from the excess inventory in existing networks.

Proven and Experienced Management Team. Our senior management team is composed of seasoned executives with extensive expertise in the telecommunications industry as well as knowledge of the markets in which we operate. The members of our senior management team have an average of over 20 years of experience in the telecommunications industry and many have been working together at Cogent for several years. Several members of the senior management team have been working together at Cogent since 2000. Our senior management team has designed and built our network and led the integration of our network assets we acquired through 13 significant acquisitions and managed the expansion and growth of our business.

Our Strategy

We intend to become the leading provider of high-quality, high-speed Internet access and private network services and to continue to improve our profitability and cash flow. The principal elements of our strategy include:

Focus on Providing Low-Cost, High-Speed Internet Access and Private Network Services. We intend to further load our high-capacity network to respond to the growing demand for high-speed Internet access generated by bandwidth-intensive applications such as streaming media, online gaming, video, voice over IP (VOIP), remote data storage, distributed computing, cloud services and virtual private networks. We intend to do so by continuing to offer our high-speed and high-capacity services at competitive prices.

Pursuing On-Net Customer Growth. We intend to increase usage of our network and operational infrastructure by adding customers in our existing on-net buildings, as well as connecting more multi-tenant office buildings and carrier neutral data centers to our network. We emphasize our on-net service because our on-net services generate greater profit margins and we have more control over service levels, quality, pricing and our on-net services are provisioned in considerably less time than our off-net services. Our fiber network connects directly to our on-net customers' premises and we pay no local access ("last mile") charges to other carriers to provide our on-net services. We are responding to this on-net revenue opportunity by increasing our sales and marketing efforts including increasing our number of sales representatives, implementing strategies to optimize sales productivity and expanding our on-net addressable market by adding service locations to our network.

Selectively Pursuing Acquisition Opportunities. In addition to adding customers through our sales and marketing efforts, we will continue to seek out acquisition opportunities that increase our customer base, allowing us to take advantage of the unused capacity on our network and to add revenues with minimal incremental costs. We may pursue acquisition opportunities that we believe expand our footprint, and generate positive cash flow. These acquisition opportunities may include off-net as well as on-net customers and complementary businesses including those offering over the top applications such as VOIP. We may also make opportunistic acquisitions of network assets. Given our record of successful asset integration, we believe we can

continue to successfully integrate new businesses as they are acquired. We are very selective in reviewing acquisition opportunities and have not completed an acquisition in over a decade.

Our Network

Our network is comprised of in-building riser facilities, metropolitan optical networks, metropolitan traffic aggregation points and inter-city transport facilities. We believe that we deliver a high level of technical performance because our network is optimized for packet switched traffic. We believe that our network is more reliable and carries packet switched traffic at lower cost than networks built as overlays to traditional circuit-switched telephone networks.

Our network serves over 200 metropolitan markets in North America, Europe, Asia, Latin America and Australia and encompasses:

- 1,767 multi-tenant office buildings strategically located in commercial business districts;
- 980 carrier-neutral Internet aggregation facilities, data center buildings and single-tenant buildings;
- 873 intra-city networks consisting of 35,526 fiber miles;
- an inter-city network of 57,600 fiber route miles; and
- multiple high-capacity transoceanic circuits that connect the North American, European, Asian, Latin American and Australian portions of our network.

We have created our network by acquiring optical fiber from carriers with large amounts of unused fiber and directly connecting Internet routers to our existing optical fiber national backbone. We have expanded our network through key acquisitions of financially distressed companies or their assets at a significant discount to their original cost. Due to our network design and acquisition strategy, we believe we are positioned to grow our revenue and increase our profitability with limited incremental capital expenditures.

Inter-city Networks

Our inter-city network consists of optical fiber connecting major cities in North America, Europe, Asia, Latin America and Australia. The North American, European, Asian, Latin American and Australian portions of our network are connected by transoceanic circuits. Our network was built by acquiring from various owners of fiber optic networks the right to use typically two strands of optical fiber out of the multiple fibers owned by the cable operator. We install the optical and electronic equipment necessary to amplify, regenerate, and route the optical signals along these networks. We have the right to use the optical fiber under long term agreements. We pay these providers our pro rata fees for the maintenance of the optical fiber and provide our own equipment maintenance.

Intra-city Networks

In each metropolitan area in which we provide our high-speed on-net Internet access services, our backbone network is connected to one or more routers that are connected to one or more of our metropolitan optical networks. We created our intra-city networks by obtaining the right to use optical fiber from carriers with optical fiber networks in those cities. These metropolitan networks consist of optical fiber that runs from the central router in a market into routers located in our on-net buildings. In most cases the metropolitan fiber runs in a ring architecture, which provides redundancy so that if the fiber is cut, data can still be transmitted to the central router by directing traffic in the opposite direction around the ring. The router in the building provides the connection to each of our on-net customers.

Within the cities where we offer our off-net Internet access services, we lease circuits from telecommunications carriers, primarily local telephone companies and cable TV companies, to provide the last mile connection to our customer's premises. Typically, these circuits are aggregated at various locations in those cities onto higher-capacity leased circuits that ultimately connect the local aggregation router to our network.

In-building Networks

In office buildings where we provide service to multiple tenants we connect our routers to a cable typically containing 12 to 288 optical fiber strands that run from our equipment in the basement of the building through the building riser to the customer location. Our service is initiated by connecting a fiber optic cable from our customer's local area network to the infrastructure in the building riser giving our customer dedicated and secure access to our network using an Ethernet connection. We believe that Ethernet is the lowest cost network connection technology and is almost universally used for the local area networks that businesses operate.

Data Centers

We operate 54 data centers across the United States and in Europe. These facilities comprise over 609,000 square feet of floor space and are directly connected to our network. Each location is equipped with secure access, uninterruptable power supplies (UPS), and backup generators. Our customers typically purchase bandwidth, rack space, and power within these facilities.

Internetworking

The Internet is an aggregation of interconnected networks. We interconnect with the networks of our customers, which represent the majority of our interconnections, and with other Internet service providers, or ISPs. The majority of our traffic travels between our customers. We have settlement-free interconnections between our network and most major ISPs who are not our customers. We interconnect our network to other ISP networks predominantly through private peering arrangements facilitated with direct connections with networks who are not customers of the ISP. Larger ISPs exchange traffic and interconnect their networks by means of direct private connections referred to as private peering.

Peering agreements between ISPs are necessary in order for them to exchange traffic. Without peering agreements, each ISP would have to buy Internet access from every other ISP in order for its customer's traffic, such as email, to reach and be received from customers of other ISPs. We are considered a Tier 1 ISP with a large customer base and, as a result, we have settlement-free peering arrangements with other providers. We do not purchase transit services or paid peering to reach any portion of the Internet. This allows us to exchange traffic with those ISPs without payment by either party. In such arrangements, each party exchanging traffic bears its own cost of delivering traffic to the point at which it is handed off to the other party. We do not treat our settlement-free peering arrangements as generating revenue or expense related to the traffic exchanged. We do not sell or purchase paid peering. We directly connect with over 6,920 total networks of which approximately 30 networks are settlement-free peers, the remaining networks are customers, whom we charge for Internet access.

Network Management and Customer Care

Our primary network operations centers are located in Washington, D.C. and Madrid, Spain. These facilities provide continuous operational support for our network. Our network operations centers are designed to immediately respond to any problems in our network. Our customer care call centers are located in Washington D.C., Herndon Virginia, Madrid Spain, Paris France, and Frankfurt Germany. To ensure the quick replacement of faulty equipment in the intra-city and long-haul networks, we have deployed field engineers across North America and Europe. In addition, we have maintenance contracts with third-party vendors that specialize in maintaining optical and routed networks.

Our Services

We offer our high-speed Internet access and IP connectivity services primarily to small and medium-sized businesses, communications providers and other bandwidth-intensive organizations located in North America, Europe, Asia, Latin America and Australia.

We offer on-net services in over 200 metropolitan markets. We serve 2,801 on-net buildings. Our most popular on-net service in North America is Internet access at 100 megabits per second. We typically offer this service to small and medium-sized business customers. We also offer Internet access at higher speeds of up to 100 gigabits per second. These services are generally used by bandwidth intensive customers that have

businesses, such as web hosting, Internet access, and video delivery, predicated upon the Internet. These services are generally delivered at our data centers and carrier neutral data centers. We believe that, on a per-megabit basis, this service offering is one of the lowest priced in the marketplace. We also offer colocation services in our data centers. This service offers Internet access combined with rack space and power in our facility, allowing the customer to locate a server or other equipment at that location and connect to our Internet access service. Our final on-net service offering is our private network service. This service provides point-to-point and point to multi-point connectivity. This service allows customers to connect geographically dispersed local area networks in a seamless manner. We offer lower prices for longer term and volume commitments. We emphasize the sale of our on-net services because we believe that we have a competitive advantage in providing these services and these services generate gross profit margins that are greater than our off-net services.

We offer our off-net services to customers that are not located in our on-net buildings. These services are primarily provided in the metropolitan markets in North America and Europe in which we offer on-net services. These services are generally provided to small and medium-sized corporate customers in over 6,870 off-net buildings.

Sales and Marketing

Direct Sales. We employ a direct sales and marketing approach. As of February 1, 2020, our sales force included 686 full-time employees. Our quota bearing sales force includes 548 employees with 364 employees focused primarily on the corporate market and 184 employees focused primarily on the net-centric market. Our sales personnel work through direct contact with potential customers in, or intending to locate in, our on-net buildings. Through agreements with building owners, we are able to initiate and maintain personal contact with our customers by staging various promotional and social events in our multi-tenant office buildings and carrier neutral data centers. Sales personnel are compensated with a base salary plus quota-based commissions and incentives. We use a customer relationship management system to efficiently track sales activity levels and sales productivity.

Indirect Sales. We also have an indirect sales program. Our indirect sales program includes several master agents with whom we have a direct relationship. Through our agreements with our master agents we are able to sell through thousands of sub agents. All agents have access to selling to potential corporate customers and may sell all of our products. We have hired an indirect channel team who manages these indirect relationships. The indirect channel team is compensated with a base salary plus quota-based commissions and incentives. We use our customer relationship management system to efficiently track indirect sales activity levels and the sales productivity of our agents under our indirect sales program.

Marketing. Because of our historical focus on a direct sales force that utilizes direct contact, we have not spent funds on television, radio or print advertising. We use a limited amount of web based advertising. Our marketing efforts are designed to drive awareness of our products and services, to identify qualified leads through various direct marketing campaigns and to provide our sales force with product brochures, collateral materials, in building marketing events and relevant sales tools to improve the overall effectiveness of our sales organization. In addition, we conduct building events and public relations efforts focused on cultivating industry analyst and media relationships with the goal of securing media coverage and public recognition of our Internet access and private network services.

Competition

We face competition from incumbent telephone and cable companies, and facilities-based network operators, many of whom are much larger than us, have significantly greater financial resources, better-established brand names and large, existing installed customer bases in the markets in which we compete. We also face competition from new entrants to the communications services market. Many of these companies offer products and services that are similar to our products and services.

Unlike some of our competitors, we generally do not have title to most of the dark fiber that makes up our network. Our interests in that dark fiber are in the form of long-term leases under indefeasible rights of use, or IRUs, with providers, some of which also compete with us. We rely on the owner of the fiber to maintain the

fiber. We are also dependent on third party providers, some of which compete with us, to provide both intracity fiber and the lateral fiber connections required to add buildings to our network and to provide the local loop facilities for the provision of connections to our off-net customers.

We believe that competition is based on many factors, including price, transmission speed, ease of access and use, length of time to provision service, breadth of service availability, reliability of service, customer support and brand recognition. Because our fiber optic networks have been recently installed compared to those of the incumbent carriers, our state-of-the-art technology may provide us with cost, capacity, and service quality advantages over some existing incumbent carrier networks; however, our network may not support some of the services supported by these legacy networks, such as circuit-switched voice, ATM, frame relay, wireless and shared hybrid fiber coax networks. While the Internet access speeds offered by traditional ISPs serving multi-tenant office buildings using DSL or cable modems typically do not match our on-net offerings in terms of throughput or quality, these slower services are usually priced lower than our offerings and thus provide competitive pressure on pricing, particularly for more price-sensitive customers. These and other downward pricing pressures particularly in carrier neutral data centers have diminished, and may further diminish, the competitive advantages that we have enjoyed as the result of the pricing of our services. Increasingly, traditional ISPs are upgrading their services using optical fiber and cable technology so that they can match our transmission speed and quality.

Regulation

Our services are subject to the regulatory authority of various agencies in the jurisdictions in which we operate. As a provider of only Internet access and private networks to businesses regulation is generally light. This benefits us in that we have flexibility in offering our services and ease of entry into new markets. However, this light regulation generally extends to our competitors, some of whom are incumbent telephone and cable companies with whom we need to interconnect and from whom we acquire circuits for our off-net services. The extent of regulation can change. For example, the U.S. Federal Communications Commission ("FCC") recently rescinded regulations applicable to mass market Internet access providers. In all jurisdictions regulations continue to evolve. We also enter into new markets with their own regulations. The regulations with which we need to comply include licenses to provide our services, data privacy, interception of communications by law enforcement, blocking of web sites, and others. We believe that we comply with all regulations in the jurisdictions in which we operate.

The laws related to Internet telecommunications are unsettled and there may be new legislation and court decisions that may affect our services and expose us to burdensome requirements and liabilities.

Employees

As of February 1, 2020, we had 1,051 employees. Unions represent 29 of our employees in France. We believe that we have a satisfactory relationship with our employees.

Available Information

We were incorporated in Delaware in 1999. We maintain an Internet website at www.cogentco.com. We make available free of charge through our Internet website our annual report on Form 10-K, our quarterly reports on Form 10-Q, our current reports on Form 8-K, and any amendments to those reports filed or furnished pursuant to Section 13(a) or 15(d) of the Exchange Act. The reports are made available through a link to the SEC's Internet website at www.sec.gov. You can find these reports and request a copy of our Code of Conduct on our website at www.cogentco.com under the "About Cogent" tab at the "Investor Relations" link.

ITEM 1A. RISK FACTORS

Our connections to the Internet require us to establish and maintain relationships with other providers, which we may not be able to maintain.

The Internet is composed of various network providers who operate their own networks that interconnect at public and private interconnection points. Our network is one such network. In order to obtain Internet

connectivity for our network, we must establish and maintain relationships with other Internet access providers and certain of our larger customers. These providers may be customers (who connect their network to ours by buying Internet access from us) or may be other large Internet access providers to whom we connect on a settlement-free peering basis as described below. Both customers and settlement-free peers may be competitors of ours.

By entering into what are known as settlement-free peering arrangements, providers agree to exchange traffic between their respective networks without charging each other. Our ability to avoid the higher costs of acquiring paid dedicated network capacity (transit or paid peering) and to maintain high network performance is dependent upon our ability to establish and maintain settlement-free peering relationships and to increase the capacity of the interconnections provided by these relationships. The terms and conditions of our settlement-free peering relationships may also be subject to adverse changes, which we may not be able to control. For example, several network operators with large numbers of individual users are arguing that they should be able to charge or charge more to network operators and businesses that deliver the large volumes of traffic requested by their users. If we are not able to maintain or increase our settlement-free peering relationships in all of our markets on favorable terms or to upgrade the capacity of our existing settlement-free peering relationships, we may not be able to provide our customers with high performance or affordable or reliable services, which could cause us to lose existing and potential customers, damage our reputation and have a material adverse effect on our business. We have in the past had peering disputes with other network providers that resulted in a temporary disruption of the exchange of traffic between our network and the network of the other carrier. We have resolved the majority of such disputes through negotiations. In 2013 the major incumbent telephone and cable companies in the United States began to refuse to upgrade our peering connections. This refusal caused congestion at our existing peering connections with these networks as our connections were unable to handle the large volume of traffic requested by the customers of these incumbent telephone and cable companies. This congestion impacted our network and our services to our other customers. Following issuance by the FCC of its Open Internet Order we were able to enter into agreements with most of these carriers that have alleviated the congestion we were experiencing. We cannot assure you that the upgrade commitments in those agreements will be sufficient to accommodate the growth of Internet traffic on our network. In December 2017 the FCC rescinded the protections of the Open Internet Order. This may impact the willingness of telephone and cable companies to continue our current agreements or to enter into agreements to augment interconnections as traffic grows and to continue current agreements.

We have experienced the same congestion problem in Europe with incumbent telephone companies. As the use of streaming video increases this problem is exacerbated. Recently, several European incumbent telephone companies have increased the capacity of our interconnections. We do not know if they will continue to do so. The major carrier in Germany, Deutsche Telekom, continues to limit our interconnection capacity.

We cannot assure you that we will be able to continue to establish and maintain relationships with other Internet access providers, favorably resolve disputes with such providers, or increase the capacity of our interconnections with such providers.

We need to retain existing customers and continue to add new customers in order to become consistently profitable and cash flow positive.

In order to become consistently profitable and consistently cash flow positive, we need to both retain existing customers and continue to add a large number of new customers. The precise number of additional customers required is dependent on a number of factors, including the turnover of existing customers, the pricing of our product offerings and the revenue mix among our customers. We may not succeed in adding customers if our sales and marketing efforts are unsuccessful. In addition, many of our targeted customers are businesses that are already purchasing Internet access services from one or more providers, often under a contractual commitment. It has been our experience that such targeted customers are often reluctant to switch providers due to costs and effort associated with switching providers. Further, as some of our customers grow larger they may decide to build their own Internet backbone networks or enter into direct connection agreements with telephone and cable companies that provide Internet service to consumers. A migration of a few very large Internet users to their own networks, or to special networks that may be offered by major telephone and cable providers of last

mile broadband connections to consumers, or the loss or reduced purchases from several significant customers could impair our growth, cash flow and profitability.

We have customers who depend on the U.S. government's E-rate program for funding. There can be no assurance that the E-rate program will continue or that other governmental programs that fund governments and organizations that are or might become customers will continue. A failure of such programs to continue could result in a loss of customers and impair our growth, cash flow and profitability.

Our growth and financial health are subject to a number of economic risks.

A downturn in the world economy, especially the economies of North America and Europe would negatively impact our growth. We would be particularly impacted by a decline in the development of new applications and businesses that make use of the Internet. Our revenue growth is predicated on growth in the use of the Internet that makes up for the declining prices of Internet service. An economic downturn could impact the Internet business more significantly than other businesses that are less dependent on new applications and growth in the use of those applications because of the retrenchment by consumers and businesses that typically occurs in an economic downturn.

Our business and operations are growing rapidly and we may not be able to efficiently manage our growth.

We have grown our company rapidly through network expansion and by obtaining new customers through our sales efforts. Our expansion places significant strains on our management, operational and financial infrastructure. Our ability to manage our growth will be particularly dependent upon our ability to:

- expand, develop and retain an effective sales force and qualified personnel, especially in light of the tight job market in the U.S.;
- maintain the quality of our operations and our service offerings;
- maintain and enhance our system of internal controls to ensure timely and accurate compliance with our financial and regulatory reporting requirements; and
- expand our accounting and operational information systems in order to support our growth.

If we fail to implement these measures successfully, our ability to manage our growth will be impaired.

We may experience difficulties operating in countries outside of the United States, Canada and Western Europe.

We have expanded our network into Eastern Europe, Mexico and on a limited basis to Tokyo, Hong Kong, Singapore, Latin America and Australia. We have experienced difficulties, ranging from lack of dark fiber to regulatory issues to slower revenue growth rates in operating in these markets. If we are not successful in developing our market presence in these regions our operating results and revenue growth could be adversely impacted.

We may experience delays and additional costs in expanding our on-net buildings.

We plan on continuing to increase the number of carrier-neutral data centers and multi-tenant office buildings that are connected to our network. We may be unsuccessful at identifying appropriate buildings or negotiating favorable terms for acquiring access to such buildings, and we may be unable to procure dark fiber to connect such buildings to our network or to procure such fiber on favorable terms. Consequently, we may experience difficulty in adding customers to our network and fully using our network's available capacity.

We may be required to censor content on the Internet, which we may find difficult to do and which may impact our ability to provide our services in some countries as well as impact the growth of Internet usage, upon which we depend.

Some governments attempt to limit access to certain content on the Internet. It is impossible for us (and other providers as far as we know) to filter all content that flows across the Internet connections we provide. For example, some content is encrypted when a secure web site is accessed. It is difficult to limit access to web sites by blocking a fixed set of Internet addresses when the website operators engage in practices that make it difficult to block them. Should any government require us to perform these types of blocking procedures we could experience difficulties ranging from incurring additional expenses to ceasing to provide service in that country. We could also be subject to penalties if we fail to implement the censorship.

We may not successfully make or integrate acquisitions or enter into strategic alliances.

As part of our growth strategy, we may pursue selected acquisitions and strategic alliances. To date, we have completed 13 significant acquisitions. However, we are very selective with respect to such acquisitions and alliances and we have not undertaken either for more than 15 years. We compete with other companies for acquisition opportunities and we cannot assure you that we will be able to execute future acquisitions or strategic alliances on commercially reasonable terms, or at all. Even if we enter into these transactions, we may experience:

- delays in realizing or a failure to realize the benefits we anticipate;
- difficulties or higher-than-anticipated costs associated with integrating any acquired companies, products or services into our existing business;
- attrition of key personnel from acquired businesses;
- unexpected costs or charges; and
- unforeseen operating difficulties that require significant financial and managerial resources that would otherwise be available for the ongoing development or expansion of our existing operations.

In the past, our acquisitions have often included assets, service offerings and financial obligations that are not compatible with our core business strategy. We have expended management attention and other resources to the divestiture of assets, modification of products and systems as well as restructuring financial obligations of acquired operations. In most acquisitions, we have been successful in renegotiating the agreements that we have acquired. If we are unable to satisfactorily renegotiate such agreements in the future or with respect to future acquisitions, we may be exposed to large claims for payment for services and facilities we do not need.

Consummating these transactions could also result in the incurrence of additional debt and related interest expense, as well as unforeseen contingent liabilities, all of which could have a material adverse effect on our business, financial condition and results of operations. Because we have purchased financially distressed companies or their assets, and may continue to do so in the future, we have not had, and may not have, the opportunity to perform extensive due diligence or obtain contractual protections and indemnifications that are customarily provided in acquisitions. As a result, we may face unexpected contingent liabilities arising from these acquisitions. We may also issue additional equity in connection with these transactions, which would dilute our existing shareholders.

Following an acquisition, we have experienced a decline in revenue attributable to acquired customers as these customers' contracts have expired and they have entered into our standard customer contracts at generally lower rates or have chosen not to renew service with us. We anticipate that we would experience similar revenue declines with respect to customers we may acquire in the future.

We depend upon our key employees and may be unable to attract or retain sufficient qualified personnel.

Our future performance depends upon the continued contribution of our executive management team and other key employees, in particular, our Chairman and Chief Executive Officer, Dave Schaeffer. As founder of our company, Mr. Schaeffer's knowledge of our business and our industry combined with his deep involvement in

every aspect of our operations and planning make him particularly well-suited to lead our company and difficult to replace. In addition, our senior management team has been in place for many years and has deep experience with our operations and abilities that would make them difficult to replace.

We will need to renew the long-term leases of the optical fiber that composes our network.

Our network is composed of optical fiber that we have leased from many carriers. Most of the leases are long-term, i.e. 15 years with renewal rights. These leases are generally referred to as indefeasible rights of use (IRU). In coming years we will need to renew certain of these leases either pursuant to the renewal terms of the lease or by negotiating an extension of the term. In particular, the lease for a large portion of our U.S. intercity network will need to be renewed in 2020. We have exercised our renewal right as provided in the lease. However, the owner of the fiber has the right to abandon the fiber rather than renew the lease. We do not expect the owner to abandon the fiber but if the owner did so we would experience substantial disruption and expense in replacing our U.S. backbone network with fiber from other providers. We face similar risks with respect to the other portions of our network.

Substantially all of our network infrastructure equipment is manufactured or provided by a single network infrastructure vendor.

We purchase from Cisco Systems, Inc. (Cisco) the routers and transmission equipment used in our network. If Cisco fails to provide equipment on a timely basis or fails to meet our performance expectations, including in the event that Cisco fails to enhance, maintain, upgrade or improve its products, hardware or software we purchase from them when and how we need them, we may be delayed or unable to provide services as and when requested by our customers. We also may be unable to upgrade our network and face greater difficulty maintaining and expanding our network.

Transitioning from Cisco to another vendor would be disruptive because of the time and expense required to learn to install, maintain and operate the new vendor's equipment and to operate a multi-vendor network. Any such disruption could increase our costs, decrease our operating efficiencies and have an adverse effect on our business, results of operations and financial condition.

Cisco may also be subject to litigation with respect to the technology on which we depend, including litigation involving claims of patent infringement. Such claims have been growing rapidly in the communications industry. Regardless of the merit of these claims, they can result in the diversion of technical and management personnel, or require us to obtain non-infringing technology or enter into license agreements for the technology on which we depend. There can be no assurance that such non-infringing technology or licenses will be available on acceptable terms and conditions, if at all.

Our business could suffer because telephone companies and cable companies may provide better delivery of certain Internet content, including content originating on their own networks, than content on the public Internet.

Broadband connections provided by cable TV and telephone companies have become the predominant means by which consumers connect to the Internet. The providers of these broadband connections may treat Internet content or other broadband content delivered from different sources differently. The possibility of this has been characterized as an issue of "net neutrality." As many of our customers operate websites and services that deliver content to consumers our ability to sell our services would be negatively impacted if Internet content delivered by us was less easily received by consumers than Internet content delivered by others. The FCC had promulgated rules that would have banned practices such as blocking and throttling of Internet traffic but those rules were rescinded by the FCC in December 2017. The European Union has issued similar net neutrality rules but they remain untested. We also do not know the extent to which the providers of broadband Internet access to consumers may favor certain content or providers in ways that may disadvantage us.

Our operations outside of the United States expose us to economic, regulatory and other risks.

The nature of our operations outside of the United States involve a number of risks, including:

- fluctuations in currency exchange rates;
- exposure to additional regulatory and legal requirements, including import restrictions and controls, exchange controls, tariffs and other trade barriers and privacy and data protection regulations;
- difficulties in staffing and managing our foreign operations;
- changes in political and economic conditions; and
- exposure to additional and potentially adverse tax regimes.

As we continue to expand into other countries, our success will depend, in part, on our ability to anticipate and effectively manage these and other risks. Our failure to manage these risks and grow our operations outside the United States may have a material adverse effect on our business and results of operations.

Fluctuations in foreign exchange rates may adversely affect our financial position and results of operations.

Our operations outside the United States expose us to currency fluctuations and exchange rate risk. For example, while we record revenues and the financial results of our European operations in Euros, these results are reflected in our consolidated financial statements in US dollars. Therefore, our reported results are exposed to fluctuations in the exchange rates between the US dollar and the Euro. We may fund certain of our cash flow requirements of our operations outside of the United States in US dollars. Accordingly, in the event that the foreign currency strengthens against the US dollar to a greater extent than we anticipate, the cash flow requirements associated with these operations may be significantly greater in US dollar terms than planned.

Our business could suffer delays and problems due to the actions of “last mile” providers on whom we are partially dependent.

Our off-net customers are connected to our network by means of communications lines that are provided as services by local telephone and cable companies and others. We may experience problems with the installation, maintenance and pricing of these lines which could adversely affect our results of operations and our plans to add additional customers to our network using such services. We have historically experienced installation and maintenance delays when the network provider is devoting resources to other services, such as traditional telephony, cable TV services and private network services. We have also experienced pricing problems when a lack of alternatives allows a provider to charge high prices for services in a particular area. We attempt to reduce this problem by using many different providers so that we have alternatives for linking a customer to our network. Competition among the providers tends to improve installation intervals, maintenance and pricing. Additionally, these providers are often competing with us for the same customers, and have marketed their own service to our customers when our initial contract with our customer nears the end of its term.

Our network may be the target of potential cyber-attacks and other security breaches that could have significant negative consequences.

Our business depends on our ability to limit and mitigate interruptions or degradation to our network availability. Our network, including our routers, may be vulnerable to unauthorized access, computer viruses, cyber-attacks, distributed denial of service (DDOS), and other security breaches. An attack on or security breach of our network could result in interruption or cessation of services, our inability to meet our service level commitments, and potentially compromise customer data transmitted over our network. Cyber-attacks of increasing sophistication and breadth suggest an increase in cyber-attacks that may be state-sponsored or conducted by other well-financed organizations. Moreover, as cyber warfare becomes a tool in asymmetric conflicts between the United States and other nations, we, as a US provider, may be targeted with increasing frequency. We cannot guarantee that our security measures will not be circumvented, thereby resulting in network failures or interruptions that could impact our network availability and have a material adverse effect on our business, financial condition and operational results. We may be required to expend significant resources to

protect against such threats, and may experience a reduction in revenues, litigation, and a diminution in goodwill, caused by a breach. Although our customer contracts limit our liability, affected customers and third parties may seek to recover damages from us under various legal theories.

Our network could suffer serious disruption if certain locations experience serious damage.

There are certain locations through which a large amount of our Internet traffic passes. Examples are facilities in which we exchange traffic with other carriers, the facilities through which our transoceanic traffic passes, and certain of our network hub sites. If any of these facilities were destroyed or seriously damaged a significant amount of our network traffic could be disrupted. Because of the large volume of traffic passing through these facilities our ability (and the ability of carriers with whom we exchange traffic) to quickly restore service would be challenged. There could be parts of our network or the networks of other carriers that could not be quickly restored or that would experience substantially reduced service for a significant time. If such a disruption occurs, our reputation could be negatively impacted which may cause us to lose customers and adversely affect our ability to attract new customers, resulting in an adverse effect on our business and operating results.

We may have difficulty and experience disruptions as we add features and upgrade our network

When we upgrade our network this process involves reconfiguring our network and making changes to software including our operating systems. In doing so we may experience disruptions that affect our customers, our revenue, and our ability to grow. We may require additional resources to accomplish this work in a timely manner. That could cause us to incur unexpected expenses or delay portions of this effort to the detriment of our ability to provide service to our customers.

If the information systems that we depend on to support our customers, network operations, sales, billing and financial reporting do not perform as expected, our operations and our financial results may be adversely affected.

We rely on complex information systems to operate our network and support our other business functions. Our ability to track sales leads, close sales opportunities, provision services, bill our customers for our services and prepare our financial statements depends upon the effective integration of our various information systems. If our information systems, individually or collectively, fail or do not perform as expected, our ability to process and provision orders, to make timely payments to vendors, to ensure that we collect amounts owed to us and prepare and file our financial statements would be adversely affected. Such failures or delays could result in increased capital expenditures, customer and vendor dissatisfaction, loss of business or the inability to add new customers or additional services, and the inability to prepare accurate and timely financial statements all of which would adversely affect our business and results of operations.

The U.S. Tax Cuts and Jobs Act will impact us.

The Tax Cuts and Jobs Act (the “Act”) significantly changed U.S. tax law by reducing the U.S. corporate tax rate, making certain changes to U.S. taxation of income earned abroad, the deduction of capital expenditures, and the deduction of interest expense. Although we generally believe the impact of the Act will be favorable to us, it is complex and there may be aspects that will negatively affect us.

Tax audits could adversely affect us.

We are subject to audit of our tax compliance in numerous jurisdictions. These may result in the assessment of amounts due that are material and therefore would have an adverse effect on us.

The utilization of certain of our net operating loss carryforwards is limited and depending upon the amount of our taxable income we may be subject to paying income taxes earlier than planned.

Section 382 of the Internal Revenue Code in the United States limits the utilization of net operating losses when ownership changes, as defined by that section, occur. We have performed an analysis of our Section 382

ownership changes and have determined that the utilization of certain of our net operating loss carryforwards in the United States is limited. Further, recent changes to the tax law in the United States may impact our utilization of our net operating losses.

Our business could suffer from an interruption of service from our fiber providers.

The optical fiber cable owners from whom we have obtained our inter-city and intra-city dark fiber maintain that dark fiber. We are contractually obligated under the agreements with these carriers to pay maintenance fees, and if we are unable to continue to pay such fees we would be in default under these agreements. If these carriers fail to maintain the fiber or disrupt our fiber connections due to our default or for other reasons, such as business disputes with us, bankruptcy, and governmental takings, our ability to provide service in the affected markets or parts of markets would be impaired unless we have or can obtain alternative fiber routes. Some of the companies that maintain our inter-city dark fiber and some of the companies that maintain our intra-city dark fiber are also competitors of ours. Consequently, they may have incentives to act in ways unfavorable to us. While we have successfully mitigated the effects of prior service interruptions and business disputes in the past, we may incur significant delays and costs in restoring service to our customers in connection with future service interruptions, and as a result we may lose customers.

Our business depends on agreements with carrier neutral data center operators, which we could fail to obtain or maintain.

Our business depends upon access to customers in carrier neutral data centers, which are facilities in which many users of the Internet house the computer servers that deliver content and applications to users by means of the Internet and provide access to multiple Internet access networks. Most carrier neutral data centers allow any carrier to operate within the facility (for a standard fee). We expect to enter into additional agreements with carrier neutral data center operators as part of our growth plan. Current government regulations do not require carrier neutral data center operators to allow all carriers access on terms that are reasonable or nondiscriminatory. We have been successful in obtaining agreements with these operators in the past and have generally found that the operators want to have us located in their facilities because we offer low-cost, high-capacity Internet service to their customers. Any deterioration in our existing relationships with these operators could harm our sales and marketing efforts and could substantially reduce our potential customer base. Increasing concentration in this industry could negatively impact us if any such combined entities decide to discontinue operation of their facilities in a carrier neutral fashion.

Our ability to serve customers in multi-tenant office buildings depends on access agreements with building owners and managers, which we could fail to obtain or maintain.

Our on-net business depends upon our in-building networks. Our in-building networks depend on access agreements with building owners or managers allowing us to install our in-building networks and provide our services in these buildings. These agreements typically have terms of five to ten years, with one or more renewal options. Any deterioration in our existing relationships with building owners or managers could harm our sales and marketing efforts and could substantially reduce our potential customer base. We expect to enter into additional access agreements as part of our growth plan. Current federal and state regulations do not require building owners to make space available to us or to do so on terms that are reasonable or nondiscriminatory. While the FCC has adopted regulations that prohibit common carriers (subject to regulation under Title II of the Communications Act) from entering into exclusive arrangements with owners of multi-tenant commercial office buildings, these regulations do not require building owners to offer us access to their buildings. Building owners or managers may decide not to permit us to install our networks in their buildings or they may elect not to renew or amend our access agreements. Most of these agreements have one or more automatic renewal periods and others may be renewed at the option of the landlord. Some of these access agreements have or will have exhausted all automatic renewal periods and, as such, will be coming up for renewal in the near future. While we have historically been successful in renewing these agreements and no single building access agreement is material to our success, the failure to obtain or maintain a number of these agreements would reduce our revenue, and we might not recover our costs of procuring building access and installing our in-building networks in those locations.

We may not be able to obtain or construct additional building laterals to connect new buildings to our network.

In order to connect a new building to our network we need to obtain or construct a lateral from our metropolitan network to the building. We may not be able to obtain fiber in an existing lateral at an attractive price from a provider and may not be able to construct our own lateral due to the cost of construction or municipal regulatory restrictions. Failure to obtain fiber in an existing lateral or to construct a new lateral could keep us from adding new buildings to our network and negatively impact our growth opportunities.

Impairment of our proprietary property and our alleged infringement on other companies' intellectual property rights could harm our business.

We cannot assure you that the steps taken by us to protect our proprietary property will be adequate to deter misappropriation of proprietary information or that we will be able to detect unauthorized use and take appropriate steps to enforce our rights. We also are subject to the risk of litigation alleging infringement of third party intellectual property rights. Any such claims could require us to spend significant sums in litigation, pay damages, develop non-infringing intellectual property or acquire licenses to the intellectual property that is the subject of the alleged infringement.

We are aware of other companies in our and other industries that use the word "Cogent" in their corporate names. Consequently, we do not have rights to the name "Cogent". This may weaken our ability to market our services.

The sector in which we operate is highly competitive, and we may not be able to compete effectively.

We face significant competition from incumbent carriers, Internet service providers and facilities-based network operators. Relative to us, many of these providers have significantly greater financial resources, more well-established brand names, larger customer bases, and more diverse strategic plans and service offerings.

Intense competition from these traditional and new communications companies has led to declining prices and margins for many communications services, and we expect this trend to continue as competition intensifies in the future. Decreasing prices for high-speed Internet services have somewhat diminished the competitive advantage that we have enjoyed as a result of our service pricing.

Our business is premised on the idea that customers want simple Internet access and private networks rather than a combination of such services with other services such as VOIP and complex enterprise services. Our competitors offer such services. Should the market come to favor such services our ability to acquire and keep customers would be impaired. Our competitors may also upgrade their existing services or introduce new technologies or services, such as satellite-based Internet or 5G services, that could make our services less attractive to potential customers.

We issue projected results and estimates for future periods from time to time, and such projections and estimates are subject to inherent uncertainties and may prove to be inaccurate.

Financial information, results of operations and other projections that we may issue from time to time are based upon our assumptions and estimates. While we believe these assumptions and estimates to be reasonable when they are developed, they are inherently subject to significant business, economic and competitive uncertainties and contingencies, many of which are beyond our control. You should understand that certain unpredictable factors could cause our actual results to differ from our expectations and those differences may be material. No independent expert participates in the preparation of these estimates. These estimates should not be regarded as a representation by us as to our results of operations during such periods as there can be no assurance that any of these estimates will be realized. In light of the foregoing, we caution you not to place undue reliance on these estimates. These estimates constitute forward-looking statements.

We have negative stockholders' equity and may not be able to pay dividends in the future.

We have negative stockholders equity. Our Board of Directors has declared dividends based upon an independent expert valuation of our assets that determined sufficient funds existed to pay a dividend under Delaware Law. We cannot assure you that a future valuation of our assets will reach the same conclusion. In the future if we do not receive a similar valuation of our assets and we continue to have negative stockholders equity, we will not be able to pay dividends.

The indentures governing our debt agreements, among other things, limits our ability to incur indebtedness; to pay dividends or make other distributions; to make certain investments and other restricted payments; to create liens; consolidate, merge, sell or otherwise dispose of all or substantially all of our assets; to incur restrictions on the ability of a subsidiary to pay dividends or make other payments; and to enter into certain transactions with our affiliates.

The payment of any future dividends and any other returns of capital, including stock buybacks, will be at the discretion of our Board of Directors and may be reduced, eliminated or increased and will be dependent upon our financial position, results of operations, available cash, cash flow, capital requirements, limitations under our debt indentures and other factors deemed relevant by the our Board of Directors. We are a Delaware Corporation as are our U.S subsidiaries and under the General Corporate Law of the State of Delaware distributions may be restricted including a restriction that distributions, including stock purchases and dividends, do not result in an impairment of a corporation's capital, as defined under Delaware Law.

Network failure or delays and errors in transmissions expose us to potential liability.

Our network is part of the Internet which is a network of networks. Our network uses a collection of communications equipment, software, operating protocols and proprietary applications for the high-speed transportation of large quantities of data among multiple locations. Given the complexity of our network, it is possible that data will be lost or distorted. Delays in data delivery may cause significant losses to one or more customers using our network. Our network may also contain undetected design faults and software bugs that, despite our testing, may not be discovered in time to prevent harm to our network or to the data transmitted over it. The failure of any equipment or facility on our network could result in the interruption of customer service until we affect the necessary repairs or install replacement equipment. Network failures, delays and errors could also result from natural disasters, power losses, security breaches, computer viruses, distributed denial of service attacks, fiber cuts, and other natural or man-made events. Our off-net services are dependent on the network facilities of other providers or on local telephone companies or cable companies. Network failures, faults or errors could cause delays or service interruptions, require us to provide increased service credits to our customers, expose us to customer liability or require expensive modifications that could have a material adverse effect on our business.

As an Internet access provider, we may incur liabilities for information disseminated through our network.

The law relating to the liabilities of Internet access providers and on-line services companies for information carried on or disseminated through their networks is unsettled. As the law in this area develops and as we expand our international operations, the potential imposition of liabilities upon us for the behavior of our customers or the information carried on and disseminated through our network could require us to implement measures to reduce our exposure to such liabilities, which may require the expenditure of substantial resources or the discontinuation of certain products or service offerings. Any costs that are incurred as a result of such measures or the imposition of liabilities could have a material adverse effect on our business.

Privacy requirements in the EU may impact our business.

The General Data Protection Regulation ("GDPR") came into force in May 2018 in the European Union. The GDPR creates significant new requirements regarding the protection of personal data and significantly increases the financial penalties for noncompliance. We believe we are in compliance with GDPR, and we do not believe that GDPR will have a significant impact on our provision of services to our customers. However, in the

absence of precedence and guidance from EU regulators, the application of GDPR to the provision of internet services remains unsettled, and we may be required to adopt additional measures in the future.

In addition to the new requirements imposed upon us by GDPR, the privacy requirements and expectations created in the EU by GDPR are stricter than those in the US. These requirements include rules restricting the flow of data across borders. These restrictions may cause companies to localize data, decline to make use of services provided by our customers in the US, and otherwise impact the use of our services. Notwithstanding the existence of programs such as the Privacy Shield program in place between the US and EU and other means of compliance created by GDPR, European companies and individuals may be reluctant to use US companies, which could negatively impact our business.

Proposed privacy requirements in the United States and other countries may impact our business.

Many countries, including the United States, are considering adopting privacy regulations or laws that would govern the way an Internet user's data is used. On January 1, 2020, the California Consumer Privacy Act ("CCPA") came into effect. The primary impact of these rules are on businesses that collect personal information about consumer users of their services. We do not provide services to consumers and do not collect such personal information. However, we transmit data across the Internet, which data may include personal information collected by our customers. We believe we are in compliance with the CCPA, and we do not believe our transmission of this information creates any separate obligations under the CCPA. Nevertheless, as the application of the CCPA is novel and unsettled, interpretation and enforcement of the CCPA will develop over time, and we may be required to adopt additional measures in the future. In addition to the CCPA, numerous other states are contemplating similar privacy regulation. Some of these proposed privacy rules could impose obligations on us that could negatively impact our business. Although our customer contracts limit our liability, affected customers and third parties may seek to recover damages from us under various legal theories.

Changes in laws, rules, and enforcement could adversely affect us.

We are not subject to substantial regulation by the FCC or the state public utilities commissions in the United States. Internet service is also subject to minimal regulation in Western Europe and in Canada. Elsewhere the regulation is greater, though not as extensive as the regulation for providers of voice services. If we decide to offer traditional voice services or otherwise expand our service offerings to include services that would cause us to be deemed a common carrier, we will become subject to additional regulation. Additionally, if we offer voice service using IP (VOIP) or offer certain other types of data services, we may become subject to additional regulation. This regulation could impact our business because of the costs and time required to obtain necessary authorizations, the additional taxes that we may become subject to or may have to collect from our customers, and the additional administrative costs of providing these services, and other costs. Even if we do not decide to offer additional services, governmental authorities may decide to impose additional regulation and taxes upon providers of Internet access and private network services. All of these matters could inhibit our ability to remain a low-cost carrier and could have a material adverse effect on our business, financial condition and our results of operations.

As with the privacy laws described earlier, much of the law related to the liability of Internet service providers for content on the network and the behavior of our customers and their end users remains unsettled. Some jurisdictions have laws, regulations, or court decisions that impose obligations upon Internet access providers to restrict access to certain content. Other legal issues, such as the sharing of copyrighted information, data protection, trans-border data flow, unsolicited commercial email ("spam"), universal service, and liability for software viruses could become subjects of additional legislation and legal development and changes in enforcement policies. Laws that could subject us to claims or otherwise impact our business include, among others:

- The Canadian Anti-Spam Legislation ("CASL") implemented in 2015. The full implementation of CASL was delayed in 2017, and changes may be made to the legislation in the future. We believe we are currently in compliance with CASL.

- Statutory safe harbors, such as the Digital Millennium Copyright Act in the United States, upon which we rely with respect to copyright liability for transitory communications. Any changes to these safe harbors may adversely impact us.
- The United States Communications Assistance for Law Enforcement Act and similar laws of other countries require that we be able to intercept communications when required to do so by law enforcement agencies. We may experience difficulties and incur significant costs in complying with these laws. If we are unable to comply with the laws we could be subject to fines in the United States of up to \$1.0 million per event and equal or greater fines in other countries.

We cannot predict the impact of these changes on us. They could have a material adverse effect on our business, financial condition and our results of operations.

Governments may assert that we are liable for taxes which we have not collected from our customers and we may have to begin collecting a multitude of taxes if Internet services become subject to taxation similar to the taxation of telephone service.

In the United States Internet services are generally not subject to taxes. Consequently, in the United States we collect few taxes from our customers even though most telecommunications services are subject to numerous taxes. Various local jurisdictions have asserted or may assert that some of our operations or services should be subject to local taxes. If such jurisdictions assess taxes on prior years we may be subject to a liability for unpaid taxes that we may be unable to collect from our customers or former customers. If the taxation of Internet service is expanded we will need to collect those taxes from our customers. The process of implementing a system to properly bill and collect such taxes may require significant resources. In addition, the FCC is considering changes to its Universal Services Fund that could result in its application to Internet services. This too would require that we expend resources to collect this tax. Finally, the cumulative effect of these taxes levied on Internet services could discourage potential customers from using Internet services to replace traditional telecommunication services and negatively impact our ability to grow our business.

Our private network services are subject to taxes and fees in various jurisdictions. We believe we collect all required taxes, however, a jurisdiction may assert we have failed to collect certain taxes. The expense of paying any unpaid taxes could be substantial and we might not be able to collect such back taxes from our customers.

The exit of the United Kingdom from the European Union may adversely affect us.

We operate in the EU, including the United Kingdom. The exit of the United Kingdom from the EU could adversely affect our operations and sales in unknown ways.

Terrorist activity throughout the world, military action to counter terrorism and natural disasters could adversely impact our business.

The continued threat of terrorist activity and other acts of war or hostility have had, and may continue to have, an adverse effect on business, financial and general economic conditions internationally. Effects from these events and any future terrorist activity, including cyber terrorism, may, in turn, increase our costs due to the need to provide enhanced security, which would adversely affect our business and results of operations. These circumstances may also damage or destroy the Internet infrastructure and may adversely affect our ability to attract and retain customers, our ability to raise capital and the operation and maintenance of our network access points. We are particularly vulnerable to acts of terrorism because our largest customer concentration is located in New York, our headquarters is located in Washington, D.C., and we have significant operations in Paris, Madrid and London, cities that have historically been targets for pandemics and/or terrorist attacks. We are also susceptible to other catastrophic events such as major natural disasters, extreme weather, fire or similar events that could affect our headquarters, other offices, our network, infrastructure or equipment or our customers and prospective customers, which could adversely affect our business.

If we do not comply with laws regarding corruption and bribery, we may become subject to monetary or criminal penalties.

The United States Foreign Corrupt Practices Act generally prohibits companies and their intermediaries from bribing foreign officials for the purpose of obtaining or keeping business. Other countries have similar laws to which we are subject. We take precautions to comply with these laws. However, these precautions may not protect us against liability, particularly as a result of actions that may be taken in the future by agents and other intermediaries through whom we have exposure under these laws even though we may have limited or no ability to control such persons. Our competitors include foreign entities that are not subject to the United States Foreign Corrupt Practices Act or laws of similar stringency, and hence we may be at a competitive disadvantage.

Allegations that the United States Government has intercepted Internet traffic may discourage use of the Internet and the use of United States based Internet service providers.

Allegations have been made that the United States Government (through its National Security Agency) and other governments have allegedly intercepted Internet traffic on a massive scale. It has also been alleged that user information has been collected from various Internet-based services with and without the cooperation of the companies providing those services. Such allegations may discourage individuals and organizations from making use of Internet-based services due to privacy concerns and concerns that proprietary data can be compromised. This could impact our ability to grow our business, especially because we and other companies headquartered in the United States may be less favored by customers that perceive a connection between the activities of the United States Government and United States companies.

Risk Factors Related to Our Indebtedness

We have substantial debt which we may not be able to repay when due.

Our total indebtedness, at par, at December 31, 2019 was \$967.9 million and included \$189.2 million of our 5.625% senior unsecured notes, \$445.0 million of our 5.375% senior secured notes and €135.0 million of our 4.375% senior unsecured notes. Our \$189.2 million of senior unsecured notes are due in 2021 and require interest payments totaling \$10.6 million per year. Our \$445.0 million senior secured notes are due in March 2022 and require annual interest payments of \$23.9 million per year. Our €135.0 million of senior unsecured notes are due in 2024 and require annual interest payments of €5.9 million per year. All of our noteholders have the right to be paid the principal upon default and upon certain designated events, such as certain changes of control. Our total indebtedness at December 31, 2019 included \$169.8 million of finance lease obligations for dark fiber primarily under 15 — 20 year IRUs and \$12.5 million due under an installment payment agreement with a vendor. Our total indebtedness at December 31, 2019 excludes \$96.8 million of operating lease liabilities which we were required to record as a right-to-use asset and operating lease liabilities in connection with the adoption of ASU No. 2016-02 *Leases* on January 1, 2019. The amount of our IRU finance lease obligations may be impacted due to our expansion activities, the timing of payments and fluctuations in foreign currency rates. The amount of US dollars required to fund our interest and principal obligations for our Euro-denominated notes may be impacted due to fluctuations in the Euro to US Dollar exchange rate. We may not have sufficient funds to pay the interest and principal related to these obligations at the time we are obligated to do so, which could result in bankruptcy, or we may only be able to raise the necessary funds on unfavorable terms.

Our substantial level of indebtedness could adversely affect our financial condition and prevent us from fulfilling our obligations under our notes and our other indebtedness.

We have substantial indebtedness. Our substantial debt may have important consequences. For instance, it could:

- make it more difficult for us to satisfy our financial obligations, including those relating to our debt;
- require us to dedicate a substantial portion of any cash flow from operations to the payment of interest and principal due under our debt, which will reduce funds available for other business purposes, including the growth of our operations, capital expenditures and acquisitions;

- place us at a competitive disadvantage compared with some of our competitors that may have less debt and better access to capital resources; and
- limit our ability to obtain additional financing required to fund working capital and capital expenditures, for strategic acquisitions and for other general corporate purposes.

Our ability to satisfy our obligations including our debt depends on our future operating performance and on economic, financial, competitive and other factors, many of which are beyond our control. Our business may not generate sufficient cash flow, and future financings may not be available to provide sufficient net proceeds, to meet these obligations or to successfully execute our business strategy.

Despite our leverage we may still be able to incur more debt. This could further exacerbate the risks that we and our subsidiaries face.

We and our subsidiaries may incur additional indebtedness, including additional secured indebtedness, in the future. The terms of our debt indentures restrict, but do not completely prohibit, us from doing so. In addition, the indentures allow us to issue additional notes and other indebtedness secured by the collateral under certain circumstances. Moreover, we are not prevented from incurring other liabilities that do not constitute indebtedness as defined in the indentures, including additional finance lease obligations in the form of IRUs. These liabilities may represent claims that are effectively prior to the claims of our note holders. If new debt or other liabilities are added to our debt levels the related risks that we and our subsidiaries now face could intensify.

The agreements governing our various debt obligations impose restrictions on our business and could adversely affect our ability to undertake certain corporate actions.

The agreements governing our various debt obligations include covenants imposing significant restrictions on our business. These restrictions may affect our ability to operate our business and may limit our ability to take advantage of potential business opportunities as they arise. These covenants place restrictions on our ability to, among other things:

- incur additional debt;
- create liens;
- make certain investments;
- enter into certain transactions with affiliates;
- declare or pay dividends, redeem stock or make other distributions to stockholders; and
- consolidate, merge or transfer or sell all or substantially all of our assets.

Our ability to comply with these agreements may be affected by events beyond our control, including prevailing economic, financial and industry conditions. These covenants could have an adverse effect on our business by limiting our ability to take advantage of financing, merger and acquisition or other corporate opportunities. The breach of any of these covenants or restrictions could result in a default under the agreements governing our debt obligations.

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

Our ability to make payments on and to refinance our indebtedness and to fund planned capital expenditures will depend on our ability to generate cash in the future, which, in turn, is subject to general economic, financial, competitive, regulatory and other factors, many of which are beyond our control.

Our business may not generate sufficient cash flow from operations and we may not have available to us future borrowings in an amount sufficient to enable us to pay our indebtedness or to fund our other liquidity needs. In these circumstances, we may need to refinance all or a portion of our indebtedness on or before maturity. We may not be able to refinance any of our indebtedness on commercially reasonable terms or at all.

Without this financing, we could be forced to sell assets or secure additional financing to make up for any shortfall in our payment obligations under unfavorable circumstances. However, we may not be able to secure additional financing on terms favorable to us or at all and, in addition, the terms of the indentures governing our notes limit our ability to sell assets and also restrict the use of proceeds from such a sale. We may not be able to sell assets quickly enough or for sufficient amounts to enable us to meet our obligations, including our obligations under our notes.

ITEM 1B. UNRESOLVED STAFF COMMENTS

None.

ITEM 2. PROPERTIES

We lease space for offices, data centers, colocation facilities, and points-of-presence.

Our headquarters facility consists of 43,117 square feet located in Washington, D.C. The lease for our headquarters is with an entity controlled by our Chief Executive Officer. The lease was scheduled to expire in May 2020. In February 2020, the lease was extended to expire in May 2025. The lease may be cancelled by us upon 60 days' notice.

We lease a total of approximately 760,000 square feet of space for our data centers, offices and operations centers. We believe that these facilities are generally in good condition and suitable for our operations.

ITEM 3. LEGAL PROCEEDINGS

We are involved in legal proceedings in the ordinary course of our business that we do not expect to have a material adverse effect on our business, financial condition or results of operations. For a discussion of the significant proceedings in which we are involved, see Note 6 to our consolidated financial statements.

ITEM 4. MINE SAFETY DISCLOSURES

Not applicable.

PART II

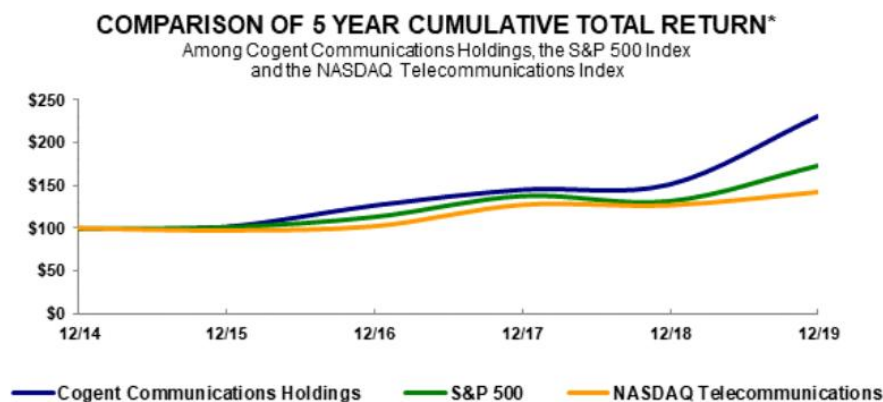
ITEM 5. MARKET FOR REGISTRANT’S COMMON EQUITY, RELATED STOCKHOLDER MATTERS AND ISSUER PURCHASES OF EQUITY SECURITIES

Our sole class of common equity is our common stock, par value \$0.001, which is currently traded on the NASDAQ Global Select Market under the symbol “CCOI.” Prior to March 6, 2006, our common stock traded on the American Stock Exchange under the symbol “COL.” Prior to February 5, 2002, no established public trading market for our common stock existed.

As of February 1, 2020, there were 135 holders of record of shares of our common stock holding 45,629,938 shares of our common stock.

Performance Graph

Our common stock currently trades on the NASDAQ Global Select Market. The chart below compares the relative changes in the cumulative total return of our common stock for the period from December 31, 2014 to December 31, 2019, against the cumulative total return for the same period of the (1) The Standard & Poor’s 500 (S&P 500) Index and (2) the NASDAQ Telecommunications Index. The comparison below assumes \$100 was invested on December 31, 2014 in our common stock, the S&P 500 Index and the NASDAQ Telecommunications Index, with dividends, if any, reinvested.



*\$100 invested on 12/31/14 in stock or index, including reinvestment of dividends. Fiscal year ending December 31.

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	12/14	12/15	12/16	12/17	12/18	12/19
Cogent Communications Holdings	\$ 100.00	\$ 102.53	\$ 127.23	\$ 145.44	\$ 151.55	\$ 230.20
S&P 500	\$ 100.00	\$ 101.38	\$ 113.51	\$ 138.29	\$ 132.23	\$ 173.86
NASDAQ Telecommunications	\$ 100.00	\$ 97.52	\$ 102.36	\$ 127.62	\$ 127.16	\$ 142.60

The stock price performance included in this graph is not necessarily indicative of future stock price performance.

Issuer Purchases of Equity Securities

Our Board of Directors authorized a plan to permit the repurchase of up to \$50.0 million of our common stock in negotiated and open market transactions through December 31, 2020. We did not purchase shares of our common stock in the year ended December 31, 2019. As of December 31, 2019, \$34.9 million remained

available for such negotiated and open market transactions concerning our common stock. We may purchase shares from time to time depending on market, economic, and other factors.

ITEM 6. SELECTED FINANCIAL DATA

The annual financial information set forth below has been derived from our audited consolidated financial statements. The information should be read in connection with, and is qualified in its entirety by reference to, Item 7. “Management’s Discussion and Analysis of Financial Condition and Results of Operations”, the consolidated financial statements and notes included elsewhere in this report and in our SEC filings.

	Years Ended December 31,				
	2019	2018	2017	2016	2015
	(dollars in thousands)				
CONSOLIDATED STATEMENT OF OPERATIONS DATA:					
Service revenue	\$ 546,159	\$ 520,193	\$ 485,175	\$ 446,900	\$ 404,234
Operating expenses:					
Network operations	218,807	218,631	208,674	193,493	173,926
Equity-based compensation expense—network operations	994	895	604	573	584
Selling, general, and administrative	129,447	117,045	115,229	110,547	102,172
Equity-based compensation expense—SG&A	17,466	16,813	12,686	10,162	10,931
Depreciation and amortization	80,247	81,233	75,926	75,235	70,527
Total operating expenses	446,961	434,617	413,119	390,010	358,140
Losses on debt redemption and extinguishment	—	—	—	(587)	(10,144)
Gains—lease obligation restructurings and releases	—	—	—	—	11,643
Gains on equipment exchanges	1,059	982	3,862	7,739	5,443
Operating income	100,257	86,558	75,918	64,042	53,036
Interest expense	(57,453)	(51,056)	(48,467)	(40,803)	(41,280)
Interest income and other, net	9,870	5,880	3,667	1,021	956
Income before income taxes	52,674	41,382	31,118	24,260	12,712
Income tax expense	(15,154)	(12,715)	(25,242)	(9,331)	(7,816)
Net income	\$ 37,520	\$ 28,667	\$ 5,876	\$ 14,929	\$ 4,896
Net income per common share—basic	\$ 0.82	\$ 0.63	\$ 0.13	\$ 0.33	\$ 0.11
Net income per common share—diluted	\$ 0.81	\$ 0.63	\$ 0.13	\$ 0.33	\$ 0.11
Dividends declared per common share	\$ 2.44	\$ 2.12	\$ 1.80	\$ 1.51	\$ 1.46
Weighted-average common shares—basic	45,542,315	45,280,161	44,855,263	44,641,805	44,888,723
Weighted-average common shares—diluted	46,080,395	45,780,954	45,184,203	44,873,830	45,159,849
CONSOLIDATED BALANCE SHEET DATA (AT PERIOD END):					
Total assets	\$ 932,124	\$ 739,850	\$ 710,588	\$ 737,892	\$ 665,860
Long-term debt (including finance leases and current portion) (net of unamortized discount of \$392, \$446, \$385, \$257 and \$817, respectively, including unamortized premium of \$985, \$1,405, \$382, \$462 and \$0, respectively, and net of unamortized debt costs of \$4,164, \$4,171, \$3,930, \$4,832, and \$4,557, respectively)	964,341	806,032	728,544	707,080	601,839

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

You should read the following discussion and analysis together with "Item 6. Selected Consolidated Financial Data" and our consolidated financial statements and related notes included in this report. The discussion in this report contains forward-looking statements that involve risks and uncertainties, such as statements of our plans, objectives, expectations and intentions. The cautionary statements made in this report should be read as applying to all related forward-looking statements wherever they appear in this report. Factors that could cause or contribute to these differences include those discussed in "Item 1A. Risk Factors," as well as those discussed elsewhere. You should read "Item 1A. Risk Factors" and "Special Note Regarding Forward-Looking Statements." Our actual results could differ materially from those discussed here. Factors that could cause or contribute to these differences include, but are not limited to:

Future economic instability in the global economy, which could affect spending on Internet services; the impact of changing foreign exchange rates (in particular the Euro to US dollar and Canadian dollar to US dollar exchange rates) on the translation of our non-US dollar denominated revenues, expenses, assets and liabilities; legal and operational difficulties in new markets; the imposition of a requirement that we contribute to the United States Universal Service Fund on the basis of our Internet revenue; changes in government policy and/or regulation, including rules regarding data protection, cyber security and net neutrality; increasing competition leading to lower prices for our services; our ability to attract new customers and to increase and maintain the volume of traffic on our network; the ability to maintain our Internet peering arrangements on favorable terms; our ability to renew our long-term leases of optical fiber that comprise our network; our reliance on an equipment vendor, Cisco Systems Inc., and the potential for hardware or software problems associated with such equipment; the dependence of our network on the quality and dependability of third-party fiber providers; our ability to retain certain customers that comprise a significant portion of our revenue base; the management of network failures and/or disruptions; and outcomes in litigation as well as other risks discussed from time to time in our filings with the Securities and Exchange Commission, including, without limitation, this annual report on Form 10-K.

General Overview

We are a leading facilities-based provider of low-cost, high-speed Internet access, private network services and data center colocation space. Our network is specifically designed and optimized to transmit packet routed data. We deliver our services primarily to small and medium-sized businesses, communications service providers and other bandwidth-intensive organizations in North America, Europe, Asia, Latin America and Australia.

Our on-net service consists of high-speed Internet access and private network services provided at speeds ranging from 100 megabits per second to 100 gigabits per second. We offer our on-net services to customers located in buildings that are physically connected to our network. We provide on-net Internet access and private network services to corporate customers and net-centric customers. Our corporate customers are located in multi-tenant office buildings and in our data centers and typically include law firms, financial services firms, advertising and marketing firms and other professional services businesses. Our net-centric customers include bandwidth-intensive users such as other Internet access providers, telephone companies, cable television companies, web hosting companies, content delivery networks and commercial content and application service providers. These net-centric customers generally receive our services in carrier neutral colocation facilities and in our data centers.

Our off-net services are sold to businesses that are connected to our network primarily by means of "last mile" access service lines obtained from other carriers, primarily in the form of metropolitan Ethernet circuits. Our non-core services, which consist primarily of legacy services of companies whose assets or businesses we have acquired, primarily include voice services (only provided in Toronto, Canada). We do not actively market these non-core services, are actively discontinuing providing certain of these services and expect the service revenue associated with them to continue to decline.

Our network is comprised of in-building riser facilities, metropolitan optical fiber networks, metropolitan traffic aggregation points and inter-city transport facilities. Our network is physically connected entirely through

our facilities to 2,801 buildings in which we provide our on-net services, including 1,767 multi-tenant office buildings. We also provide on-net services in carrier-neutral data centers, Cogent controlled data centers and single-tenant office buildings. We operate 54 Cogent controlled data centers totaling over 609,000 square feet. Because of our integrated network architecture, we are not dependent on local telephone companies or cable companies to serve our on-net customers. We emphasize the sale of our on-net services because we believe we have a competitive advantage in providing these services and these services generate gross profit margins that are greater than the gross profit margins of our off-net services.

We believe our key growth opportunity is provided by our high-capacity network, which provides us with the ability to add a significant number of customers to our network with minimal direct incremental costs. Our focus is to add customers to our network in a way that maximizes its use and at the same time provides us with a profitable customer mix. We are responding to this opportunity by increasing our sales and marketing efforts including increasing our number of sales representatives and expanding our network to locations that we believe can be economically integrated and represent significant concentrations of Internet traffic. One of our keys to developing a profitable business will be to carefully match the cost of extending our network to reach new customers with the revenue expected to be generated by those customers. In addition, we may add customers to our network through strategic acquisitions.

We believe some of the most important trends in our industry are the continued long-term growth in Internet traffic and a decline in Internet access prices on a per megabit basis. The effective price per megabit for our corporate customers is declining as the bandwidth utilization and connection size of our corporate customer connections increases. As Internet traffic continues to grow and prices per unit of traffic continue to decline, we believe we can continue to load our network and gain market share from less efficient network operators. However, continued erosion in Internet access prices will likely have a negative impact on the rate at which we can increase our revenues and our profitability. Our revenue may also be negatively affected if we are unable to grow our Internet traffic or if the rate of growth of Internet traffic does not offset an expected decline in pricing. We do not know if Internet traffic will increase or decrease, or the rate at which it will increase or decrease. Changes in Internet traffic will be a function of the number of Internet users, the amount of time users spend on the Internet, the applications for which the Internet is used, the bandwidth intensity of these applications and the pricing of Internet services, and other factors.

The growth in Internet traffic has a more significant impact on our net-centric customers who represent the vast majority of the traffic on our network and who tend to consume the majority of their allocated bandwidth on their connections. Net-centric customers tend to purchase their service on a price per megabit basis. Our corporate customers tend to utilize a small portion of their allocated bandwidth on their connections and tend to purchase their service on a per connection basis. Over the past several years, our revenue from corporate customers has grown faster than our revenue from our net-centric customers.

We are a facilities-based provider of Internet access and communications services. Facilities-based providers require significant physical assets, or network facilities, to provide their services. Typically when a facilities-based network services provider begins providing its services in a new jurisdiction losses are incurred for several years until economies of scale have been achieved. Our foreign operations are in Europe, Canada, Mexico, Asia, Latin America and Australia. Europe accounts for roughly 75% of our foreign operations. Our European operations have incurred losses and will continue to do so until our European customer base and revenues have grown enough to achieve sufficient economies of scale.

Due to our strategic acquisitions of network assets and equipment, we believe we are well positioned to grow our revenue base. We continue to purchase and deploy network equipment to parts of our network to maximize the utilization of our assets and to expand and increase the capacity of our network. Our future capital expenditures will be based primarily on the expansion of our network and the addition of on-net buildings. We plan to continue to expand our network and to increase the number of on-net buildings we serve including multi-tenant office buildings, carrier neutral data centers and Cogent controlled data centers. Many factors can affect our ability to add buildings to our network. These factors include the willingness of building owners to grant us access rights, the availability of optical fiber networks to serve those buildings, the cost to connect buildings to our network and equipment availability.

Results of Operations

Year Ended December 31, 2019 Compared to the Year Ended December 31, 2018

Our management reviews and analyzes several key financial measures in order to manage our business and assess the quality of and variability of our service revenue, operating results and cash flows. The following summary tables present a comparison of our results of operations with respect to certain key financial measures. The comparisons illustrated in the tables are discussed in greater detail below.

	Year Ended December 31,		Percent Change
	2019	2018	
	(in thousands)		
Service revenue	\$ 546,159	\$ 520,193	5.0 %
On-net revenues	396,753	374,555	5.9 %
Off-net revenues	148,931	145,004	2.7 %
Network operations expenses(1)	219,801	219,526	0.1 %
Selling, general, and administrative expenses(2)	146,913	133,858	9.8 %
Depreciation and amortization expenses	80,247	81,233	(1.2)%
Gains on equipment transactions	1,059	982	7.8 %
Interest expense	57,453	51,056	12.5 %
Income tax expense	15,154	12,715	19.2 %

(1) Includes non-cash equity-based compensation expense of \$994 and \$895 for 2019 and 2018, respectively.

(2) Includes non-cash equity-based compensation expense of \$17,466 and \$16,813 for 2019 and 2018, respectively.

	Year Ended December 31,		Percent Change
	2019	2018	
Other Operating Data			
<i>Average Revenue Per Unit (ARPU)</i>			
ARPU—on-net	\$ 461	\$ 480	(3.8)%
ARPU—off-net	\$ 1,097	\$ 1,155	(5.0)%
Average price per megabit	\$ 0.62	\$ 0.82	(23.9)%
<i>Customer Connections—end of period</i>			
On-net	74,554	68,770	8.4 %
Off-net	11,660	10,974	6.3 %

Service Revenue. Our service revenue increased 5.0% from 2018 to 2019. Exchange rates negatively impacted our increase in service revenue by approximately \$5.3 million. All foreign currency comparisons herein reflect results for 2019 translated at the average foreign currency exchange rates for 2018. We increased our total service revenue by increasing the number of sales representatives selling our services, by expanding our network, by adding additional buildings to our network, by increasing our penetration into the buildings connected to our network and by gaining market share by offering our services at lower prices than our competitors.

Revenue recognition standards include guidance relating to any tax assessed by a governmental authority that is directly imposed on a revenue-producing transaction between a seller and a customer and may include, but is not limited to, gross receipts taxes, Universal Service Fund fees and certain state regulatory fees. We record these taxes billed to our customers on a gross basis (as service revenue and network operations expense) in our consolidated statements of operations. The impact of these taxes including the Universal Service Fund resulted in an increase to our revenues from 2018 to 2019 of approximately \$2.4 million.

Our net-centric customers tend to purchase their service on a price per megabit basis. Our corporate customers tend to utilize a small portion of their allocated bandwidth on their connections and tend to purchase their service on a per connection basis. Revenues from our corporate and net-centric customers represented

68.4% and 31.6% of total service revenue, respectively, for 2019 and represented 64.9% and 35.1% of total service revenue, respectively, for 2018. Revenues from corporate customers increased 10.6% to \$373.7 million for 2019 from \$337.8 million for 2018 primarily due to an increase in our number of our corporate customers. Revenues from our net-centric customers decreased by 5.4% to \$172.5 million for 2019 from \$182.3 million for 2018 primarily due to an increase in our number of net-centric customers being offset by a decline in our average price per megabit. Our revenue from our net-centric customers has declined as a percentage of our total revenue and grew at a slower rate than our corporate customer revenue because net-centric customers purchase our services based upon a price per megabit basis and our average price per megabit declined by 23.9% from 2018 to 2019. Additionally, the net-centric market experiences a greater level of pricing pressure than the corporate market and net-centric customers who renew their service with us expect their renewed service to be at a lower price than their current price. We expect that our average price per megabit will continue to decline at similar rates which would result in our corporate revenues continuing to represent a greater portion of our total revenues and our net-centric revenues continuing to grow at a lower rate than our corporate revenues. Additionally, the impact of foreign exchange rates has a more significant impact on our net-centric revenues.

Our on-net revenues increased 5.9% from 2018 to 2019. We increased the number of our on-net customer connections by 8.4% at December 31, 2019 from December 31, 2018. On-net customer connections increased at a greater rate than on-net revenues primarily due to the 3.8% decline in our on-net ARPU, primarily from a decline in ARPU for our net-centric customers. ARPU is determined by dividing revenue for the period by the average customer connections for that period. Our average price per megabit for our installed base of customers is determined by dividing the aggregate monthly recurring fixed charges for those customers by the aggregate committed data rate for the same customers. The decline in on-net ARPU is partly attributed to volume and term based pricing discounts. Additionally, on-net customers who cancel their service from our installed base of customers, in general, have an ARPU that is greater than the ARPU for our new customers due to declining prices primarily for our on-net services sold to our net-centric customers. These trends resulted in the reduction to our on-net ARPU and a 23.9% decline in our average price per megabit for our installed base of customers.

Our off-net revenues increased 2.7% from 2018 to 2019. Our off-net revenues increased as we increased the number of our off-net customer connections by 6.3% at December 31, 2019 from December 31, 2018. Our off-net customer connections increased at a greater rate than our off-net revenue primarily due to the 5.0% decrease in our off-net ARPU.

Network Operations Expenses. Network operations expenses include the costs of personnel associated with service delivery, network management, and customer support, network facilities costs, fiber and equipment maintenance fees, leased circuit costs, access and facilities fees paid to building owners and excise taxes billed to our customers and recorded on a gross basis. Non-cash equity-based compensation expense is included in network operations expenses consistent with the classification of the employee's salary and other compensation. Our network operations expenses, including non-cash equity-based compensation expense, increased 0.1% from 2018 to 2019 as we were connected to 8.0% more customer connections and we were connected to 125 more on-net buildings as of December 31, 2019 compared to December 31, 2018. The increase in network operations expense is primarily attributable to an increase in costs related to our network and facilities expansion activities, the increase in our off-net revenues and the increase in taxes recorded on a gross basis partly offset by price reductions obtained in certain of our circuit costs and fewer fiber operating leases. When we provide off-net services we also assume the cost of the associated tail circuits.

Selling, General, and Administrative Expenses ("SG&A"). Our SG&A expenses, including non-cash equity-based compensation expense, increased 9.8% from 2018 to 2019. Non-cash equity-based compensation expense is included in SG&A expenses consistent with the classification of the employee's salary and other compensation and was \$17.5 million for 2019 and \$16.8 million for 2018. SG&A expenses increased primarily from an increase in salaries and related costs required to support our expansion and increases in our sales efforts and an increase in our headcount. Our sales force headcount increased by 10.8% from 619 at December 31, 2018 to 686 at December 31, 2019 and our total headcount increased by 8.3% from 974 at December 31, 2018 to 1,055 at December 31, 2019.

Depreciation and Amortization Expenses. Our depreciation and amortization expenses decreased 1.2% from 2018 to 2019. The decrease is primarily due to the depreciation expense associated with the increase related to

newly deployed fixed assets being offset by the decline in depreciation expense from fully depreciated fixed assets.

Gains on Equipment Transactions. We exchanged certain used network equipment and cash consideration for new network equipment resulting in gains of \$1.1 million for 2019 and \$1.0 million for 2018. The gains are based upon the excess of the estimated fair value of the new network equipment over the carrying amount of the returned used network equipment and the cash paid. The increase in gains from 2018 to 2019 was due to purchasing more equipment under the exchange program in 2019 than we purchased in 2018.

Interest Expense. Interest expense results from interest incurred on our \$445.0 million of senior secured notes, interest incurred on our \$189.2 million of senior unsecured notes, interest on our installment payment agreement, interest on our finance lease obligations and interest incurred on our €135.0 million of 2024 Notes that we issued on June 25, 2019. Our interest expense increased by 12.5% for 2019 from 2018 primarily due to the issuance of \$70.0 million of senior secured notes we issued in August 2018, the issuance of €135.0 million of senior unsecured notes we issued in June 2019 and an increase in our finance lease obligations. The 2024 Notes were issued at par for €135.0 million (\$153.7 million) on June 25, 2019. The 2024 Notes were issued in Euros and are reported in our reporting currency — US Dollars. As of December 31, 2019 the 2024 Notes were valued at \$151.4 million resulting in an unrealized gain on foreign exchange of \$2.3 million in 2019.

Income Tax Expense. Our income tax expense was \$15.1 million for 2019 and \$12.7 million for 2018. The increase in our income tax expense was primarily related to an increase in our income before income taxes.

Buildings On-net. As of December 31, 2019 and 2018 we had a total of 2,801 and 2,676 on-net buildings connected to our network, respectively.

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

Our management reviews and analyzes several key financial measures in order to manage our business and assess the quality of and variability of our service revenue, operating results and cash flows. The following summary tables present a comparison of our results of operations with respect to certain key financial measures. The comparisons illustrated in the tables are discussed in greater detail below.

	Year Ended December 31,		Change Percent
	2018	2017	
	(in thousands)		
Service revenue	\$ 520,193	\$ 485,175	7.2 %
On-net revenues	374,555	346,445	8.1 %
Off-net revenues	145,004	137,892	5.2 %
Network operations expenses(1)	219,526	209,278	4.9 %
Selling, general, and administrative expenses(2)	133,858	127,915	4.6 %
Depreciation and amortization expenses	81,233	75,926	7.0 %
Gains on equipment transactions	982	3,862	(74.6)%
Interest expense	51,056	48,467	5.3 %
Income tax expense	12,715	25,242	(49.6)%

(1) Includes non-cash equity-based compensation expense of \$895 and \$604 for 2018 and 2017, respectively.

(2) Includes non-cash equity-based compensation expense of \$16,813 and \$12,686 for 2018 and 2017, respectively.

	Year Ended December 31,		Percent Change
	2018	2017	
Other Operating Data			
<i>Average Revenue Per Unit (ARPU)</i>			
ARPU—on-net	\$ 480	\$ 506	(5.1)%
ARPU—off-net	\$ 1,155	\$ 1,239	(6.8)%
Average price per megabit	\$ 0.82	\$ 1.11	(25.9)%
<i>Customer Connections—end of period</i>			
On-net	68,770	61,334	12.1 %
Off-net	10,974	9,953	10.3 %

Service Revenue. Our service revenue increased 7.2% from 2017 to 2018. Exchange rates positively impacted our increase in service revenue by approximately \$4.0 million. All foreign currency comparisons herein reflect results for 2018 translated at the average foreign currency exchange rates for 2017. We increased our total service revenue by increasing the number of sales representatives selling our services, by expanding our network, by adding additional buildings to our network, by increasing our penetration into the buildings connected to our network and by gaining market share by offering our services at lower prices than our competitors.

Revenue recognition standards include guidance relating to any tax assessed by a governmental authority that is directly imposed on a revenue-producing transaction between a seller and a customer and may include, but is not limited to, gross receipts taxes, Universal Service Fund fees and certain state regulatory fees. We record these taxes billed to our customers on a gross basis (as service revenue and network operations expense) in our consolidated statements of operations. The impact of these taxes including the Universal Service Fund resulted in an increase to our revenues from 2017 to 2018 of approximately \$1.6 million.

Our net-centric customers tend to purchase their service on a price per megabit basis. Our corporate customers tend to utilize a small portion of their allocated bandwidth on their connections and tend to purchase their service on a per connection basis. Revenues from our corporate and net-centric customers represented 64.9% and 35.1% of total service revenue, respectively, for 2018 and represented 62.3% and 37.7% of total service revenue, respectively, for 2017. Revenues from corporate customers increased 11.8% to \$337.8 million for 2018 from \$302.1 million for 2017 primarily due to an increase in our number of our corporate customers. Revenues from our net-centric customers decreased by 0.4% to \$182.3 million for 2018 from \$183.1 million for 2017 primarily due to an increase in our number of net-centric customers being offset by a decline in our average price per megabit. Our revenue from our net-centric customers has declined as a percentage of our total revenue and grew at a slower rate than our corporate customer revenue because net-centric customers purchase our services based upon a price per megabit basis and our average price per megabit declined by 25.9% from 2017 to 2018. Additionally, the net-centric market experiences a greater level of pricing pressure than the corporate market and net-centric customers who renew their service with us expect their renewed service to be at a lower price than their current price. We expect that our average price per megabit will continue to decline at similar rates which would result in our corporate revenues continuing to represent a greater portion of our total revenues and our net-centric revenues continuing to grow at a lower rate than our corporate revenues. Additionally, the impact of foreign exchange rates has a more significant impact on our net-centric revenues.

Our on-net revenues increased 8.1% from 2017 to 2018. We increased the number of our on-net customer connections by 12.1% at December 31, 2018 from December 31, 2017. On-net customer connections increased at a greater rate than on-net revenues primarily due to the 5.1% decline in our on-net ARPU, primarily from a decline in ARPU for our net-centric customers. ARPU is determined by dividing revenue for the period by the average customer connections for that period. Our average price per megabit for our installed base of customers is determined by dividing the aggregate monthly recurring fixed charges for those customers by the aggregate committed data rate for the same customers. The decline in on-net ARPU is partly attributed to volume and term based pricing discounts. Additionally, on-net customers who cancel their service from our installed base of customers, in general, have an ARPU that is greater than the ARPU for our new customers due to declining prices primarily for our on-net services sold to our net-centric customers. These trends resulted in the reduction to our on-net ARPU and a 25.9% decline in our average price per megabit for our installed base of customers.

Our off-net revenues increased 5.2% from 2017 to 2018. Our off-net revenues increased as we increased the number of our off-net customer connections by 10.3% at December 31, 2018 from December 31, 2017. Our off-net customer connections increased at a greater rate than our off-net revenue primarily due to the 6.8% decrease in our off-net ARPU.

Network Operations Expenses. Network operations expenses include the costs of personnel associated with service delivery, network management, and customer support, network facilities costs, fiber and equipment maintenance fees, leased circuit costs, access and facilities fees paid to building owners and excise taxes billed to our customers and recorded on a gross basis. Non-cash equity-based compensation expense is included in network operations expenses consistent with the classification of the employee's salary and other compensation. Our network operations expenses, including non-cash equity-based compensation expense, increased 4.9% from 2017 to 2018 as we were connected to 11.9% more customer connections and we were connected to 170 more on-net buildings as of December 31, 2018 compared to December 31, 2017. The increase in network operations expense is primarily attributable to an increase in costs related to our network and facilities expansion activities and the increase in our off-net revenues. When we provide off-net services we also assume the cost of the associated tail circuits.

Selling, General, and Administrative Expenses ("SG&A"). Our SG&A expenses, including non-cash equity-based compensation expense, increased 4.6% from 2017 to 2018. Non cash equity-based compensation expense is included in SG&A expenses consistent with the classification of the employee's salary and other compensation and was \$16.8 million for 2018 and \$12.7 million for 2017. SG&A expenses increased primarily from an increase in salaries and related costs required to support our expansion and increases in our sales efforts and an increase in our headcount partly offset by a \$1.1 million decrease in our legal fees primarily associated with U.S. net neutrality and interconnection regulatory matters and by the \$1.3 million reduction in commission expense from the impact of the new revenue accounting standard which requires us to capitalize certain commissions paid to our sales agents and sales employees. Our sales force headcount increased by 7.8% from 574 at December 31, 2017 to 619 at December 31, 2018 and our total headcount increased by 4.8% from 929 at December 31, 2017 to 974 at December 31, 2018.

Depreciation and Amortization Expenses. Our depreciation and amortization expenses increased 7.0% from 2017 to 2018. The increase is primarily due to the depreciation expense associated with the increase related to newly deployed fixed assets more than offsetting the decline in depreciation expense from fully depreciated fixed assets.

Gains on Equipment Transactions. We exchanged certain used network equipment and cash consideration for new network equipment resulting in gains of \$1.0 million for 2018 and \$3.9 million for 2017. The gains are based upon the excess of the estimated fair value of the new network equipment over the carrying amount of the returned used network equipment and the cash paid. The reduction in gains from 2017 to 2018 was due to purchasing more equipment under the exchange program in 2017 than we purchased in 2018.

Interest Expense. Interest expense results from interest incurred on our \$445.0 million of senior secured notes, interest incurred on our \$189.2 million of senior unsecured notes, interest on our installment payment agreement and interest on our finance lease obligations. Our interest expense increased by 5.3% for 2018 from 2017 primarily due to the issuance of \$70.0 million of senior secured notes in August 2018 and an increase in our finance lease obligations.

Income Tax Expense. Our income tax expense was \$12.7 million for 2018 and \$25.2 million for 2017. The decrease in our income tax expense was primarily related to an increase in deferred income tax expense for 2017 primarily due to the impact of the Tax Cuts and Jobs Act (the "Act"). On December 22, 2017, the President of the United States signed into law the Act. The Act amended the Internal Revenue Code and reduced the corporate tax rate from a maximum rate of 35% to a flat 21% rate. The rate reduction was effective on January 1, 2018 and may reduce our future income taxes payable once we become a cash taxpayer in the United States. As a result of the reduction in the corporate income tax rate and other provisions under the Act, we were required to revalue our net deferred tax asset at December 31, 2017 resulting in a reduction in our net deferred tax asset of \$9.0 million and we also recorded a transition tax of \$2.3 million related to our foreign operations for a total income tax expense of approximately \$11.3 million, which was recorded as additional noncash income tax expense in 2017.

Buildings On-net. As of December 31, 2018 and 2017 we had a total of 2,676 and 2,506 on-net buildings connected to our network, respectively.

Liquidity and Capital Resources

In assessing our short term and long term liquidity, management reviews and analyzes our current cash balances, short-term investments, accounts receivable, accounts payable, accrued liabilities, capital expenditure and operating expense commitments, and required finance lease, interest and debt payments and other obligations.

The following table sets forth our consolidated cash flows.

	Year Ended December 31,		
	2019	2018	2017
		(in thousands)	
Net cash provided by operating activities	\$ 148,809	\$ 133,921	\$ 111,702
Net cash used in investing activities	(46,958)	(49,937)	(45,801)
Net cash provided by (used in) financing activities	22,020	(52,545)	(97,267)
Effect of exchange rates on cash	(542)	(2,357)	4,058
Net increase (decrease) in cash and cash equivalents during the year	\$ 123,329	\$ 29,082	\$ (27,308)

Net Cash Provided By Operating Activities. Our primary source of operating cash is receipts from our customers who are billed on a monthly basis for our services. Our primary uses of operating cash are payments made to our vendors, employees and interest payments made to our finance lease vendors and our note holders. Our changes in cash provided by operating activities are primarily due to changes in our operating profit and changes in our interest payments. Cash provided by operating activities for 2019, 2018 and 2017 includes interest payments on our note obligations of \$38.0 million, \$32.7 million and \$30.8 million, respectively.

Net Cash Used In Investing Activities. Our primary use of investing cash is for purchases of property and equipment. These amounts were \$47.0 million, \$49.9 million and \$45.8 million for 2019, 2018 and 2017, respectively. The annual changes in purchases of property and equipment are primarily due to the timing and scope of our network expansion activities including geographic expansion and adding buildings to our network. In 2019, 2018 and 2017 we obtained \$11.3 million, \$9.9 million and \$9.0 million, respectively, of network equipment and software in non-cash exchanges for notes payable under an installment payment agreement.

Net Cash Provided By (Used In) Financing Activities. Our primary uses of cash for financing activities are for dividend payments, stock purchases and principal payments under our finance lease obligations. Amounts paid under our stock buyback program were \$6.6 million for 2018 and \$1.8 million for 2017. There were no stock purchases for 2019. During 2019, 2018 and 2017 we paid \$112.6 million, \$97.9 million and \$81.7 million, respectively, for our quarterly dividend payments. Our quarterly dividend payments have increased due to regular quarterly increases in our quarterly dividend per share amounts. Principal payments under our finance lease obligations were \$9.1 million, \$10.3 million and \$11.2 million for 2019, 2018 and 2017, respectively, and are impacted by the timing and extent of our network expansion activities. Our financing activities also include proceeds from and repayments of our debt offerings. In June 2019 we received net proceeds of \$152.1 million from the issuance of our €135.0 million of 2024 Notes. In August 2018 we received net proceeds of \$69.9 million from the issuance of our \$70.0 million of senior secured notes. Total installment payment agreement principal payments were \$10.0 million, \$9.4 million and \$3.8 million for 2019, 2018 and 2017, respectively.

Indebtedness

Our total indebtedness, at par and excluding operating lease liabilities, at December 31, 2019 was \$967.9 million. Our total indebtedness at December 31, 2019 includes \$169.8 million of finance lease obligations for dark fiber primarily under 15-20 year IRUs. Our total cash and cash equivalents were \$399.4 million at December 31, 2019.

On May 15, 2014, pursuant to the Agreement and Plan of Reorganization (the “Merger Agreement”) by and among Cogent Communications Group, Inc. (“Group”), a Delaware corporation, Cogent Communications Holdings, Inc., a Delaware corporation (“Holdings”) and Cogent Communications Merger Sub, Inc., a Delaware corporation (“Merger Sub”), Group adopted a new holding company organizational structure whereby Group is now a wholly owned subsidiary of Holdings. Holdings is a “successor issuer” to Group pursuant to Rule 12g-3(a) under the Securities Exchange Act of 1934, as amended (the “Exchange Act”).

Senior unsecured notes—€135.0 million

On June 25, 2019, Group completed an offering of €135.0 million aggregate principal amount of 4.375% senior unsecured notes due on June 30, 2024 (the “2024 Notes”). The 2024 Notes were sold in private offerings for resale to qualified institutional buyers pursuant to SEC Rule 144A and mature on June 30, 2024. Interest accrues at 4.375% and is paid semi-annually in arrears on June 30 and December 30 of each year. Holdings provided a guarantee of the 2024 Notes but Holdings is not subject to the covenants under the indenture.

Senior unsecured notes—\$189.2 million

Group is obligor on our \$189.2 million (originally \$200.0 million) of 5.625% senior unsecured notes due 2021 (the “2021 Notes”). The 2021 Notes were sold in private offerings for resale to qualified institutional buyers pursuant to SEC Rule 144A and mature on April 15, 2021. Interest accrues at 5.625% and is paid semi-annually in arrears on April 15 and October 15 of each year. Holdings provided a guarantee of the 2021 Notes but Holdings is not subject to the covenants under the indenture. In the second quarter of 2016, we paid \$10.9 million for the purchase of \$10.8 million of par value and accrued interest on our 2021 Notes reducing the principal amount to \$189.2 million.

Senior secured notes—\$445.0 million

In February 2015, Group issued \$250.0 million of 5.375% senior secured notes due 2022 (the “2022 Notes”). In December 2016, we issued an additional \$125.0 million of our 2022 Notes at a premium of 100.365%. In August 2018, we issued an additional \$70.0 million of our 2022 Notes at a premium of 101.75%. The 2022 Notes were sold in private offerings for resale to qualified institutional buyers pursuant to SEC Rule 144A and mature on March 1, 2022. Interest accrues at 5.375% and is paid semi-annually in arrears on March 1 and September 1 of each year. Holdings provided a guarantee of the 2022 Notes but Holdings is not subject to the covenants under the indenture.

Limitations under the indentures

The indentures governing the 2024 Notes, 2022 Notes and 2021 Notes, among other things, limits our ability to incur indebtedness; to pay dividends or make other distributions; to make certain investments and other restricted payments; to create liens; consolidate, merge, sell or otherwise dispose of all or substantially all of its assets; to incur restrictions on the ability of a subsidiary to pay dividends or make other payments; and to enter into certain transactions with its affiliates. Limitations on the ability to incur additional indebtedness (excluding IRU agreements incurred in the normal course of business) include a restriction on incurring additional indebtedness if our consolidated leverage ratio, as defined in the indentures, is greater than 6.0 for the 2024 Notes and greater than 5.0 for the 2022 Notes and 2021 Notes. Limitations on the ability to incur additional secured indebtedness include a restriction on incurring additional secured indebtedness if our consolidated secured leverage ratio, as defined in the indentures, is greater than 4.0 for the 2024 Notes and greater than 3.5 for the 2022 Notes and 2021 Notes. The indentures prohibit certain payments, such as dividends and stock purchases, when our consolidated leverage ratio, as defined by the indentures, is greater than 4.25. A certain amount of such unrestricted payments is permitted notwithstanding this prohibition. The unrestricted payment amount may be increased by our consolidated cash flow, as defined in the indentures, as long as our consolidated leverage ratio is less than 4.25. Our consolidated leverage ratio was above 4.25 as of December 31, 2019. As of December 31, 2019, a total of \$110.3 million (primarily held by Holdings in cash and cash equivalents) was permitted for investment payments including dividends and stock purchases.

Summarized Financial Information of Holdings

Holdings is a guarantor under the 2024, 2021 and 2022 Notes. Under the indentures we are required to disclose financial information of Holdings including its assets, liabilities and its operating results (“Holdings Financial Information”). The Holdings Financial Information as of and for the year ended December 31, 2019 is detailed below (in thousands).

	<u>December 31, 2019</u> <u>(Unaudited)</u>
Cash and cash equivalents	\$ 110,265
Accrued interest receivable	65
Total assets	<u>\$ 110,330</u>
Investment from subsidiaries	\$ 260,537
Common stock	47
Accumulated deficit	(150,254)
Total equity	<u>\$ 110,330</u>

	<u>Year Ended</u> <u>December 31, 2019</u> <u>(Unaudited)</u>
Equity-based compensation expense	\$ 20,212
Interest income	3,069
Net loss	<u>\$ (17,143)</u>

Common Stock Buyback Program

Our Board of Directors has approved through December 31, 2020, purchases of our common stock under a buyback program (the “Buyback Program”). We purchased 0.1 million shares of our common stock for \$6.6 million during the year ended December 31, 2018 and 0.1 million shares of our common stock for \$1.8 million during the year ended December 31, 2017. There were no purchases of common stock during the year ended December 31, 2019. As of December 31, 2019 there was a total of \$34.9 million available under the Buyback Program.

Dividends on Common Stock

Dividends are recorded as a reduction to retained earnings. Dividends on unvested restricted shares of common stock are paid as the awards vest. Our initial quarterly dividend payment was made in the third quarter of 2012. On February 26, 2020, our Board of Directors approved the payment of our quarterly dividend of \$0.66 per common share. The dividend for the first quarter of 2020 will be paid to holders of record on March 13, 2020. This estimated \$30.1 million dividend payment is expected to be made on March 27, 2020.

The payment of any future dividends and any other returns of capital, including stock buybacks, will be at the discretion of our Board of Directors and may be reduced, eliminated or increased and will be dependent upon our financial position, results of operations, available cash, cash flow, capital requirements, limitations under our debt indentures and other factors deemed relevant by the our Board of Directors. We are a Delaware Corporation and under the General Corporate Law of the State of Delaware distributions may be restricted including a restriction that distributions, including stock purchases and dividends, do not result in an impairment of a corporation’s capital, as defined under Delaware Law. The indentures governing our notes limit our ability to return cash to our stockholders. See Note 4 to our consolidated financial statements for additional discussion of limitations on distributions.

Contractual Obligations and Commitments

The following table summarizes our contractual cash obligations and other commercial commitments as of December 31, 2019.

	Payments due by period				
	Total	Less than 1 year	1 - 3 years (in thousands)	3 - 5 years	After 5 years
Debt(1)	903,696	50,601	691,748	161,347	—
Finance lease obligations(2)	340,188	25,459	48,693	45,311	220,725
Operating leases, colocation and data center obligations(3)	205,087	36,119	42,344	26,138	100,486
Unconditional purchase obligations(4)	27,885	12,154	1,346	1,307	13,078
Total contractual cash obligations	\$ 1,476,856	\$ 124,333	\$ 784,131	\$ 234,103	\$ 334,289

- (1) These amounts include interest and principal payment obligations on our €135.0 million of 2024 Notes through the maturity date of June 30, 2024, interest and principal payments on our \$445.0 million of 2022 Notes through the maturity date of March 1, 2022, interest and principal payments on our \$189.2 million of 2021 Notes through the maturity date of April 15, 2021 and \$12.5 million due under an installment payment agreement with a vendor.
- (2) The amounts include principal and interest payments under our finance lease obligations. Our finance lease obligations were incurred in connection with IRUs for inter-city and intra-city dark fiber underlying substantial portions of our network. These finance leases are presented on our balance sheet at the net present value of the future minimum lease payments, or \$169.8 million at December 31, 2019. These leases generally have initial terms of 15 to 20 years.
- (3) These amounts include amounts due under our facilities, operating leases, colocation obligations and carrier neutral data center obligations. Certain of these operating lease liabilities are presented on our balance sheet at the net present value of the future minimum lease payments, or \$96.8 million at December 31, 2019.
- (4) These amounts include amounts due under unconditional purchase obligations including dark fiber IRU operating and finance lease agreements entered into but not delivered and accepted prior to December 31, 2019.

Future Capital Requirements

We believe that our cash on hand and cash generated from our operating activities will be adequate to meet our working capital, capital expenditure, debt service, dividend payments and other cash requirements for the next twelve months if we execute our business plan.

Any future acquisitions or other significant unplanned costs or cash requirements in excess of amounts we currently hold may require that we raise additional funds through the issuance of debt or equity. We cannot assure you that such financing will be available on terms acceptable to us or our stockholders, or at all. Insufficient funds may require us to delay or scale back the number of buildings and markets that we add to our network, reduce our planned increase in our sales and marketing efforts, or require us to otherwise alter our business plan or take other actions that could have a material adverse effect on our business, results of operations and financial condition. If issuing equity securities raises additional funds, substantial dilution to existing stockholders may result.

We may need to or elect to refinance all or a portion of our indebtedness at or before maturity and we cannot provide assurances that we will be able to refinance any such indebtedness on commercially reasonable terms or at all. In addition, we may elect to secure additional capital in the future, at acceptable terms, to improve our liquidity or fund acquisitions or for general corporate purposes. In addition, in an effort to reduce future cash interest payments as well as future amounts due at maturity or to extend debt maturities, we may, from time to time, issue new debt, enter into debt for debt, or cash transactions to purchase our outstanding debt securities in the open market or through privately negotiated transactions. We will evaluate any such transactions in light of

the existing market conditions. The amounts involved in any such transaction, individually or in the aggregate, may be material.

Off-Balance Sheet Arrangements

We do not have relationships with unconsolidated entities or financial partnerships, such as entities often referred to as structured finance or special purpose entities, which would have been established for the purpose of facilitating off-balance sheet arrangements or other contractually narrow or limited purposes. In addition, we do not engage in trading activities involving non-exchange traded contracts. As such, we are not materially exposed to any financing, liquidity, market or credit risk that could arise if we had engaged in these relationships.

Income Taxes

Section 382 of the Internal Revenue Code in the United States limits the utilization of net operating losses when ownership changes, as defined by that section, occur. We have performed an analysis of our Section 382 ownership changes and have determined that the utilization of certain of our net operating loss carryforwards in the United States is limited.

Critical Accounting Policies and Significant Estimates

Our discussion and analysis of our financial condition and results of operations are based upon our consolidated financial statements, which have been prepared in accordance with accounting principles generally accepted in the United States. 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 the related disclosure of contingent assets and liabilities. We base our estimates on historical experience and on various other assumptions that are believed to be reasonable under the circumstances, the results of which form the basis for making judgments about the carrying values of assets and liabilities that are not readily apparent from other sources. Actual results may differ from these estimates under different assumptions or conditions.

The accounting policies we believe to be most critical to understanding our financial results and condition or that require complex, significant and subjective management judgments are discussed below.

Revenue recognition

Our service offerings consist of on-net and off-net telecommunications services. Fixed fees are billed monthly in advance and usage fees are billed monthly in arrears. Amounts billed are due upon receipt and contract lengths range from month to month to 60 months. We satisfy our performance obligations to provide services to customers over time as the services are rendered. Revenue is recognized when a customer obtains the promised service. The amount of revenue recognized reflects the consideration to which we expect to be entitled to receive in exchange for these services.

To achieve this core principle, we follow the following five steps:

- 1) Identification of the contract, or contracts with a customer
- 2) Identification of the performance obligations in the contract
- 3) Determination of the transaction price
- 4) Allocation of the transaction price to the performance obligations in the contract
- 5) Recognition of revenue when, or as, we satisfy a performance obligation

Installation fees for contracts with terms longer than month-to-month are recognized over the contract term. Installation fees associated with month-to-month contracts are recognized over the estimated average customer life. To the extent a customer contract is terminated prior to its contractual end the customer is subject to termination fees. We vigorously seek payment of these amounts. We recognize revenue for these amounts as they are collected.

Revenue recognition standards include guidance relating to taxes or surcharges assessed by a governmental authority that are directly imposed on a revenue-producing transaction between a seller and a customer and may include, but are not limited to, gross receipts taxes, excise taxes, Universal Service Fund fees and certain state regulatory fees. Such charges may be presented gross or net based upon our accounting policy election. We record certain excise taxes and surcharges on a gross basis and includes them in our service revenue and cost of network operations.

Finance Lease Obligations

We record assets and liabilities under finance leases at the lesser of the present value of the aggregate future minimum lease payments or the fair value of the assets under lease. We establish the number of renewal option periods used in determining the lease term, if any, based upon our assessment at the inception of the lease of the number of option periods for which failure to renew the lease imposes a penalty on us in such amount that renewal appears to be reasonably assured. Useful lives are determined based on historical usage with consideration given to technological changes and trends in the industry that could impact the asset utilization. We estimate the fair value of leased assets primarily using estimated replacement cost data for similar assets. We determine the incremental borrowing rate for each lease using our current borrowing rate adjusted for various factors including the level of collateralization and term to align with the term of the lease.

Recent Accounting Pronouncements

Recent Accounting Pronouncements—to be Adopted

In June 2016, the FASB issued No. ASU No. 2016-13, “*Financial Instruments—Credit Losses: Measurement of Credit Losses on Financial Instruments*.” This guidance is intended to introduce a revised approach to the recognition and measurement of credit losses, emphasizing an updated model based on expected losses rather than incurred losses. This new standard is effective for annual and interim reporting periods beginning after December 15, 2019 and early adoption is permitted. We do not believe that the adoption of ASU No. 2016-13 will have a material impact on our financial statements or disclosures.

ITEM 7A. QUANTITATIVE AND QUALITATIVE DISCLOSURES ABOUT MARKET RISK

We are exposed to certain market risks. These risks, which include interest rate risk and foreign currency exchange risk, arise in the normal course of business rather than from trading activities.

Interest Rate Risk

Our cash flow exposure due to changes in interest rates related to our debt is limited as our note obligations have fixed interest rates. The fair value of our note obligations may increase or decrease for various reasons, including fluctuations in the market price of our common stock, fluctuations in market interest rates and fluctuations in general economic conditions. A decline in interest rates in the future will not generally benefit us with respect to our fixed rate debt due to the terms and conditions of the indentures relating to that debt that would require us to repurchase the debt at specified premiums if redeemed early. Our interest income is sensitive to changes in the general level of interest rates. However, based upon the nature and current level of our investments, which consist of cash and cash equivalents, we believe that there is no material interest rate exposure related to our investments.

Foreign Currency Exchange Risk

Our operations outside of the United States and our 2024 Notes expose us to potentially unfavorable adverse movements in foreign currency rate changes. We have not entered into forward exchange contracts related to our foreign currency exposure. While we record financial results and assets and liabilities from our international operations in the functional currency, which is generally the local currency, these results are reflected in our consolidated financial statements in US dollars. Therefore, our reported results are exposed to fluctuations in the exchange rates between the US dollar and the local currencies, in particular the Euro and the Canadian dollar. In addition, we may fund certain cash flow requirements of our international operations including the interest and principal payment obligations, while due in Euros, on our 2024 notes in US dollars. Accordingly, in the event that the local currencies strengthen versus the US dollar to a greater extent than planned, the revenues, expenses and cash flow requirements associated with our international operations may be significantly higher in US-dollar terms than planned. During the year ended December 31, 2019, our foreign activities accounted for 22% of our consolidated revenue. A 1% change in foreign exchange rates would impact our consolidated annual revenue by approximately \$1.1 million. Changes in foreign currency rates could adversely and materially affect our operating results.

ITEM 8. FINANCIAL STATEMENTS AND SUPPLEMENTARY DATA

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Report of Ernst & Young LLP, Independent Registered Public Accounting Firm

To the Stockholders and the Board of Directors of Cogent Communications Holdings, Inc.

Opinion on the Financial Statements

We have audited the accompanying consolidated balance sheets of Cogent Communications Holdings, Inc. and subsidiaries (the Company) as of December 31, 2019 and 2018, the related consolidated statements of comprehensive income (loss), changes in stockholders' equity (deficit) and cash flows for each of the three years in the period ended December 31, 2019, and the related notes and financial statement schedule listed in the Index at Item 15(a)2 (collectively referred to as the "consolidated financial statements"). In our opinion, the consolidated financial statements present fairly, in all material respects, the financial position of the Company at December 31, 2019 and 2018, and the results of its operations and its cash flows for each of the three years in the period ended December 31, 2019, in conformity with U.S. generally accepted accounting principles.

We also have audited, in accordance with the standards of the Public Company Accounting Oversight Board (United States) (PCAOB), the Company's internal control over financial reporting as of December 31, 2019, based on criteria established in Internal Control—Integrated Framework issued by the Committee of Sponsoring Organizations of the Treadway Commission (2013 framework) and our report dated February 28, 2020 expressed an unqualified opinion thereon.

Adoption of New Accounting Standard

As discussed in Note 1 to the consolidated financial statements, the Company changed its method of accounting for leases in 2019.

Basis for Opinion

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

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

Critical Audit Matter

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

Determining the Initial Carrying Amount for Infeasible Right of Use Lease Assets and Liabilities

<i>Description of the Matter</i>	<p>As described in Notes 1, 2 and 6 to the consolidated financial statements, as of December 31, 2019, the Company has recorded \$408.2 million and \$169.8 million of infeasible right of use (IRU) finance lease assets and liabilities, respectively. The Company makes certain judgments and estimates to determine the initial carrying amount of the asset and lease liabilities at the lease commencement date, which include, among others, the lease term and the incremental borrowing rate.</p> <p>Auditing the initial carrying amount of IRU lease assets and liabilities involved subjectivity due to the application of judgment in management’s determination of the lease term and the incremental borrowing rate. For example, management’s determination of the lease term included assumptions related to the useful life of IRUs and the expectations regarding exercise or non-exercise of renewal options contained in certain IRU lease agreements. Management’s determination of the interest rate used in determining the present value of the aggregate future minimum lease payments is based on the Company’s estimated incremental borrowing rate at the lease inception date. Changes in those assumptions may have a material effect on the initial carrying amount of the right-of-use asset or lease liabilities due to the volume of the IRU agreements executed each period.</p>
<i>How We Addressed the Matter in Our Audit</i>	<p>We tested the design and operating effectiveness of the Company’s controls over the process to determine the carrying amount of its IRU leases. This included testing controls related to management’s assumptions regarding the lease term and the incremental borrowing rate.</p> <p>To test the initial carrying amount of right-of-use assets and lease liabilities, our audit procedures included among others, assessing the Company’s historical lease option renewals compared to management’s assumptions, evaluating industry practice in estimating useful lives compared to those selected by management, and comparing market information to the estimated incremental borrowing rates.</p>

/s/ Ernst & Young LLP

We have served as the Company’s auditor since 2002
Tysons, VA
February 28, 2020

COGENT COMMUNICATIONS HOLDINGS, INC., AND SUBSIDIARIES
CONSOLIDATED BALANCE SHEETS
AS OF DECEMBER 31, 2019 AND 2018
(IN THOUSANDS, EXCEPT SHARE AND PER SHARE DATA)

	2019	2018
Assets		
Current assets:		
Cash and cash equivalents	\$ 399,422	\$ 276,093
Accounts receivable, net of allowance for doubtful accounts of \$1,771 and \$1,263, respectively	40,484	41,709
Prepaid expenses and other current assets	35,822	32,535
Total current assets	475,728	350,337
Property and equipment:		
Property and equipment	1,366,782	1,300,503
Accumulated depreciation and amortization	(997,853)	(925,178)
Total property and equipment, net	368,929	375,325
Right-of-use leased assets	73,460	—
Deferred tax assets	335	2,733
Deposits and other assets	13,672	11,455
Total assets	\$ 932,124	\$ 739,850
Liabilities and stockholders' equity		
Current liabilities:		
Accounts payable	\$ 11,075	\$ 8,519
Accrued and other current liabilities	51,301	51,431
Current maturities, operating lease liabilities	10,101	—
Installment payment agreement, current portion, net of discount of \$350 and \$395, respectively	9,063	8,283
Finance lease obligations, current maturities	8,154	7,074
Total current liabilities	89,694	75,307
Senior unsecured 2024 Euro notes, net of unamortized debt costs of \$1,410	150,001	—
Senior secured 2022 notes, net of unamortized debt costs of \$1,897 and \$2,695 respectively and including premium of \$985 and \$1,405, respectively	444,088	443,710
Senior unsecured 2021 notes, net of unamortized debt costs of \$857 and \$1,476, respectively	188,368	187,749
Operating lease liabilities, net of current maturities	86,690	—
Finance lease obligations, net of current maturities	161,635	156,706
Other long term liabilities	15,327	25,380
Total liabilities	1,135,803	888,852
Commitments and contingencies		
Stockholders' equity:		
Common stock, \$0.001 par value; 75,000,000 shares authorized; 46,840,434 and 46,336,499 shares issued and outstanding, respectively	47	46
Additional paid-in capital	493,178	471,331
Accumulated other comprehensive income	(12,326)	(10,928)
Accumulated deficit	(684,578)	(609,451)
Total stockholders' deficit	(203,679)	(149,002)
Total liabilities and stockholders' equity	\$ 932,124	\$ 739,850

The accompanying notes are an integral part of these consolidated balance sheets.

COGENT COMMUNICATIONS HOLDINGS, INC., AND SUBSIDIARIES
CONSOLIDATED STATEMENTS OF COMPREHENSIVE INCOME
FOR EACH OF THE THREE YEARS ENDED DECEMBER 31, 2019
(IN THOUSANDS, EXCEPT SHARE AND PER SHARE DATA)

	2019	2018	2017
Service revenue	\$ 546,159	\$ 520,193	\$ 485,175
Operating expenses:			
Network operations (including \$994, \$895 and \$604 of equity-based compensation expense, respectively), exclusive of amounts shown separately	219,801	219,526	209,278
Selling, general, and administrative (including \$17,466, \$16,813 and \$12,686 of equity-based compensation expense, respectively)	146,913	133,858	127,915
Depreciation and amortization	80,247	81,233	75,926
Total operating expenses	446,961	434,617	413,119
Gains on equipment transactions	1,059	982	3,862
Operating income	100,257	86,558	75,918
Interest income and other	9,870	5,880	3,667
Interest expense	(57,453)	(51,056)	(48,467)
Income before income taxes	52,674	41,382	31,118
Income tax expense	(15,154)	(12,715)	(25,242)
Net income	\$ 37,520	\$ 28,667	\$ 5,876
Comprehensive income:			
Net income	\$ 37,520	\$ 28,667	\$ 5,876
Foreign currency translation adjustment	(1,398)	(6,328)	12,593
Comprehensive income	\$ 36,122	\$ 22,339	\$ 18,469
Basic net income per common share	\$ 0.82	\$ 0.63	\$ 0.13
Diluted net income per common share	\$ 0.81	\$ 0.63	\$ 0.13
Dividends declared per common share	\$ 2.44	\$ 2.12	\$ 1.80
Weighted-average common shares—basic	45,542,315	45,280,161	44,855,263
Weighted-average common shares—diluted	46,080,395	45,780,954	45,184,203

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

COGENT COMMUNICATIONS HOLDINGS, INC., AND SUBSIDIARIES
CONSOLIDATED STATEMENTS OF CHANGES IN STOCKHOLDERS' EQUITY (DEFICIT)
FOR EACH OF THE THREE YEARS ENDED DECEMBER 31, 2019
(IN THOUSANDS, EXCEPT SHARE AMOUNTS)

	Common Stock		Additional Paid-in Capital	Accumulated Other Comprehensive Income (Loss)	Accumulated Deficit	Total Stockholder's Equity (Deficit)
	Shares	Amount				
Balance at December 31, 2016	<u>45,478,787</u>	<u>\$ 45</u>	<u>\$ 442,799</u>	<u>\$ (17,193)</u>	<u>\$ (478,905)</u>	<u>\$ (53,254)</u>
Forfeitures of shares granted to employees	(10,181)	—	—	—	—	—
Equity-based compensation	—	—	14,504	—	—	14,504
Foreign currency translation	—	—	—	12,593	—	12,593
Issuances of common stock	499,654	1	—	—	—	1
Exercises of options	39,289	—	1,222	—	—	1,222
Common stock purchases and retirement	(46,750)	—	(1,829)	—	—	(1,829)
Dividends paid	—	—	—	—	(81,657)	(81,657)
Net income	—	—	—	—	5,876	5,876
Balance at December 31, 2017	<u>45,960,799</u>	<u>\$ 46</u>	<u>\$ 456,696</u>	<u>\$ (4,600)</u>	<u>\$ (554,686)</u>	<u>\$ (102,544)</u>
Cumulative effect adjustment from adoption of ASC 606	—	—	—	—	14,455	14,455
Forfeitures of shares granted to employees	(24,973)	—	—	—	—	—
Equity-based compensation	—	—	19,431	—	—	19,431
Foreign currency translation	—	—	—	(6,328)	—	(6,328)
Issuances of common stock	496,228	—	—	—	—	—
Exercises of options	52,440	—	1,768	—	—	1,768
Common stock purchases and retirement	(147,995)	—	(6,564)	—	—	(6,564)
Dividends paid	—	—	—	—	(97,887)	(97,887)
Net income	—	—	—	—	28,667	28,667
Balance at December 31, 2018	<u>46,336,499</u>	<u>\$ 46</u>	<u>\$ 471,331</u>	<u>\$ (10,928)</u>	<u>\$ (609,451)</u>	<u>\$ (149,002)</u>
Forfeitures of shares granted to employees	(12,632)	—	—	—	—	—
Equity-based compensation	—	—	20,210	—	—	20,211
Foreign currency translation	—	—	—	(1,398)	—	(1,398)
Issuances of common stock	473,550	1	—	—	—	1
Exercises of options	43,017	—	1,637	—	—	1,636
Dividends paid	—	—	—	—	(112,647)	(112,647)
Net income	—	—	—	—	37,520	37,520
Balance at December 31, 2019	<u>46,840,434</u>	<u>\$ 47</u>	<u>\$ 493,178</u>	<u>\$ (12,326)</u>	<u>\$ (684,578)</u>	<u>\$ (203,679)</u>

COGENT COMMUNICATIONS HOLDINGS, INC., AND SUBSIDIARIES
CONSOLIDATED STATEMENTS OF CASH FLOWS
FOR EACH OF THE THREE YEARS ENDED DECEMBER 31, 2019
(IN THOUSANDS)

	2019	2018	2017
Cash flows from operating activities:			
Net income	\$ 37,520	\$ 28,667	\$ 5,876
Adjustments to reconcile net income to net cash provided by operating activities:			
Depreciation and amortization	80,247	81,233	75,926
Amortization of debt discount and premium	1,807	1,533	1,239
Equity-based compensation expense (net of amounts capitalized)	18,460	17,708	13,290
Unrealized foreign currency exchange gain on 2024 Euro notes	(2,273)		
Gains—equipment transactions and other, net	(358)	(1,109)	(4,833)
Deferred income taxes	12,158	11,117	24,679
Changes in operating assets and liabilities:			
Accounts receivable	1,067	(3,204)	(4,161)
Prepaid expenses and other current assets	(3,730)	(438)	1,146
Deposits and other assets	(1,131)	(1,490)	1,111
Accounts payable, accrued liabilities and other long-term liabilities	5,042	(96)	(2,571)
Net cash provided by operating activities	<u>148,809</u>	<u>133,921</u>	<u>111,702</u>
Cash flows from investing activities:			
Purchases of property and equipment	(46,958)	(49,937)	(45,801)
Net cash used in investing activities	<u>(46,958)</u>	<u>(49,937)</u>	<u>(45,801)</u>
Cash flows from financing activities:			
Net proceeds from issuance of senior unsecured 2024 Euro notes — net of debt costs of \$1,556	152,134	—	—
Net proceeds from issuance of 2022 secured notes-net of debt costs of \$1,364	—	69,861	—
Dividends paid	(112,647)	(97,887)	(81,657)
Principal payments of finance lease obligations	(9,097)	(10,286)	(11,201)
Principal payments of installment payment agreement	(10,007)	(9,437)	(3,802)
Purchases of common stock	—	(6,564)	(1,829)
Proceeds from exercises of common stock options	1,637	1,768	1,222
Net cash provided by (used in) financing activities	<u>22,020</u>	<u>(52,545)</u>	<u>(97,267)</u>
Effect of exchange rate changes on cash	<u>(542)</u>	<u>(2,357)</u>	<u>4,058</u>
Net increase (decrease) in cash and cash equivalents	<u>123,329</u>	<u>29,082</u>	<u>(27,308)</u>
Cash and cash equivalents, beginning of year	<u>276,093</u>	<u>247,011</u>	<u>274,319</u>
Cash and cash equivalents, end of year	<u>\$ 399,422</u>	<u>\$ 276,093</u>	<u>\$ 247,011</u>
Supplemental disclosures of cash flow information:			
Cash paid for interest	\$ 56,022	\$ 48,918	\$ 47,032
Cash paid for income taxes	3,409	2,444	441
Non-cash investing and financing activities:			
Finance lease obligations incurred	14,307	20,050	22,595
PP&E obtained for installment payment agreement	11,255	9,925	9,027
Fair value of equipment acquired in leases	1,207	—	—
Non-cash component of network equipment obtained in exchange transactions	978	968	3,861

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

COGENT COMMUNICATIONS HOLDINGS, INC., AND SUBSIDIARIES
NOTES TO CONSOLIDATED FINANCIAL STATEMENTS

1. Description of the business and summary of significant accounting policies:

Reorganization and merger

On May 15, 2014, pursuant to the Agreement and Plan of Reorganization (the “Merger Agreement”) by and among Cogent Communications Group, Inc. (“Group”), a Delaware corporation, Cogent Communications Holdings, Inc., a Delaware corporation (“Holdings”) and Cogent Communications Merger Sub, Inc., a Delaware corporation, Group adopted a new holding company organizational structure whereby Group is now a wholly owned subsidiary of Holdings. Holdings is a “successor issuer” to Group pursuant to Rule 12g-3(a) under the Securities Exchange Act of 1934, as amended (the “Exchange Act”). References to the “Company” for events that occurred prior to May 15, 2014 refer to Cogent Communications Group, Inc. and its subsidiaries and on and after May 15, 2014 the “Company” refers to Cogent Communications Holdings, Inc. and its subsidiaries.

Description of business

The Company is a Delaware corporation and is headquartered in Washington, DC. The Company is a facilities-based provider of low-cost, high-speed Internet access services, private network services and data center colocation space. The Company’s network is specifically designed and optimized to transmit packet routed data. The Company delivers its services primarily to small and medium-sized businesses, communications service providers and other bandwidth-intensive organizations in North America, Europe, Asia, Latin America and Australia.

The Company offers on-net Internet access and private network services exclusively through its own facilities, which run from its network to its customers’ premises. The Company is not dependent on local telephone companies or cable TV companies to serve its customers for its on-net Internet access services because of its integrated network architecture. The Company offers its on-net services to customers located in buildings that are physically connected to its network. The Company’s on-net service consists of high-speed Internet access and private network services offered at speeds ranging from 100 megabits per second to 100 gigabits per second of bandwidth. The Company provides its on-net Internet access services and private network services to its corporate and net-centric customers. The Company’s corporate customers are located in multi-tenant office buildings and typically include law firms, financial services firms, advertising and marketing firms and other professional services businesses. The Company’s net-centric customers include bandwidth-intensive users such as other Internet service providers, telephone companies, cable television companies, web hosting companies, content delivery network companies and commercial content and application service providers. These net-centric customers obtain the Company’s services in colocation facilities and in the Company’s data centers. The Company operates data centers throughout North America and Europe that allow its customers to collocate their equipment and access the Company’s network.

In addition to providing its on-net services, the Company provides Internet connectivity and private network services to customers that are not located in buildings directly connected to its network. The Company provides this off-net service primarily to corporate customers using other carriers’ facilities to provide the “last mile” portion of the link from the customers’ premises to the Company’s network. The Company also provides certain non-core services that resulted from acquisitions. The Company continues to support but does not actively sell these non-core services.

Principles of consolidation

The consolidated financial statements have been prepared in accordance with United States generally accepted accounting principles and include the accounts of the Company and all of its wholly-owned and majority-owned subsidiaries. All intercompany balances and transactions have been eliminated in consolidation.

COGENT COMMUNICATIONS HOLDINGS, INC., AND SUBSIDIARIES
NOTES TO CONSOLIDATED FINANCIAL STATEMENTS (Continued)

1. Description of the business and summary of significant accounting policies: (Continued)

Use of estimates

The preparation of consolidated financial statements in conformity with United States generally accepted accounting principles requires management to make estimates and assumptions that affect the reported amounts of assets and liabilities and disclosures of contingent assets and liabilities at the date of the consolidated financial statements and the reported amounts of revenues and expenses during the reporting period. Actual results may differ from these estimates.

Allowance for doubtful accounts

The Company establishes an allowance for doubtful accounts and other sales credit adjustments related to its trade receivables. Trade receivables are recorded at the invoiced amount and can bear interest. Allowances for sales credits are established through a reduction of revenue, while allowances for doubtful accounts are established through a charge to selling, general, and administrative expenses as bad debt expense. The Company assesses the adequacy of these reserves by evaluating factors, such as the length of time individual receivables are past due, historical collection experience, and changes in the credit worthiness of its customers. The Company also assesses the ability of specific customers to meet their financial obligations and establishes specific allowances related to these customers. If circumstances relating to specific customers change or economic conditions change such that the Company's past collection experience and assessment of the economic environment are no longer appropriate, the Company's estimate of the recoverability of its trade receivables could be impacted. Accounts receivable balances are written-off against the allowance for doubtful accounts after all means of internal collection activities have been exhausted and the potential for recovery is considered remote. The Company recognized bad debt expense, net of recoveries, of \$4.1 million, \$3.3 million and \$3.7 million for the years ended December 31, 2019, 2018 and 2017, respectively.

COGENT COMMUNICATIONS HOLDINGS, INC., AND SUBSIDIARIES
NOTES TO CONSOLIDATED FINANCIAL STATEMENTS (Continued)

1. Description of the business and summary of significant accounting policies: (Continued)

Recent Accounting Pronouncements— Adopted

In February 2016, the FASB issued ASU No. 2016-02, *Leases* (“ASU 2016-02”). ASU 2016-02 replaced most existing lease accounting guidance. In July 2018 the FASB approved an Accounting Standards Update which, among other changes, allowed a company to elect to adopt ASU 2016-02 using the modified retrospective method applying the transition provisions at the beginning of the period of adoption, rather than at the beginning of the earliest comparative period presented in these financial statements. ASU 2016-02 was effective for the Company beginning on January 1, 2019 and required the Company to record a right-of-use asset and a lease liability for most of its facilities leases. These leases were previously treated as operating leases. The Company adopted ASU 2016-02 using the optional transition method whereby the new lease requirements under ASU 2016-02 were recorded through a cumulative-effect adjustment, which after completing the implementation analysis, resulted in no adjustment to the Company’s January 1, 2019 beginning retained earnings balance. The effect of ASU 2016-02 was to record a cumulative-effect adjustment on January 1, 2019 as a right-of-use asset and an operating lease liability totaling \$97.3 million. The operating lease liability is not considered a liability under the consolidated leverage ratio calculations in the indentures governing the Company’s senior unsecured and senior secured note obligations. The Company has made an accounting policy election to not apply the recognition requirements of ASU 2016-02 to its short-term leases — leases with a term of one year or less. The Company has also elected to apply certain practical expedients under ASU2016-02 including not separating lease and nonlease components on its finance and operating leases, not reassessing whether any existing contracts contained leases, not reconsidering lease classification, not reassessing initial direct costs and using hindsight in determining the lease reasonably certain term of its leases.

	Year Ended December 31, 2019
Finance lease cost amortization of right-of-use assets	\$ 19,823
Interest expense on finance lease liabilities	17,709
Operating lease cost	15,688
Total lease costs	53,220
<i><u>Other lease information</u></i>	
<i>Cash paid for amounts included in the measurement of lease liabilities</i>	
Operating cash flows from finance leases	(17,959)
Operating cash flows from operating leases	(17,106)
Financing cash flows from finance leases	(9,097)
Right-of-use assets obtained in exchange for new finance lease liabilities	14,307
Right-of-use assets obtained in exchange for new operating lease liabilities	9,754
Weighted-average remaining lease term — finance leases (in years)	14.3
Weighted-average remaining lease term — operating leases (in years)	21.9
Weighted average discount rate — finance leases	11.0 %
Weighted average discount rate — operating leases	5.6 %

COGENT COMMUNICATIONS HOLDINGS, INC., AND SUBSIDIARIES
NOTES TO CONSOLIDATED FINANCIAL STATEMENTS (Continued)

1. Description of the business and summary of significant accounting policies: (Continued)

Finance leases—fiber lease agreements

The Company has entered into lease agreements with numerous providers of dark fiber under indefeasible-right-of-use agreements (“IRUs”). These IRUs typically have initial terms of 15-20 years and include renewal options after the initial lease term. The Company establishes the number of renewal option periods used in determining the lease term based upon its assessment at the inception of the lease of the number of option periods for which failure to renew the lease imposes a penalty in such amount that renewal appears to be reasonably certain. The option to renew may be automatic, at the option of the Company or mutually agreed to between the dark fiber provider and the Company. Once the Company has accepted the related fiber route, leases that meet the criteria for treatment as finance leases are recorded as a finance lease obligation and an IRU asset. The interest rate used in determining the present value of the aggregate future minimum lease payments is the Company’s incremental borrowing rate for the reasonably certain lease term. The determination of the Company’s incremental borrowing rate requires judgment. The Company determines its incremental borrowing rate for each lease using its current borrowing rate, adjusted for various factors including level of collateralization and term to align with the term of the lease. Finance lease assets are included in property and equipment in the Company’s consolidated balance sheets. As of December 31, 2019, the Company had committed to additional dark fiber IRU lease agreements totaling \$20.3 million in future payments to be paid over periods of up to 20 years. These obligations begin when the related fiber is accepted, which is generally expected to occur in the next 12 months.

The future minimum payments (principal and interest) under these finance leases are as follows (in thousands):

For the Twelve Months Ending December 31,	
2020	\$ 25,459
2021	24,993
2022	23,700
2023	22,596
2024	22,715
Thereafter	220,725
Total minimum finance lease obligations	340,188
Less—amounts representing interest	(170,399)
Present value of minimum finance lease obligations	169,789
Current maturities	(8,154)
Finance lease obligations, net of current maturities	\$ 161,635

COGENT COMMUNICATIONS HOLDINGS, INC., AND SUBSIDIARIES
NOTES TO CONSOLIDATED FINANCIAL STATEMENTS (Continued)

1. Description of the business and summary of significant accounting policies: (Continued)

Operating leases

The Company leases office space and certain data center facilities under operating leases. In certain cases the Company also enters into short term operating leases for dark fiber. Right-of-use assets represent the Company's right to use an underlying asset for the lease term and lease liabilities represent its obligation to make lease payments under the lease. Operating lease right-of-use assets and liabilities are recognized at the lease commencement date based on the present value of lease payments over the reasonably certain lease term. The implicit rates within the Company's operating leases are generally not determinable and the Company uses its incremental borrowing rate at the lease commencement date to determine the present value of its lease payments. The determination of the Company's incremental borrowing rate requires judgment. The Company determines its incremental borrowing rate for each lease using its current borrowing rate, adjusted for various factors including level of collateralization and term to align with the term of the lease. The determination of the Company's incremental borrowing rate requires judgment. The Company determines its incremental borrowing rate for each lease using its current borrowing rate, adjusted for various factors including level of collateralization and term to align with the term of the lease. Certain of the Company's leases include options to extend or terminate the lease. The Company establishes the number of renewal option periods used in determining the operating lease term based upon its assessment at the inception of the operating lease of the number of option periods for which failure to renew the lease imposes a penalty in such amount that renewal appears to be reasonably certain. The option to renew may be automatic, at the option of the Company or mutually agreed to between the landlord or dark fiber provider and the Company. Once the Company has accepted the related fiber route or the facility lease term has begun, the present value of the aggregate future minimum operating lease payments is recorded as an operating lease liability and a right-of-use leased asset. Lease incentives and deferred rent liabilities for facilities operating leases are presented with the right-of-use leased asset. Lease expense for lease payments is recognized on a straight-line basis over the term of the lease.

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

For the Twelve Months Ending December 31,	
2020	\$ 15,075
2021	13,788
2022	12,211
2023	11,376
2024	9,903
Thereafter	98,542
Total minimum operating lease obligations	160,895
Less—amounts representing interest	(64,104)
Present value of minimum operating lease obligations	96,791
Current maturities	(10,101)
Lease obligations, net of current maturities	\$ 86,690

COGENT COMMUNICATIONS HOLDINGS, INC., AND SUBSIDIARIES
NOTES TO CONSOLIDATED FINANCIAL STATEMENTS (Continued)

1. Description of the business and summary of significant accounting policies: (Continued)

Revenue recognition

The Company recognizes revenue under ASU No. 2014-09, *Revenue from Contracts with Customers* ("ASC 606"), which requires an entity to recognize the amount of revenue to which it expects to be entitled for the transfer of promised goods or services to customers. Under ASC 606 installation fees for contracts with terms longer than month-to-month are recognized over the contract term. The Company believes that the installation fee does not give rise to a material right as defined by ASC 606 for contracts with terms longer than month-to-month. The Company recognizes revenue over the estimated average customer life for installation fees associated with month-to-month contracts, because the fee represents a material right as defined by ASC 606. The Company capitalizes certain contract acquisition costs that relate directly to a customer contract, including commissions paid to its sales team and sales agents and amortizes these costs on straight-line basis over the period the services are transferred to the customer for commissions paid to its sales team (estimated customer life) and over the remaining original contract term for agent commissions. Management assesses these costs for impairment at least quarterly and as "triggering" events occur that indicate it is more likely than not that an impairment exists. These contract costs were \$18.7 million as of December 31, 2019 and were \$18.5 million as of December 31, 2018.

The Company's service offerings consist of on-net and off-net telecommunications services. Fixed fees are billed monthly in advance and usage fees are billed monthly in arrears. Amounts billed are due upon receipt and contract lengths range from month to month to 60 months. The Company satisfies its performance obligations to provide services to customers over time as the services are rendered. In accordance with ASC 606, revenue is recognized when a customer obtains the promised service. The amount of revenue recognized reflects the consideration to which the Company expects to be entitled to receive in exchange for these services. The Company has adopted the practical expedient related to certain performance obligation disclosures since it has a right to consideration from its customer in an amount that corresponds directly with the value to the customer of the Company's performance completed to date.

To achieve this core principle, the Company follows the following five steps:

- 1) Identification of the contract, or contracts with a customer
- 2) Identification of the performance obligations in the contract
- 3) Determination of the transaction price
- 4) Allocation of the transaction price to the performance obligations in the contract
- 5) Recognition of revenue when, or as, we satisfy a performance obligation

Fees billed in connection with customer installations are deferred (as deferred revenue) and recognized as noted above. To the extent a customer contract is terminated prior to its contractual end the customer is subject to termination fees. The Company vigorously seeks payment of these amounts. The Company recognizes revenue for these amounts as they are collected.

Service revenue recognized from amounts in deferred revenue (contract liabilities) at the beginning of the period during the year ended December 31, 2019 was \$4.4 million and during the year ended December 31, 2018 was \$5.0 million. Amortization expense for contract costs was \$17.3 million for the year ended December 31, 2019 and \$16.8 million for the year ended December 31, 2018.

COGENT COMMUNICATIONS HOLDINGS, INC., AND SUBSIDIARIES
NOTES TO CONSOLIDATED FINANCIAL STATEMENTS (Continued)

1. Description of the business and summary of significant accounting policies: (Continued)

Gross receipts taxes, universal service fund and other surcharges

Revenue recognition standards include guidance relating to taxes or surcharges assessed by a governmental authority that are directly imposed on a revenue-producing transaction between a seller and a customer and may include, but are not limited to, gross receipts taxes, excise taxes, Universal Service Fund fees and certain state regulatory fees. Such charges may be presented gross or net based upon the Company's accounting policy election. The Company records certain excise taxes and surcharges on a gross basis and includes them in its revenues and costs of network operations. Excise taxes and surcharges billed to customers and recorded on a gross basis (as service revenue and network operations expense) were \$14.9 million, \$12.5 million, and \$10.9 million for the years ended December 31, 2019, 2018 and 2017, respectively.

Network operations

Network operations expenses include the costs of personnel and related operating expenses associated with service delivery, network management, and customer support, network facilities costs, fiber and equipment maintenance fees, leased circuit costs, access fees paid to building owners and certain excise taxes and surcharges recorded on a gross basis. The Company estimates its accruals for any disputed leased circuit obligations based upon the nature and age of the dispute. Network operations costs are impacted by the timing and amounts of disputed circuit costs. The Company generally records these disputed amounts when billed by the vendor and reverses these amounts when the vendor credit has been received or the dispute has otherwise been resolved. The Company does not allocate depreciation and amortization expense to its network operations expense.

Foreign currency translation adjustment and comprehensive income

The consolidated financial statements of the Company's non-US operations are translated into US dollars using the period-end foreign currency exchange rates for assets and liabilities and the average foreign currency exchange rates for revenues and expenses. Gains and losses on translation of the accounts are accumulated and reported as a component of other comprehensive income in stockholders' equity. The Company's only components of "other comprehensive income" are currency translation adjustments for all periods presented. The Company considers the majority of its investments in its foreign subsidiaries to be long-term in nature. The Company's foreign exchange transaction gains (losses) are included within interest income and other on the consolidated statements of comprehensive income.

Financial instruments

The Company considers all highly liquid investments with an original maturity of three months or less at purchase to be cash equivalents. The Company determines the appropriate classification of its investments at the time of purchase and evaluates such designation at each balance sheet date.

At December 31, 2019 and December 31, 2018, the carrying amount of cash and cash equivalents, accounts receivable, prepaid and other current assets, accounts payable, and accrued expenses approximated fair value because of the short-term nature of these instruments. The Company measures its cash equivalents at amortized cost, which approximates fair value based upon quoted market prices (Level 1). Based upon recent trading prices (Level 2—market approach) at December 31, 2019 the fair value of the Company's \$189.2 million senior unsecured notes was \$191.8 million, the fair value of the Company's \$445.0 million senior secured notes was \$466.1 million and the fair value of the Company's €135.0 million (\$151.4 million) senior unsecured notes was \$155.4 million.

COGENT COMMUNICATIONS HOLDINGS, INC., AND SUBSIDIARIES
NOTES TO CONSOLIDATED FINANCIAL STATEMENTS (Continued)

1. Description of the business and summary of significant accounting policies: (Continued)

Concentrations of credit risk

The Company's assets that are exposed to credit risk consist of its cash and cash equivalents, other assets and accounts receivable. As of December 31, 2019 and 2018, the Company's cash equivalents were invested in demand deposit accounts, overnight investments and money market funds. The Company places its cash equivalents in instruments that meet high-quality credit standards as specified in the Company's investment policy guidelines. Accounts receivable are due from customers located in major metropolitan areas in the United States, Europe, Canada, Mexico, Asia, Latin America and Australia. Receivables from the Company's net-centric (wholesale) customers are generally subject to a higher degree of credit risk than the Company's corporate customers.

The Company relies upon an equipment vendor for the majority of its network equipment and is also dependent upon many third-party fiber providers for providing its services to its customers.

Property and equipment

Property and equipment are recorded at cost and depreciated once deployed using the straight-line method over the estimated useful lives of the assets. Useful lives are determined based on historical usage with consideration given to technological changes and trends in the industry that could impact the asset utilization. System infrastructure costs include the capitalized compensation costs of employees directly involved with construction activities and costs incurred by third party contractors.

Assets and liabilities under finance leases are recorded at the lesser of the present value of the aggregate future minimum lease payments or the fair value of the assets under lease. Leasehold improvements include costs associated with building improvements. The Company determines the number of renewal option periods, if any, included in the lease term for purposes of amortizing leasehold improvements and the lease term of its finance leases based upon its assessment at the inception of the lease for which the failure to renew the lease imposes a penalty on the Company in such amount that a renewal appears to be reasonably assured. Expenditures for maintenance and repairs are expensed as incurred.

Depreciation and amortization periods are as follows:

Type of asset	Depreciation or amortization period
Indefeasible rights of use (IRUs)	Shorter of useful life or the IRU lease agreement; generally 15 to 20 years
Network equipment	3 to 8 years
Leasehold improvements	Shorter of lease term, including reasonably assured renewal periods, or useful life
Software	5 years
Owned buildings	40 years
Office and other equipment	3 to 7 years
System infrastructure	5 to 10 years

COGENT COMMUNICATIONS HOLDINGS, INC., AND SUBSIDIARIES
NOTES TO CONSOLIDATED FINANCIAL STATEMENTS (Continued)

1. Description of the business and summary of significant accounting policies: (Continued)

Long-lived assets

The Company's long-lived assets include property and equipment. These long-lived assets are reviewed for impairment whenever events or changes in circumstances indicate that the carrying amount may not be recoverable. Impairment is determined by comparing the carrying value of these long-lived assets to management's probability weighted estimate of the future undiscounted cash flows expected to result from the use of the assets. In the event an impairment exists, a loss is recognized based on the amount by which the carrying value exceeds the fair value of the asset, which would be determined by using quoted market prices or valuation techniques such as the discounted present value of expected future cash flows, appraisals, or other pricing models. In the event there are changes in the planned use of the Company's long-term assets or the Company's expected future undiscounted cash flows are reduced significantly, the Company's assessment of its ability to recover the carrying value of these assets could change.

Equity-based compensation

The Company recognizes compensation expense for its share-based payments granted to its employees based on their grant date fair values with the expense being recognized on a straight-line basis over the requisite service period. The Company begins recording equity-based compensation expense related to performance awards when it is considered probable that the performance conditions will be met and for market based awards compensation cost is recognized if the service condition is satisfied even if the market condition is not satisfied. Equity-based compensation expense is recognized in the statement of operations in a manner consistent with the classification of the employee's salary and other compensation.

Income taxes

The Company's deferred tax assets or liabilities are computed based upon the differences between financial statement and income tax bases of assets and liabilities using the enacted marginal tax rate. Deferred income tax expenses or benefits are based upon the changes in the assets or liability from period to period. At each balance sheet date, the Company assesses the likelihood that it will be able to realize its deferred tax assets. Valuation allowances are established when management determines that it is "more likely than not" that some portion or all of the deferred tax asset may not be realized. The Company considers all available positive and negative evidence in assessing the need for a valuation allowance including its historical operating results, ongoing tax planning, and forecasts of future taxable income, on a jurisdiction by jurisdiction basis. The Company reduces its valuation allowance if the Company concludes that it is "more likely than not" that it would be able to realize its deferred tax assets.

Management determines whether a tax position is more likely than not to be sustained upon examination based on the technical merits of the position. Once it is determined that a position meets this recognition threshold, the position is measured to determine the amount of benefit to be recognized in the financial statements. The Company adjusts its estimated liabilities for uncertain tax positions periodically because of ongoing examinations by, and settlements with, the various taxing authorities, as well as changes in tax laws, regulations and interpretations. The Company's policy is to recognize interest and penalties accrued on any unrecognized tax benefits as a component of its income tax expense.

Basic and diluted net income per common share

Basic earnings per share ("EPS") excludes dilution for common stock equivalents and is computed by dividing net income or (loss) available to common stockholders by the weighted-average number of common shares outstanding for the period. Diluted EPS is based on the weighted-average number of shares of common stock outstanding during each period, adjusted for the effect of dilutive common stock equivalents.

COGENT COMMUNICATIONS HOLDINGS, INC., AND SUBSIDIARIES
NOTES TO CONSOLIDATED FINANCIAL STATEMENTS (Continued)

1. Description of the business and summary of significant accounting policies: (Continued)

Shares of restricted stock are included in the computation of basic EPS as they vest and are included in diluted EPS, to the extent they are dilutive, determined using the treasury stock method.

The following details the determination of the diluted weighted average shares:

	Year Ended December 31, 2019	Year Ended December 31, 2018	Year Ended December 31, 2017
Weighted average common shares—basic	45,542,315	45,280,161	44,855,263
Dilutive effect of stock options	32,222	33,134	31,534
Dilutive effect of restricted stock	505,858	467,659	297,406
Weighted average common shares—diluted	<u>46,080,395</u>	<u>45,780,954</u>	<u>45,184,203</u>

The following details unvested shares of restricted common stock as well as the anti-dilutive effects of stock options and restricted stock awards outstanding:

	December 31, 2019	December 31, 2018	December 31, 2017
Unvested shares of restricted common stock	1,283,281	1,187,586	1,112,151
Anti-dilutive options for common stock	39,608	53,114	47,513
Anti-dilutive shares of restricted common stock	348	3,545	201

Recent Accounting Pronouncements—to be Adopted

In June 2016, the FASB issued ASU No. 2016-13, “*Financial Instruments—Credit Losses: Measurement of Credit Losses on Financial Instruments*.” This guidance is intended to introduce a revised approach to the recognition and measurement of credit losses, emphasizing an updated model based on expected losses rather than incurred losses. This new standard is effective for annual and interim reporting periods beginning after December 15, 2019 and early adoption is permitted. The Company has determined that the impact of ASU No. 2016-13 will not have a material impact on its financial statements or disclosures.

2. Property and equipment:

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

	December 31,	
	2019	2018
Owned assets:		
Network equipment	\$ 566,936	\$ 538,761
Leasehold improvements	227,388	214,495
System infrastructure	134,726	124,018
Software	10,035	9,963
Office and other equipment	18,169	16,711
Building	1,252	1,277
Land	106	108
	<u>958,612</u>	<u>905,333</u>
Less—Accumulated depreciation and amortization	(790,033)	(736,356)
	<u>168,579</u>	<u>168,977</u>
Assets under finance leases:		
IRUs	408,170	395,170
Less—Accumulated depreciation and amortization	(207,820)	(188,822)
	<u>200,350</u>	<u>206,348</u>
Property and equipment, net	<u>\$ 368,929</u>	<u>\$ 375,325</u>

COGENT COMMUNICATIONS HOLDINGS, INC., AND SUBSIDIARIES
NOTES TO CONSOLIDATED FINANCIAL STATEMENTS (Continued)

2. Property and equipment: (Continued)

Depreciation and amortization expense related to property and equipment and finance leases was \$80.2 million, \$81.2 million and \$75.9 million, for 2019, 2018 and 2017, respectively.

The Company capitalizes the compensation cost of employees directly involved with its construction activities. In 2019, 2018 and 2017, the Company capitalized compensation costs of \$10.7 million, \$10.5 million and \$9.7 million respectively. These amounts are included in system infrastructure costs.

Exchange agreement

In 2019, 2018 and 2017 the Company exchanged certain used network equipment and cash consideration for new network equipment. The fair value of the new network equipment received was estimated to be \$3.3 million, \$3.2 million and \$9.1 million resulting in gains of \$1.0 million, \$1.0 million and \$3.9 million respectively. The estimated fair value of the equipment received was based upon the cash consideration price the Company pays for the new network equipment on a standalone basis (Level 3).

Installment payment agreement

The Company has entered into an installment payment agreement (“IPA”) with a vendor. Under the IPA the Company may purchase network equipment in exchange for interest free note obligations each with a twenty-four month term. There are no payments under each note obligation for the first six months followed by eighteen equal installment payments for the remaining eighteen month term. As of December 31, 2019 and December 31, 2018, there was \$12.5 million and \$11.2 million, respectively, of note obligations outstanding under the IPA, secured by the related equipment. The Company recorded the assets purchased and the present value of the note obligation utilizing an imputed interest rate. The resulting discounts totaling \$0.4 million and \$0.4 million as of December 31, 2019 and December 31, 2018, respectively, under the note obligations are being amortized over the note term using the effective interest rate method.

3. Accrued and other liabilities:

Accrued and other current liabilities consist of the following (in thousands):

	<u>December 31,</u>	
	<u>2019</u>	<u>2018</u>
Operating accruals	\$ 23,695	\$ 24,020
Deferred revenue—current portion	4,316	4,504
Payroll and benefits	6,613	7,695
Taxes—non-income based	6,053	4,212
Interest	10,624	11,000
Total	<u>\$ 51,301</u>	<u>\$ 51,431</u>

4. Long-term debt:*Issuance of 2024 Notes*

On June 25, 2019, Group completed an offering of €135.0 million aggregate principal amount of 4.375% senior unsecured notes (“The 2024 Notes”) due on June 30, 2024. The net proceeds from the offering, after deducting offering expenses, were approximately \$152.1 million. The Company expects to use the proceeds for general corporate purposes and/or to repurchase the Company’s common stock or for special or recurring dividends to the Company’s stockholders. The 2024 Notes are guaranteed (the “Guarantees”) on a senior unsecured basis, jointly and severally, by the Company’s material domestic subsidiaries, subject to certain exceptions, and by the Company (collectively, the “Guarantors”). Under certain circumstances, the Guarantors may be released from these Guarantees without the consent of the holders of the 2024 Notes.

COGENT COMMUNICATIONS HOLDINGS, INC., AND SUBSIDIARIES
NOTES TO CONSOLIDATED FINANCIAL STATEMENTS (Continued)

4. Long-term debt: (Continued)

The 2024 Notes and the Guarantees are Group's and the Guarantors' senior unsecured obligations. The 2024 Notes and the Guarantees are effectively subordinated to all of Group's and the Guarantors' existing and future secured indebtedness to the extent of the value of the collateral securing such indebtedness, and are structurally subordinated to all indebtedness and other liabilities of subsidiaries that are not Guarantors. Without giving effect to collateral arrangements, the 2024 Notes and the Guarantees rank pari passu in right of payment with Group's and the Guarantors' existing and future senior indebtedness. The 2024 Notes and the Guarantees rank contractually senior in right of payment to all of Group's and the Guarantors' existing and future subordinated indebtedness.

The 2024 Notes were offered and sold only to persons reasonably believed to be qualified institutional buyers in an unregistered offering pursuant to Rule 144A under the Securities Act of 1933, as amended (the "Act"), and to certain non-U.S. persons in transactions outside the United States in compliance with Regulation S under the Act. The 2024 Notes have not been registered under the Act, and may not be offered or sold in the United States absent registration or an applicable exemption from registration requirements. The 2024 Notes are listed on the Official List of The International Stock Exchange; however, there can be no assurance that the listing will be maintained.

The 2024 Notes bear interest at a rate of 4.375% per annum. Interest began to accrue on the 2024 Notes on June 25, 2019 and will be paid semi-annually in arrears on June 30 and December 30 of each year, commencing on December 30, 2019. Unless earlier redeemed, the 2024 Notes will mature on June 30, 2024. The 2024 Notes were issued by Group, a subsidiary with a US dollar functional currency, and issued at par for €135.0 million (\$153.7 million) on June 25, 2019. The 2024 Notes were issued in Euros and are reported in the Company's reporting currency — US Dollars. As of December 31, 2019 the 2024 Notes were valued at \$151.4 million resulting in an unrealized gain on foreign exchange of \$2.3 million for the year ended December 31, 2019.

Group may redeem some or all of the 2024 Notes at any time prior to June 30, 2021 at a price equal to 100% of the principal amount of the 2024 Notes, plus a "make-whole" premium as set forth in the indenture, plus accrued and unpaid interest, if any, to, but not including, the date of redemption. Thereafter, Group may redeem the 2024 Notes, in whole or in part, at a redemption price ranging from 102.188% to par (depending on the year), as set forth in the indenture. Group may also redeem up to 35% of the principal amount of the 2024 Notes using proceeds of certain equity offerings completed prior to June 30, 2021 at a redemption price equal to 104.375%, plus accrued and unpaid interest, if any, to, but not including, the date of redemption, subject to certain exceptions. Group may also redeem the 2024 Notes, in whole but not in part, in the event of certain changes in the tax laws of the United States (or any taxing authority in the United States). This redemption would be at 100% of the principal amount of the 2024 Notes to be redeemed (plus any accrued interest and additional amounts then payable with respect to the 2024 Notes to, but not including, the redemption date).

If Group undergoes specific kinds of change in control accompanied by certain ratings events, it will be required to offer to repurchase the 2024 Notes from holders at a price equal to 101% of the principal amount thereof, plus accrued and unpaid interest, if any, to, but not including, the date of repurchase. Additionally, if Group or any of its restricted subsidiaries sells assets and does not apply the proceeds from such sale in a certain manner or certain other events have not occurred, under certain circumstances, Group will be required to use the excess net proceeds to make an offer to purchase the 2024 Notes at an offer price in cash equal to 100% of the principal amount of the 2024 Notes, plus accrued and unpaid interest, if any, to, but not including, the repurchase date.

In connection with any offer to purchase all or any of the 2024 Notes (including a change of control offer, asset sale offer or any tender offer), if holders of no less than 90% of the aggregate principal amount of the 2024 Notes validly tender their 2024 Notes, Group or a third party is entitled to redeem any remaining 2024 Notes at the price offered to each holder.

COGENT COMMUNICATIONS HOLDINGS, INC., AND SUBSIDIARIES
NOTES TO CONSOLIDATED FINANCIAL STATEMENTS (Continued)

4. Long-term debt: (Continued)

The 2024 notes indenture includes covenants that restrict Group and its restricted subsidiaries' ability to, among other things: incur indebtedness; issue certain preferred stock or similar equity securities; pay dividends or make other distributions in respect of, or repurchase or redeem, capital stock; make certain investments and other restricted payments, such as prepayment, redemption or repurchase of certain indebtedness; create liens; consolidate, merge, sell or otherwise dispose of all or substantially all of the assets of Group and its restricted subsidiaries taken as a whole; incur restrictions on the ability of a subsidiary to pay dividends or make other payments; and enter into transactions with affiliates. However, the covenants provide for certain exceptions to these restrictions and the Company is not subject to the covenants under the 2024 Notes indenture. Certain covenants will cease to apply to the 2024 Notes if, and for so long as, the 2024 Notes have investment grade ratings from any two of Moody's Investors Service, Inc., Fitch Ratings, Inc. and S&P Global Ratings and so long as no default or event of default under the Indenture has occurred and is continuing.

The principal amount of the 2024 Notes would become immediately due and payable upon the occurrence of certain bankruptcy or insolvency events involving Group or certain of its subsidiaries, and may be declared immediately due and payable by the trustee or the holders of at least 25% of the aggregate principal amount of the then-outstanding 2024 Notes upon the occurrence of certain events of default under the indenture.

Senior secured notes - \$445.0 million 2022 Notes

In February 2015, Group issued \$250.0 million of 5.375% senior secured notes due 2022 (the "2022 Notes"). The net proceeds from the offering were \$248.6 million after deducting discounts and commissions and offering expenses. In December 2016, the Company issued an additional \$125.0 million par value of its 2022 Notes at a premium of 100.375% of par value. The Company received net proceeds of \$124.3 million after deducting offering costs. In August 2018, the Company issued an additional \$70.0 million par value of its 2022 Notes at a premium of 101.75% of par value. The Company received net proceeds of \$69.9 million after deducting offering costs. The premium and offering costs are amortized to interest expense to the maturity date using the effective interest rate method. The net proceeds from these offerings are intended to be used for general corporate purposes.

The 2022 Notes were sold in private offerings for resale to qualified institutional buyers pursuant to SEC Rule 144A and mature on March 1, 2022. Interest accrues at 5.375% and is paid semi-annually in arrears on March 1 and September 1 of each year. The indenture governing the 2022 Notes provides that the Company and each of the Company's existing domestic subsidiaries and future material domestic subsidiaries guarantee the 2022 Notes, subject to certain exceptions and permitted liens. The 2022 Notes are also secured by a pledge of all of the equity interests in Group's domestic subsidiaries and 65% of the equity interests in Group's first-tier foreign subsidiaries. The 2022 Notes and the subsidiary guarantees will be the Company's and the subsidiary guarantors' senior indebtedness and will rank *pari passu* in right of payment with all of the Company's and the subsidiary guarantors' existing and future senior indebtedness, effectively senior to Group's senior unsecured indebtedness to the extent of the value of the collateral securing the 2022 Notes and the subsidiary guarantees, including Group's 2021 Notes that were issued on April 9, 2014, described below, and senior to any of the Company's and the subsidiary guarantors' future subordinated indebtedness. The 2022 Notes are structurally subordinated to the liabilities of the non-guarantor subsidiaries and are effectively subordinated to the Company's and the subsidiary guarantors' secured indebtedness to the extent of the value of the collateral securing such indebtedness on a basis senior to the 2022 Notes and the subsidiary guarantees. Holdings is also a guarantor of the 2022 Notes; however Holdings' guarantee is unsecured and thus its guarantee is not secured by any of Holdings assets. Holdings is also not subject to the covenants under the indenture governing the 2022 Notes.

COGENT COMMUNICATIONS HOLDINGS, INC., AND SUBSIDIARIES
NOTES TO CONSOLIDATED FINANCIAL STATEMENTS (Continued)

4. Long-term debt: (Continued)

The 2022 Notes may be redeemed prior to December 1, 2021 (three months prior to the maturity date of the Notes) in whole or from time to time in part, at a redemption price equal to the sum of (1) 100% of the principal amount plus accrued and unpaid interest, if any, to, but not including, the redemption date, and (2) a make-whole premium, if any. The make-whole premium is the excess of (1) the net present value, on the redemption date, of the principal being redeemed or paid and the amount of interest (exclusive of interest accrued to the date of redemption) that would have been payable if such redemption had not been made, over (2) the aggregate principal amount of the notes being redeemed or paid. Net present value shall be determined by discounting, on a semi-annual basis, such principal and interest at the reinvestment rate (as determined in the indenture governing the 2022 Notes) from the respective dates on which such principal and interest would have been payable if such redemption had not been made. In addition, at any time on or after December 1, 2021 (three months prior to the maturity date of the 2022 Notes), the Issuer may redeem the 2022 Notes, in whole and or in part, at a redemption price equal to 100% of the principal amount of the 2022 Notes to be redeemed, plus accrued and unpaid interest, if any, to, but not including, the redemption date.

Senior unsecured notes—\$189.2 million 2021 Notes

On April 9, 2014, Cogent Communications Finance, Inc. (“Cogent Finance”), a newly formed financing subsidiary of Group, completed an offering at par of \$200.0 million in aggregate principal amount of 5.625% Senior Notes due 2021 (the “2021 Notes”). The 2021 Notes were sold in private offerings for resale to qualified institutional buyers pursuant to SEC Rule 144A and will mature on April 15, 2021. Interest is paid semi-annually on April 15 and October 15. Cogent Finance merged with Group, with Group continuing as the surviving corporation (the “Finance Merger”). At the time of consummation of the Finance Merger, Group assumed the obligations of Cogent Finance under the 2021 Notes and the indenture governing the 2021 Notes (the “Indenture”) and Group and each of Group’s domestic subsidiaries became party to the Indenture pursuant to a supplemental indenture to the Indenture and the obligations under the Indenture became obligations solely of Group and each of Group’s domestic subsidiaries. Holdings also provided a guarantee of the 2021 Notes but Holdings is not subject to the covenants under the Indenture. The net proceeds from the offering were \$195.8 million after deducting commissions and offering expenses. The net proceeds from the offering are intended to be used for general corporate purposes.

In the second quarter of 2016, the Company paid \$10.9 million for the purchase of \$10.8 million of par value and accrued interest on its 2021 Notes reducing the principal amount to \$189.2 million and resulting in a loss on extinguishment of \$0.2 million. The loss resulted from the write off of the remaining unamortized debt issuance costs related to the purchased notes.

The 2021 Notes bear interest at a rate of 5.625% per year and will mature on April 15, 2021. Interest is paid semi-annually on April 15 and October 15. The 2021 Notes are senior unsecured obligations of Group and are guaranteed on a senior unsecured basis by Holdings. The 2021 Notes are effectively subordinated in right of payment to all of Group’s and each guarantor’s secured indebtedness and future secured indebtedness, if any, to the extent of the value of the assets securing such indebtedness. The 2021 Notes are equal in right of payment with Group’s and each guarantor’s unsecured indebtedness that is not subordinated in right of payment to the 2021 Notes. The 2021 Notes rank senior in right of payment to Group’s and each guarantor’s future subordinated debt, if any; and are structurally subordinated in right of payment to all indebtedness and other liabilities of any of the Group’s subsidiaries that are not guarantors, which only consist of immaterial subsidiaries and foreign subsidiaries that do not guarantee other indebtedness of Group.

COGENT COMMUNICATIONS HOLDINGS, INC., AND SUBSIDIARIES
NOTES TO CONSOLIDATED FINANCIAL STATEMENTS (Continued)

4. Long-term debt: (Continued)

Group may also redeem the 2021 Notes, in whole or in part, at any time on or after April 15, 2017 at the applicable redemption prices specified under the indenture governing the 2021 Notes plus accrued and unpaid interest, if any, to the date of redemption. The redemption prices (expressed as a percentage of the principal amount) are 104.219% during the 12-month period beginning on April 15, 2017, 102.813% during the 12-month period beginning on April 15, 2018, 101.406% during the 12-month period beginning on April 15, 2019 and 100.0% during the 12-month period beginning on April 15, 2020 and thereafter. If Group experiences specific kinds of changes of control, Group must offer to repurchase all of the 2021 Notes at a purchase price of 101.0% of their principal amount, plus accrued and unpaid interest, if any, to the repurchase date.

Limitations under the indentures

The indentures governing the 2024 Notes, 2022 Notes and 2021 Notes, among other things, limit the Company's ability to incur indebtedness; to pay dividends or make other distributions; to make certain investments and other restricted payments; to create liens; consolidate, merge, sell or otherwise dispose of all or substantially all of its assets; to incur restrictions on the ability of a subsidiary to pay dividends or make other payments; and to enter into certain transactions with its affiliates. Limitations on the ability to incur additional indebtedness (excluding IRU agreements incurred in the normal course of business) include a restriction on incurring additional indebtedness if the Company's consolidated leverage ratio, as defined in the indentures, is greater than 6.0 for the 2024 Notes and greater than 5.0 for the 2022 Notes and 2021 Notes. Limitations on the ability to incur additional secured indebtedness include a restriction on incurring additional secured indebtedness if the Company's consolidated secured leverage ratio, as defined in the indentures, is greater than 4.0 for the 2024 Notes and greater than 3.5 for the 2022 Notes and 2021 Notes. The indentures prohibit certain payments, such as dividends and stock purchases, when the Company's consolidated leverage ratio, as defined by the indentures, is greater than 4.25. A certain amount of such unrestricted payments is permitted notwithstanding this prohibition. The unrestricted payment amount may be increased by the Company's consolidated cash flow, as defined in the indentures, as long as the Company's consolidated leverage ratio is less than 4.25. The Company's consolidated leverage ratio was above 4.25 as of December 31, 2019. As of December 31, 2019, a total of \$110.3 million (primarily held by Holdings in cash and cash equivalents) was permitted for investment payments including dividends and stock purchases.

Long-term debt maturities

The aggregate future contractual maturities of long-term debt were as follows as of December 31, 2019 (in thousands):

<u>For the year ending December 31,</u>	
2020	\$ 9,413
2021	192,299
2022	445,000
2023	—
2024	151,411
Thereafter	—
Total	<u>\$ 798,123</u>

COGENT COMMUNICATIONS HOLDINGS, INC., AND SUBSIDIARIES
NOTES TO CONSOLIDATED FINANCIAL STATEMENTS (Continued)

5. Income taxes:

On December 22, 2017, the President of the United States signed into law the Tax Cuts and Jobs Act (the "TCJA"). The TCJA amended the Internal Revenue Code and reduced the corporate tax rate from a maximum of 35% to a flat 21% rate. The rate reduction was effective on January 1, 2018. The Company's net deferred tax assets represent a decrease in corporate taxes expected to be paid in the future. Under generally accepted accounting principles deferred tax assets and liabilities are recognized for the future tax consequences attributable to differences between the financial statement carrying amounts of existing assets and liabilities and their respective tax basis. Deferred tax assets and liabilities are measured using enacted tax rates expected to apply to taxable income in the years in which those temporary differences are expected to be recovered or settled. The Company's net deferred tax asset was determined based on the current enacted federal tax rate of 35% prior to the passage of the Act. As a result of the reduction in the corporate income tax rate from 35% to 21% and other provisions under the TCJA, the Company made reasonable estimates of the effects of the TCJA and revalued its net deferred tax asset at December 31, 2017 resulting in a reduction in the value of its net deferred tax asset of approximately \$9.0 million and recorded a transition tax of \$2.3 million related to its foreign operations for a total of \$11.3 million, which was recorded as additional noncash income tax expense in the year ended December 31, 2017. As of December 31, 2018, the Company had collected all of the necessary data to complete its analysis of the effect of the TCJA on its underlying deferred income taxes and recorded a \$0.1 million reduction in the value to its net deferred tax asset. The TCJA subjects a U.S. shareholder to current tax on global intangible low-taxed income earned by certain foreign subsidiaries. FASB Staff Q&A, Topic 740, No. 5, "Accounting for Global Intangible Low-Taxed Income", states that the Company is permitted to make an accounting policy election to either recognize deferred income taxes for temporary basis differences expected to reverse as global intangible low-taxed income in future years or provide for the income tax expense related to such income in the year the income tax is incurred. The Company has made an accounting policy to record these income taxes as a period cost in the year the income tax is incurred.

The components of income (loss) before income taxes consist of the following (in thousands):

	Years Ended December 31,		
	2019	2018	2017
Domestic	\$ 72,773	\$ 63,878	\$ 52,250
Foreign	(20,099)	(22,496)	(21,132)
Total income before income taxes	\$ 52,674	\$ 41,382	\$ 31,118

The income tax expense is comprised of the following (in thousands):

	Years Ended December 31,		
	2019	2018	2017
<i>Current:</i>			
Federal	\$ —	\$ —	\$ —
State	(2,647)	(1,522)	(353)
Foreign	(370)	(75)	(209)
<i>Deferred:</i>			
Federal	(10,899)	(9,746)	(24,150)
State	(1,285)	(802)	(430)
Foreign	47	(570)	(100)
Total income tax expense	\$ (15,154)	\$ (12,715)	\$ (25,242)

COGENT COMMUNICATIONS HOLDINGS, INC., AND SUBSIDIARIES
NOTES TO CONSOLIDATED FINANCIAL STATEMENTS (Continued)

5. Income taxes: (Continued)

Our consolidated temporary differences comprising our net deferred tax assets are as follows (in thousands):

	December 31,	
	2019	2018
Deferred Tax Assets:		
Net operating loss carry-forwards	\$ 255,269	\$ 255,235
Tax credits	2,261	2,458
Equity-based compensation	4,116	3,322
Operating leases	32,289	—
Total gross deferred tax assets	293,935	261,015
Valuation allowance	(131,069)	(126,579)
	<u>162,866</u>	<u>134,436</u>
Deferred Tax Liabilities:		
Depreciation and amortization	34,884	29,769
Accrued liabilities and other	107,711	101,934
Right-of-use assets	29,670	—
Gross deferred tax liabilities	172,265	131,703
Net deferred tax (liabilities) assets	<u>\$ (9,399)</u>	<u>\$ 2,733</u>

At each balance sheet date, the Company assesses the likelihood that it will be able to realize its deferred tax assets. The Company considers all available positive and negative evidence in assessing the need for a valuation allowance. The Company maintains a full valuation allowance against certain of its deferred tax assets consisting primarily of net operating loss carryforwards related to its foreign operations in Canada, Europe, Asia, Latin America and Australia and net operating losses in the United States that are limited for use under Section 382 of the Internal Revenue Code.

As of December 31, 2019, the Company has combined net operating loss carry-forwards of \$994.0 million. This amount includes federal net operating loss carry-forwards in the United States of \$97.6 million, net operating loss carry-forwards related to its European, Mexican, Canadian and Asian operations of \$890.1 million, \$3.3 million, \$1.8 million and \$1.0 million, respectively. Section 382 of the Internal Revenue Code in the United States limits the utilization of net operating losses when ownership changes, as defined by that section, occur. The Company has performed an analysis of its Section 382 ownership changes and has determined that the utilization of certain of its net operating loss carryforwards in the United States is limited based on the annual Section 382 limitation and remaining carryforward period. Of the net operating losses available at December 31, 2019 in the United States \$38.4 million are limited for use under Section 382. Net operating loss carryforwards outside of the United States totaling \$896.4 million are not subject to limitations similar to Section 382. The net operating loss carryforwards in the United States will expire, if unused, between 2025 and 2036. The net operating loss carry-forwards related to the Company's Mexican, Asian and Canadian operations will expire if unused, between 2020 and 2029. The net operating loss carry-forwards related to the Company's European operations include \$744.6 million that do not expire and \$145.5 million that expire between 2020 and 2035.

Other than the \$2.3 million transition tax recorded in the year ended December 31, 2017 as a result of its foreign earnings the Company has not provided for United States deferred income taxes or foreign withholding taxes on its undistributed earnings for certain non-US subsidiaries earnings or cumulative translation adjustments because these earnings and adjustments are intended to be permanently reinvested in operations outside the United States. It is not practical to determine the amount of the unrecognized deferred tax liability on such undistributed earnings or cumulative translation adjustments.

COGENT COMMUNICATIONS HOLDINGS, INC., AND SUBSIDIARIES
NOTES TO CONSOLIDATED FINANCIAL STATEMENTS (Continued)

5. Income taxes: (Continued)

In the normal course of business the Company takes positions on its tax returns that may be challenged by taxing authorities. The Company evaluates all uncertain tax positions to assess whether the position will more likely than not be sustained upon examination. If the Company determines that the tax position is not more likely than not to be sustained, the Company records a liability for the amount of the benefit that is not more likely than not to be realized when the tax position is settled. The Company does not have a liability for uncertain tax positions at December 31, 2019 and does not expect that its liability for uncertain tax positions will materially increase during the twelve months ended December 31, 2020, however, actual changes in the liability for uncertain tax positions could be different than currently expected. If recognized, changes in the Company's total unrecognized tax benefits would impact the Company's effective income tax rate.

The Company or one of its subsidiaries files income tax returns in the US federal jurisdiction and various state and foreign jurisdictions. The Company is subject to US federal tax and state tax examinations for years 2004 to 2019. The Company is subject to tax examinations in its foreign jurisdictions generally for years 2005 to 2019.

The following is a reconciliation of the Federal statutory income taxes to the amounts reported in the financial statements (in thousands).

	Years Ended December 31,		
	2019	2018	2017
Federal income tax expense at statutory rates	\$ (11,061)	\$ (8,690)	\$ (10,892)
Effect of:			
State income taxes, net of federal benefit	(2,973)	(2,665)	(2,244)
Impact of foreign operations	(11)	(146)	74
Non-deductible expenses	(592)	(1,274)	(1,350)
Federal tax rate change	—	—	(9,046)
Tax effect of TCJA from foreign earnings	(28)	(130)	(2,296)
Other	(581)	(645)	239
Changes in valuation allowance	92	835	273
Income tax expense	<u>\$ (15,154)</u>	<u>\$ (12,715)</u>	<u>\$ (25,242)</u>

6. Commitments and contingencies:

Current and potential litigation

In accordance with the accounting guidance for contingencies, the Company accrues its estimate of a contingent liability when it is both probable that a liability has been incurred and the amount of the loss can be reasonably estimated. Where it is probable that a liability has been incurred and there is a range of expected loss for which no amount in the range is more likely than any other amount, the Company accrues at the low end of the range. The Company reviews its accruals at least quarterly and adjusts them to reflect the impact of negotiations, settlements, rulings, advice of legal counsel, and other information and events pertaining to a particular matter. The Company has taken certain positions related to its obligations for leased circuits for which it is reasonably possible could result in a loss of up to \$3.1 million in excess of the amount accrued at December 31, 2019.

The Company is engaged in an arbitration proceeding in Spain in which a former provider of optical fiber to the Company is seeking approximately \$9.0 million for Company's early termination of the optical fiber leases, which amount the Company accrued in 2015. The Company has counterclaimed for damages and is contesting its obligation to pay the termination liability. The arbitration is being conducted by the Civil and Commercial Arbitration Court (CIMA) in Madrid, Spain.

COGENT COMMUNICATIONS HOLDINGS, INC., AND SUBSIDIARIES
NOTES TO CONSOLIDATED FINANCIAL STATEMENTS (Continued)

6. Commitments and contingencies: (Continued)

In the ordinary course of business the Company is involved in other legal activities and claims. Because such matters are subject to many uncertainties and the outcomes are not predictable with assurance, the liability related to these legal actions and claims cannot be determined with certainty. Management does not believe that such claims and actions will have a material impact on the Company's financial condition or results of operations. Judgment is required in estimating the ultimate outcome of any dispute resolution process, as well as any other amounts that may be incurred to conclude the negotiations or settle any litigation. Actual results may differ from these estimates under different assumptions or conditions and such differences could be material.

Leases

The Company enters into leases for network equipment sites and data center facilities. Future minimum annual payments under these arrangements are as follows (in thousands):

<u>For the year ending December 31,</u>	
2020	\$ 21,044
2021	10,983
2022	5,362
2023	3,348
2024	1,511
Thereafter	1,944
	<u>\$ 44,192</u>

Expenses related to these arrangements were \$20.6 million in 2019, \$20.8 million in 2018 and \$19.2 million in 2017. Short-term lease expense as required to be disclosed under ASU 2016-02 was \$0.9 million for the year ended December 31, 2019.

Unconditional purchase obligations

Unconditional purchase obligations for equipment and services totaled \$7.6 million at December 31, 2019. As of December 31, 2019, the Company had also committed to additional dark fiber IRU capital and operating lease agreements totaling \$20.3 million in future payments to be paid over periods of up to 20 years. These obligations begin when the related fiber is accepted, which is generally expected to occur in 2020. Future minimum payments under these obligations are \$4.6 million, \$0.6 million, \$0.7 million, \$0.7 million and \$0.6 million for the years ending December 31, 2020 to December 31, 2024, respectively, and \$13.0 million, thereafter.

Defined contribution plan

The Company sponsors a 401(k) defined contribution plan that provides for a Company matching payment. The Company matching payments were paid in cash and were \$0.8 million for 2019, \$0.8 million for 2018 and \$0.7 million for 2017.

COGENT COMMUNICATIONS HOLDINGS, INC., AND SUBSIDIARIES
NOTES TO CONSOLIDATED FINANCIAL STATEMENTS (Continued)

7. Stockholders' equity:

Authorized shares

The Company has 75.0 million shares of authorized \$0.001 par value common stock and 10,000 authorized but unissued shares of \$0.001 par value preferred stock. The holders of common stock are entitled to one vote per common share and, subject to any rights of any series of preferred stock, dividends may be declared and paid on the common stock when determined by the Company's Board of Directors.

Common stock buybacks

The Company's Board of Directors has approved \$50.0 million for purchases of the Company's common stock under a buyback program (the "Buyback Program"). At December 31, 2019, there was \$34.9 million remaining for purchases under the Buyback Program. During 2018 and 2017 the Company purchased 147,995 and 46,750 shares of its common stock for \$6.6 million and \$1.8 million, respectively. These shares of common stock were subsequently retired. There were no purchases of common stock in 2019.

Dividends on common stock

Dividends are recorded as a reduction to retained earnings. Dividends on unvested restricted shares of common stock are paid as the awards vest. The Company's initial quarterly dividend payment was made in the third quarter of 2012.

The payment of any future dividends and any other returns of capital, including stock buybacks, will be at the discretion of the Company's Board of Directors and may be reduced, eliminated or increased and will be dependent upon the Company's financial position, results of operations, available cash, cash flow, capital requirements, limitations under the Company's debt indentures and other factors deemed relevant by the Company's Board of Directors. The Company is a Delaware Corporation and under the General Corporate Law of the State of Delaware distributions may be restricted including a restriction that distributions, including stock purchases and dividends, do not result in an impairment of a corporation's capital, as defined under Delaware Law. The indentures governing the Company's notes limit the Company's ability to return cash to its stockholders.

8. Stock option and award plan:

Incentive award plan

The Company grants restricted stock and options for common stock under its award plan, as amended (the "Award Plan"). Stock options granted under the Award Plan generally vest over a four-year period and have a term of ten years. Grants of shares of restricted stock granted under the Award Plan generally vest over periods ranging from three to four years. Compensation expense for all awards is recognized on a straight-line basis over the service period. Awards with graded vesting terms that are subject only to service conditions are recognized on a straight-line basis. Certain option and share grants provide for accelerated vesting if there is a change in control, as defined. For grants of restricted stock, when an employee terminates prior to full vesting the employee retains their vested shares and the employees' unvested shares are returned to the plan. For grants of options for common stock, when an employee terminates prior to full vesting, the employee may elect to exercise their vested options for a period of ninety days and any unvested options are returned to the plan. Shares issued to satisfy awards are provided from the Company's authorized shares. The vesting of certain shares granted to the Company's executives in 2017, 2018 and 2019 as defined under the award agreements are subject to certain performance conditions and the vesting of certain shares granted to the Company's CEO in 2017, 2018 and 2019 is subject to the total shareholder return of the Company's common stock compared to the total shareholder return of the Nasdaq Telecommunications Index.

COGENT COMMUNICATIONS HOLDINGS, INC., AND SUBSIDIARIES
NOTES TO CONSOLIDATED FINANCIAL STATEMENTS (Continued)

8. Stock option and award plan: (Continued)

The accounting for equity-based compensation expense requires the Company to make estimates and judgments that affect its financial statements. These estimates for stock options include the following.

Expected Dividend Yield—The Company uses an expected dividend yield based upon expected annual dividends and the Company's stock price.

Expected Volatility—The Company uses its historical volatility for a period commensurate with the expected term of the option.

Risk-Free Interest Rate—The Company uses the zero coupon US Treasury rate during the quarter having a term that most closely resembles the expected term of the option.

Expected Term of the Option—The Company estimates the expected life of the option term by analyzing historical stock option exercises.

Forfeiture Rates—The Company estimates its forfeiture rate based on historical data with further consideration given to the class of employees to whom the options or shares were granted.

The weighted-average per share grant date fair value of options was \$8.92 in 2019, \$8.45 in 2018 and \$7.06 in 2017. The following assumptions were used for determining the fair value of options granted in the three years ended December 31, 2019:

Black-Scholes Assumptions	Years Ended December 31,		
	2019	2018	2017
Dividend yield	4.5 %	4.6 %	4.1 %
Expected volatility	28.3 %	28.7 %	27.1 %
Risk-free interest rate	2.5 %	2.5 %	2.0 %
Expected life of the option term (in years)	4.3	4.4	4.5

Stock option activity under the Company's Award Plan during the year ended December 31, 2019, was as follows:

	Number of Options	Weighted-Average Exercise Price
Outstanding at December 31, 2018	168,547	\$ 41.01
Granted	68,552	\$ 55.44
Cancelled and expired	(37,416)	\$ 49.11
Exercised—intrinsic value \$0.8 million; cash received \$1.6 million	(43,017)	\$ 38.06
Outstanding at December 31, 2019—\$3.1 million intrinsic value and 7.5 years weighted-average remaining contractual term	156,666	\$ 46.21
Exercisable at December 31, 2019—\$2.2 million intrinsic value and 6.3 years weighted-average remaining contractual term	88,377	\$ 41.27
Expected to vest—\$2.9 million intrinsic value and 7.3 years weighted-average remaining contractual term	138,392	\$ 45.21

COGENT COMMUNICATIONS HOLDINGS, INC., AND SUBSIDIARIES
NOTES TO CONSOLIDATED FINANCIAL STATEMENTS (Continued)

8. Stock option and award plan: (Continued)

A summary of the Company's non-vested restricted stock awards as of December 31, 2019 and the changes during the year ended December 31, 2019 are as follows:

<u>Non-vested awards</u>	<u>Shares</u>	<u>Weighted-Average Grant Date Fair Value</u>
Non-vested at December 31, 2018	1,187,586	\$ 41.12
Granted	473,550	\$ 53.53
Vested	(365,223)	\$ 41.83
Forfeited	(12,632)	\$ 50.49
Non-vested at December 31, 2019	<u>1,283,281</u>	<u>\$ 45.40</u>

The weighted average per share grant date fair value of restricted stock granted was \$53.53 in 2019 (0.5 million shares) \$44.02 in 2018 (0.5 million shares) and \$40.52 in 2017 (0.5 million shares). The fair value was determined using the quoted market price of the Company's common stock on the date of grant. Valuations were obtained to determine the fair value for the shares granted to the Company's CEO that are subject to the total shareholder return of the Company's common stock compared to the total shareholder return of the Nasdaq Telecommunications Index. The fair value of shares of restricted stock vested in 2019, 2018 and 2017 was \$20.8 million, \$19.1 million and \$12.6 million, respectively.

Equity-based compensation expense related to stock options and restricted stock was \$18.5 million, \$17.7 million, and \$13.3 million for 2019, 2018, and 2017, respectively. The income tax benefit related to stock options and restricted stock was \$3.0 million, \$1.8 million, and \$2.5 million for 2019, 2018, and 2017, respectively. The Company capitalized compensation expense related to stock options and restricted stock for 2019, 2018, and 2017 of \$1.8 million, \$1.7 million and \$1.2 million, respectively. As of December 31, 2019, there was \$31.7 million of total unrecognized compensation cost related to non-vested equity-based compensation awards. That cost is expected to be recognized over a weighted average period of 1.9 years.

9. Related party transactions:*Office lease*

The Company's headquarters is located in an office building owned by Sodium LLC whose owner is the Company's Chief Executive Officer. The fixed annual rent for the headquarters building is \$1.0 million per year plus an allocation of taxes and utilities. The lease began in May 2015 and the lease term was for five years. In February 2020 the lease term was extended to May 2025. The lease is cancellable by the Company upon 60 days' notice. The Company's audit committee reviews and approves all transactions with related parties. The Company paid \$1.7 million in 2019, \$1.7 million in 2018 and \$1.6 million in 2017 for rent and related costs (including taxes and utilities) for this lease.

COGENT COMMUNICATIONS HOLDINGS, INC., AND SUBSIDIARIES
NOTES TO CONSOLIDATED FINANCIAL STATEMENTS (Continued)

10. Geographic information:

Operating segments are defined as components of an enterprise about which separate financial information is available that is evaluated regularly by the chief operating decision maker in deciding how to allocate resources and in assessing the Company's performance. The Company has one operating segment. Revenues are attributed to regions based on where the services are provided. Below are the Company's service revenues and long lived assets by geographic region (in thousands):

Year Ended December 31, 2019 Revenues	On-net	Off-net	Non-core	Total
North America	\$ 319,330	\$ 131,815	\$ 422	\$ 451,567
Europe	72,320	16,323	53	88,696
Asia Pacific	4,615	778	—	5,393
Latin America	488	15	—	503
Total	<u>\$ 396,753</u>	<u>\$ 148,931</u>	<u>\$ 475</u>	<u>\$ 546,159</u>
Year Ended December 31, 2018 Revenues	On-net	Off-net	Non-core	Total
North America	\$ 299,021	\$ 128,510	\$ 572	\$ 428,103
Europe	72,958	15,918	62	88,938
Asia Pacific	2,562	576	—	3,138
Latin America	14	—	—	14
Total	<u>\$ 374,555</u>	<u>\$ 145,004</u>	<u>\$ 634</u>	<u>\$ 520,193</u>
Year Ended December 31, 2017 Revenues	On-net	Off-net	Non-core	Total
North America	\$ 278,714	\$ 122,683	\$ 797	\$ 402,194
Europe	66,588	14,867	41	81,496
Asia Pacific	1,143	342	—	1,485
Total	<u>\$ 346,445</u>	<u>\$ 137,892</u>	<u>\$ 838</u>	<u>\$ 485,175</u>
		December 31,	December 31,	
		2019	2018	
<i>Long lived assets, net</i>				
North America		\$ 269,364	\$ 275,367	
Europe and other		99,582	99,978	
Total		<u>\$ 368,946</u>	<u>\$ 375,345</u>	

11. Quarterly financial information (unaudited):

	Three months ended			
	March 31, 2019	June 30, 2019	September 30, 2019	December 31, 2019
	(in thousands, except share and per share amounts)			
Service revenue	\$ 134,137	\$ 134,789	\$ 136,942	\$ 140,292
Network operations, including equity-based compensation expense	54,150	54,407	55,253	55,990
Gains on equipment transactions	536	185	87	251
Operating income	24,400	22,022	25,799	28,033
Net income (1)	9,217	7,136	13,701	7,465
Net income per common share—basic and diluted	0.20	0.16	0.30	0.16
Weighted-average number of common shares—basic	45,223,157	45,354,327	45,438,656	45,553,727
Weighted-average number of common shares—diluted	45,644,236	45,912,291	46,019,691	46,145,970

COGENT COMMUNICATIONS HOLDINGS, INC., AND SUBSIDIARIES
NOTES TO CONSOLIDATED FINANCIAL STATEMENTS (Continued)

11. Quarterly financial information (unaudited): (Continued)

	Three months ended			
	March 31, 2018	June 30, 2018	September 30, 2018	December 31, 2018
	(in thousands, except share and per share amounts)			
Service revenue	\$ 128,706	\$ 129,296	\$ 130,139	\$ 132,049
Network operations, including equity-based compensation expense	54,875	54,379	54,615	55,660
Gains on equipment transactions	117	357	416	92
Operating income	20,637	21,354	22,255	22,311
Net income	6,784	6,552	8,231	7,100
Net income per common share—basic and diluted	0.15	0.15	0.18	0.16
Weighted-average number of common shares—basic	44,923,973	45,016,767	45,105,830	45,284,481
Weighted-average number of common shares—diluted	45,294,697	45,536,473	45,699,635	45,803,418

(1) Included in net income for the three months ended September 30, 2019 and December 31, 2019 are an unrealized gain and (loss) on foreign exchange on the Company's 2024 Notes of \$6.1 million and (\$4.0) million, respectively.

12. Subsequent Events:*Dividend*

On February 26, 2020, the Company's Board of Directors approved the payment of its quarterly dividend of \$0.66 per common share. The dividend for the first quarter of 2020 will be paid to holders of record on March 13, 2020. This estimated \$30.1 million dividend payment is expected to be made on March 27, 2020.

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

None.

ITEM 9A. CONTROLS AND PROCEDURES

We maintain disclosure controls and procedures that are designed to ensure that information required to be disclosed in our reports under the Securities Exchange Act of 1934, as amended, is recorded, processed, summarized and reported within the time periods specified in the Securities and Exchange Commission's rules and forms, and that such information is accumulated and communicated to our management, including our Chief Executive Officer and Chief Financial Officer, as appropriate, to allow timely decisions regarding required disclosure. In designing and evaluating the disclosure controls and procedures, management recognized that any controls and procedures, no matter how well designed and operated, can provide only reasonable assurance of achieving the desired control objectives, and management necessarily was required to apply its judgment in evaluating the cost-benefit relationship of possible controls and procedures.

As required by SEC Rule 13a-15(b), an evaluation was performed under the supervision and with the participation of our management, including our principal executive officer and our principal financial officer, of the effectiveness of the design and operation 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 of the end of the period covered by this report. Based upon that evaluation, our management, including our principal executive officer and our principal financial officer, concluded that the design and operation of these disclosure controls and procedures were effective at the reasonable assurance level.

There has been no change in our internal control over financial reporting during our most recent fiscal quarter that has materially affected, or is reasonably likely to materially affect, our internal control over financial reporting.

Report of Ernst & Young LLP, Independent Registered Public Accounting Firm

To the Stockholders and the Board of Directors of Cogent Communications Holdings, Inc.

Opinion on Internal Control over Financial Reporting

We have audited Cogent Communications Holdings, Inc. and subsidiaries' internal control over financial reporting as of December 31, 2019, based on criteria established in Internal Control—Integrated Framework issued by the Committee of Sponsoring Organizations of the Treadway Commission (2013 framework) (the COSO criteria). In our opinion, Cogent Communications Holdings, Inc. and subsidiaries (the Company) maintained, in all material respects, effective internal control over financial reporting as of December 31, 2019, based on the COSO criteria.

We also have audited, in accordance with the standards of the Public Company Accounting Oversight Board (United States) (PCAOB), the consolidated balance sheets of the Cogent Communications Holdings, Inc. and subsidiaries as of December 31, 2019 and 2018, the related consolidated statements of comprehensive income (loss), changes in stockholders' equity (deficit) and cash flows for each of the three years in the period ended December 31, 2019, and the related notes and financial statement schedule listed in the Index at Item 15(a)2 (collectively referred to as the "consolidated financial statements") and our report dated February 28, 2020 expressed an unqualified opinion thereon.

Basis for Opinion

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

We conducted our audit in accordance with the standards of the PCAOB. Those standards require that we plan and perform the audit to obtain reasonable assurance about whether effective internal control over financial reporting was maintained in all material respects.

Our audit included obtaining an understanding of internal control over financial reporting, assessing the risk that a material weakness exists, testing and evaluating the design and operating effectiveness of internal control based on the assessed risk, and performing such other procedures as we considered necessary in the circumstances. We believe that our audit provides a reasonable basis for our opinion.

Definition and Limitations of Internal Control Over Financial Reporting

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

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

/s/ Ernst & Young LLP

Tysons, VA
February 28, 2020

ITEM 9B. OTHER INFORMATION

None.

PART III

ITEM 10. DIRECTORS, EXECUTIVE OFFICERS AND CORPORATE GOVERNANCE

The information required by this Item 10 is incorporated in this report by reference to the information set forth under the captions entitled “Proposal No. 1- Election of Directors,” “Executive Officers and Significant Employees,” “The Board of Directors and Committees,” and, if applicable, “Delinquent Section 16(a) Reports” in our Proxy Statement for the 2020 Annual Meeting of Stockholders, which is expected to be filed with the Securities and Exchange Commission within 120 days after the close of our fiscal year(the “2020 Proxy Statement”).

ITEM 11. EXECUTIVE COMPENSATION

The information required by this Item 11 is incorporated in this report by reference to the information set forth under the captions entitled “The Board of Directors and Committees,” “Compensation Discussion and Analysis “Employment Agreements and Other Potential Post-Employment Compensation Arrangements”, “Compensation Committee Report on Executive Compensation,” and “Compensation Committee Interlocks and Insider Participation” in our 2020 Proxy Statement.

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

The information required by this Item 12 is incorporated in this report by reference to the information set forth under the caption “Security Ownership of Certain Beneficial Owners and Management” and “Securities Authorized for Issuance Under Equity Compensation Plans” in our 2020 Proxy Statement.

ITEM 13. CERTAIN RELATIONSHIPS AND RELATED TRANSACTIONS AND DIRECTOR INDEPENDENCE

The information required by this Item 13 is incorporated in this report by reference to the information set forth under the caption “Certain Relationships and Related Transactions” and “The Board of Directors and Committees” in our 2020 Proxy Statement.

ITEM 14. PRINCIPAL ACCOUNTANT FEES AND SERVICES

The information required by this Item 14 is incorporated in this report by reference to the information set forth under the caption “Relationship With Independent Registered Public Accountants” in our 2020 Proxy Statement.

PART IV

ITEM 15. EXHIBITS, FINANCIAL STATEMENT SCHEDULES

- (a) 1. Financial Statements. A list of financial statements included herein is set forth in the Index to Financial Statements appearing in “ITEM 8. FINANCIAL STATEMENTS AND SUPPLEMENTARY DATA.”
2. Financial Statement Schedules. The Financial Statement Schedule described below is filed as part of the report.

Description

Schedule II—Valuation and Qualifying Accounts.

All other financial statement schedules are not required under the relevant instructions or are inapplicable and therefore have been omitted.

(b) Exhibits

- 2.1 [Agreement and Plan of Reorganization, dated as of May 15, 2014, by and among Cogent Communications Group, Inc., Cogent Communications Holdings, Inc. and Merger Sub \(previously filed as Exhibit 2.1 to our Current Report on Form 8-K, filed on May 15, 2014, and incorporated herein by reference\).](#)
- 3.1 [Certificate of Incorporation of Cogent Communications Holdings, Inc. \(previously filed as Exhibit 3.1 to our Current Report on Form 8-K, filed on May 15, 2014, and incorporated herein by reference\).](#)
- 3.2 [Bylaws of Cogent Communications Holdings, Inc., as amended and restated on September 10, 2018 \(previously filed as Exhibit 3.2 to our Current Report on Form 8-K/A, filed on September 10, 2018, and incorporated herein by reference\).](#)
- 4.1 [Indenture to the 5.625% Senior Notes due 2021, dated as of April 9, 2014, between Cogent Communications Finance, Inc. \(to which Cogent Communications Group, Inc. is successor by merger\) and Wilmington Trust, National Association, as trustee \(filed as Exhibit 4.1 to our Current Report on Form 8-K, filed on April 10, 2014, and incorporated herein by reference\).](#)
- 4.2 [Form of 5.625% Senior Notes due 2021 \(previously filed as Exhibit A to the Exhibit 4.1 to our Current Report on Form 8-K, filed on April 10, 2014, and incorporated herein by reference\).](#)
- 4.3 [First Supplemental Indenture related to the 5.625% Senior Notes due 2021, dated as of June 23, 2014, among Cogent Communications Group, Inc., Cogent Communications Holdings, Inc., the subsidiary guarantors named therein and Wilmington Trust, National Association, as trustee \(previously filed as Exhibit 4.1 to our Current Report on Form 8-K, filed on June 26, 2014, and incorporated herein by reference\).](#)
- 4.4 [Indenture related to the 5.375% Senior Secured Notes due 2022, dated as of February 20, 2015, among Cogent Communications Group, Inc., the guarantors named therein and Wilmington Trust, National Association, as trustee and collateral agent \(previously filed as Exhibit 4.1 to our Current Report on Form 8-K, filed on February 20, 2015 and incorporated herein by reference\).](#)
- 4.5 [Form of 5.375% Senior Secured Notes due 2022 \(previously filed as Exhibit A to the Exhibit 4.1 to our Current Report on Form 8-K, filed on February 20, 2015 and incorporated herein by reference\).](#)
- 4.6 [First Supplemental Indenture related to the 5.375% Senior Secured Notes due 2022, dated as of December 2, 2016, among Cogent Communications Group, Inc., the guarantors named therein and Wilmington Trust, National Association, as trustee and collateral agent \(previously filed as Exhibit 4.1 to our Current Report on Form 8-K, filed on December 2, 2016 and incorporated herein by reference\).](#)

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- 4.7 [Second Supplemental Indenture related to the 5.375% Senior Secured Notes due 2022, dated as of August 20, 2018, among Cogent Communications Group, Inc., the guarantors named therein and Wilmington Trust, National Association, as trustee and collateral agent \(previously filed as Exhibit 4.1 to our Current Report on Form 8-K, filed on August 20, 2018 and incorporated herein by reference\).](#)
- 4.8 [Indenture related to the 4.375% Senior Notes due 2024, dated as of June 25, 2019, among Cogent Communications Group, Inc., the guarantors named therein, Wilmington Trust, National Association, as trustee, Deutsche Bank AG, London Branch, as paying agent, and Deutsche Bank Luxembourg S.A., as authentication agent and registrar \(previously filed as Exhibit 4.1 to our Current Report on Form 8-K, filed on June 25, 2019, and incorporated herein by reference\).](#)
- 4.9 [Form of 4.375% Senior Notes due 2024 \(previously filed as Exhibit A to the Exhibit 4.1 to our Current Report on Form 8-K, filed on June 25, 2019, and incorporated herein by reference\).](#)
- 4.10 [Description of Securities Registered under Section 12 of the Securities Exchange Act of 1934 \(filed herewith\)](#)
- 10.1 [Dark Fiber IRU Agreement, dated April 14, 2000, between WiTel Communications, Inc. and Cogent Communications, Inc., as amended June 27, 2000, December 11, 2000, January 26, 2001, and February 21, 2001 \(incorporated by reference to Exhibit 10.2 to our Registration Statement on Form S-4, Commission File No. 333-71684, filed on October 16, 2001\)*](#)
- 10.2 [David Schaeffer Employment Agreement with Cogent Communications Group, Inc., dated February 7, 2000 \(incorporated by reference to Exhibit 10.6 to our Registration Statement on Form S-4, Commission File No. 333-71684, filed on October 16, 2001\)](#)
- 10.3 [Robert N. Beury, Jr. Employment Agreement with Cogent Communications Group, Inc., dated June 15, 2000 \(incorporated by reference to Exhibit 10.20 to our Annual Report on Form 10-K, filed on March 31, 2003\).](#)
- 10.4 [Timothy G. O'Neill Employment Agreement with Cogent Communications Group, Inc., dated as of September 25, 2003 \(previously filed as Exhibit 10.29 to our Annual Report on Form 10-K, filed on February 27, 2012, and incorporated herein by reference\).](#)
- 10.5 [Brad Kummer Employment Agreement with Cogent Communications Group, Inc., dated January 11, 2000, \(incorporated by reference to Exhibit 10.23 to our Registration Statement on Form S-1, Commission File No. 333-122821, filed on February 14, 2005\).](#)
- 10.6 [David Schaeffer Amendment No. 2 to Employment Agreement with Cogent Communications Group, Inc., dated as of March 12, 2007 \(previously filed as Exhibit 10.26 to our Annual Report on Form 10-K, filed on March 14, 2007, and incorporated herein by reference\).](#)
- 10.7 [Robert N. Beury, Jr. Employment Agreement with Cogent Communications Group, Inc., dated as of March 12, 2007 \(previously filed as Exhibit 10.27 to our Annual Report on Form 10-K, filed on March 14, 2007, and incorporated herein by reference\).](#)
- 10.8 [Thaddeus G. Weed Employment Agreements, dated September 25, 2003 through October 26, 2006 \(previously filed as Exhibit 10.28 to our Annual Report on Form 10-K, filed on March 14, 2007, and incorporated herein by reference\).](#)
- 10.9 [Amendment No. 3 to Employment Agreement of Dave Schaeffer, dated as of August 7, 2007 \(previously filed as Exhibit 10.2 to our Quarterly Report on Form 10-Q, filed on August 8, 2007, and incorporated herein by reference\).](#)
- 10.10 [Amendment No. 4 to Employment Agreement of Dave Schaeffer, dated as of February 26, 2010 \(previously filed as Exhibit 10.25 to our Annual Report on Form 10-K, filed on March 1, 2010, and incorporated herein by reference\).](#)

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- 10.11 [Amendment No. 5 to Employment Agreement of Dave Schaeffer, dated April 7, 2010 \(previously filed as Exhibit 10.1 to our Current Report on Form 8-K, filed on April 7, 2010, and incorporated herein by reference\).](#)
- 10.12 [Cogent Communications Holdings, Inc. 2004 Incentive Award Plan \(as amended through April 17, 2014\) \(previously filed as Exhibit 10.1 to our Current Report on Form 8-K, filed April 18, 2014, and incorporated herein by reference\).](#)
- 10.13 [Assignment and Assumption Agreement, dated as of May 15, 2014, by and between Cogent Communications Group, Inc. and Cogent Communications Holdings, Inc. assuming the obligations of the 2004 Incentive Award Plan \(previously filed as Exhibit 10.1 to our Current Report on Form 8-K, filed on May 15, 2014, and incorporated herein by reference\).](#)
- 10.14 [Amendment No. 6 to Employment Agreement of Dave Schaeffer, dated August 6, 2014 \(previously filed as Exhibit 10.4 to our Quarterly Report on Form 10-Q, filed on August 7, 2014, and incorporated herein by reference\).](#)
- 10.15 [Restricted Stock Award to Mr. Schaeffer dated August 6, 2014—monthly vest \(previously filed as Exhibit 10.5 to our Quarterly Report on Form 10-Q, filed on August 7, 2014, and incorporated herein by reference\).](#)
- 10.16 [Restricted Stock Award to Mr. Schaeffer dated August 6, 2014—cliff vest \(previously filed as Exhibit 10.6 to our Quarterly Report on Form 10-Q, filed on August 7, 2014, and incorporated herein by reference\).](#)
- 10.17 [Restricted Stock Award, dated as of November 3, 2014, between the Company and Thaddeus \(“Tad”\) Weed \(previously filed Exhibit 10.1 to our Current Report on Form 8-K, filed on November 5, 2014, and incorporated herein by reference\).](#)
- 10.18 [Restricted Stock Award, dated as of November 3, 2014, between the Company and Robert Beury \(previously filed Exhibit 10.3 to our Current Report on Form 8-K, filed on November 5, 2014, and incorporated herein by reference\).](#)
- 10.19 [Restricted Stock Award, dated as of November 3, 2014, between the Company and Timothy O’Neill \(previously filed Exhibit 10.4 to our Current Report on Form 8-K, filed on November 5, 2014, and incorporated herein by reference\).](#)
- 10.20 [Restricted Stock Award to James Bubeck dated September 28, 2015 \(previously filed Exhibit 10.1 to our Current Report on Form 8-K, filed on October 1, 2015, and incorporated herein by reference\).](#)
- 10.21 [Restricted Stock Award to James Bubeck dated December 1, 2014 \(previously filed Exhibit 10.2 to our Current Report on Form 8-K, filed on October 1, 2015, and incorporated herein by reference\).](#)
- 10.22 [Restricted Stock Award, dated as of May 4, 2016, between the Company and David Schaeffer \(previously filed Exhibit 10.1 to our Current Report on Form 8-K, filed on May 5, 2016, and incorporated herein by reference\).](#)
- 10.23 [Form of Restricted Stock Award, dated as of May 4, 2016, between the Company and the Vice President named executive officers \(previously filed Exhibit 10.2 to our Current Report on Form 8-K, filed on May 5, 2016, and incorporated herein by reference\).](#)
- 10.24 [Lease Agreement, dated April 16, 2015, between Sodium LLC and Cogent Communications, Inc. \(previously filed Exhibit 10.1 to our Current Report on Form 8-K, filed on April 17, 2015, and incorporated herein by reference\).](#)
- 10.25 [Restricted Stock Award, dated as of May 3, 2017, between the Company and David Schaeffer \(previously filed Exhibit 10.1 to our Current Report on Form 8-K, filed on May 3, 2017, and incorporated herein by reference\).](#)

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- 10.26 [Form of Restricted Stock Award, dated as of May 3, 2017, between the Company and the Vice President named executive officers \(previously filed Exhibit 10.2 to our Current Report on Form 8-K, filed on May 3, 2017, and incorporated herein by reference\).](#)
- 10.27 [Amendment No. 7 to Employment Agreement of David Schaeffer, dated November 17, 2017 \(previously filed Exhibit 10.1 to our Current Report on Form 8-K, filed on November 20, 2017, and incorporated herein by reference\).](#)
- 10.28 [Cogent Communications Holdings, Inc. 2017 Incentive Award Plan \(incorporated by reference to Appendix A to the Company's Definitive Proxy Statement on Schedule 14A filed March 15, 2019\).](#)
- 10.29 [First Amendment to Cogent Communications Holdings, Inc. 2017 Incentive Award Plan \(incorporated by reference to Appendix B of the Company's Definitive Proxy Statement on Schedule 14A filed March 15, 2019\).](#)
- 10.30 [Amendment No. 8 to Employment Agreement of David Schaeffer, dated February 14, 2020 \(previously filed as Exhibit 10.1 to our Current Report on Form 8-K, filed on February 19, 2020, and incorporated herein by reference\).](#)
- 10.31 [Restricted Stock Award, dated as of February 14, 2020, between the Company and David Schaeffer \(previously filed as Exhibit 10.2 to our Current Report on Form 8-K, filed on February 19, 2020, and incorporated herein by reference\).](#)
- 21.1 [Subsidiaries \(filed herewith\)](#)
- 23.1 [Consent of Ernst & Young LLP \(filed herewith\)](#)
- 31.1 [Certification of Chief Executive Officer \(filed herewith\)](#)
- 31.2 [Certification of Chief Financial Officer \(filed herewith\)](#)
- 32.1 [Certification of Chief Executive Officer \(furnished herewith\)](#)
- 32.2 [Certification of Chief Financial Officer \(furnished herewith\)](#)
- 99.1 [Policy Against Excise Tax Gross-ups on "Golden Parachute" Payments, with effect from April 7, 2010 \(previously filed as Exhibit 99.1 to our Current Report on Form 8-K, filed on April 7, 2010, and incorporated herein by reference\).](#)
- 101 The following materials from the Annual Report on Form 10-K of Cogent Communications Group, Inc. for the year ended December 31, 2019, formatted in iXBRL (Inline eXtensible Business Reporting Language); (i) Consolidated Balance Sheets, (ii) Consolidated Statements of Comprehensive Income (Loss), (iii) Consolidated Statements of Changes in Stockholders' Equity (Deficit), (iv) Consolidated Statements of Cash Flows and (v) Notes to Consolidated Financial Statements.
- 104 Cover Page Interactive Data File (the cover page XBRL tags are embedded within the iXBRL document).

* Confidential treatment requested and obtained as to certain portions. Portions have been omitted pursuant to this request where indicated by an asterisk.

Schedule II
COGENT COMMUNICATIONS HOLDINGS, INC. AND SUBSIDIARIES
VALUATION AND QUALIFYING ACCOUNTS
(in thousands)

Description	Balance at Beginning of Period	Charged to Costs and Expenses	(Deductions)	Balance at End of Period
<i>Allowance for doubtful service accounts receivable (deducted from accounts receivable)(a)</i>				
Year ended December 31, 2017	\$ 1,734	\$ 4,835	\$ (5,070)	\$ 1,499
Year ended December 31, 2018	\$ 1,499	\$ 4,115	\$ (4,351)	\$ 1,263
Year ended December 31, 2019	\$ 1,263	\$ 6,190	\$ (5,682)	\$ 1,771
<i>Deferred tax valuation allowance</i>				
Year ended December 31, 2017	\$ 110,194	\$ 20,102	\$ (623)	\$ 129,673
Year ended December 31, 2018	\$ 129,673	\$ 2,138	\$ (5,232)	\$ 126,579
Year ended December 31, 2019	\$ 126,579	\$ 5,785	\$ (1,295)	\$ 131,069

(a) Bad debt expense, net of recoveries, was approximately \$4.1 million for the year ended December 31, 2019, \$3.3 million for the year ended December 31, 2018 and \$3.7 million for the year ended December 31, 2017.

ITEM 16. FORM 10-K SUMMARY

None

SIGNATURES

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

COGENT COMMUNICATIONS HOLDINGS, INC.

Dated: February 28, 2020

By: /s/ DAVID SCHAEFFER

Name: David Schaeffer

Title: *Chairman and Chief Executive Officer*

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

<u>Signature</u>	<u>Title</u>	<u>Date</u>
<u>/s/ DAVID SCHAEFFER</u> David Schaeffer	Chairman and Chief Executive Officer (Principal Executive Officer)	February 28, 2020
<u>/s/ THADDEUS G. WEED</u>	Thaddeus G. Weed Chief Financial Officer (Principal Financial and Accounting Officer)	February 28, 2020
<u>/s/ CAROLYN KATZ</u> Carolyn Katz	Director	February 28, 2020
<u>/s/ STEVEN BROOKS</u> Steven Brooks	Director	February 28, 2020
<u>/s/ SHERYL KENNEDY</u> Sheryl Kennedy	Director	February 28, 2020
<u>/s/ DAVID BLAKE BATH</u> David Blake Bath	Director	February 28, 2020
<u>/s/ MARC MONTAGNER</u> Marc Montagner	Director	February 28, 2020
<u>/s/ LEWIS H. FERGUSON III</u> Lewis H. Ferguson III	Director	February 28, 2020

**DESCRIPTION OF THE COMPANY'S COMMON STOCK
REGISTERED PURSUANT TO SECTION 12 OF THE
SECURITIES EXCHANGE ACT OF 1934**

Cogent Communications Holdings, Inc. (“our,” “we” or the “Company”) has one class of securities registered under Section 12 of the Securities Exchange Act of 1934, as amended (the “Exchange Act”), our common stock, par value \$0.001 per share (“Common Stock”).

Description of Common Stock

The following description of our Common Stock is a summary and does not purport to be complete. It is subject to, and qualified in its entirety by, reference to our Certificate of Incorporation (the “Certificate of Incorporation”) and our Amended and Restated Bylaws (the “Bylaws”), each of which are incorporated by reference as an exhibit to our Annual Report on Form 10-K. We encourage you to read our Certificate of Incorporation, our Bylaws and the applicable provisions of the General Corporation Law of the State of Delaware, particularly Chapter 1, Title 8 of the Delaware Code and the acts amendatory thereof and supplemental thereto, for additional information.

Authorized Capital Shares

Our authorized capital shares consist of 75,000,000 shares of Common Stock and 10,000 shares of preferred stock, par value \$0.001 per share (“Preferred Stock”). The outstanding shares of our Common Stock are fully paid and nonassessable.

Voting Rights

Holders of Common Stock are entitled to one vote per share on all matters voted on by the stockholders, including the election of directors. Our Common Stock does not have cumulative voting rights with respect to the election of directors.

Dividend Rights

Subject to the rights of holders of any outstanding shares of Preferred Stock, the holders of Common Stock are entitled to receive dividends, if any, as may be declared from time to time by our Board of Directors in its discretion out of funds lawfully available for the payment of dividends.

Liquidation Rights

Upon liquidation or dissolution of the Company, subject to any preferential rights of outstanding shares of Preferred Stock, holders of Common Stock will share ratably in all assets legally available for distribution to our stockholders after the payment of all debts and obligations .

Other Rights and Preferences

Our Common Stock has no sinking fund or redemption provisions or preemptive, conversion or exchange rights. Holders of Common Stock having not less than the minimum number of votes that would be necessary to authorize or take action at a meeting at which all shares entitled to vote thereof were present and voted may act by written consent.

Listing

The Common Stock is traded on The NASDAQ Global Select Market under the trading symbol “CCOI.”

In Effect as of February 1, 2020

Legal Entity	Jurisdiction
COGENT COMMUNICATIONS HOLDINGS, INC.	(Delaware)
subsidiaries:	
COGENT COMMUNICATIONS GROUP, INC.	(Delaware)
COGENT COMMUNICATIONS, INC.	(Delaware)
COGENT COMMUNICATIONS OF CALIFORNIA, INC.	(Delaware)
COGENT IH, LLC	(Delaware)
COGENT WG, LLC	(Delaware)
COGENT RB, LLC	(Delaware)
COGENT TW, LLC	(Delaware)
COGENT COMMUNICATIONS OF D.C., INC.	(Delaware)
COGENT COMMUNICATIONS OF FLORIDA, INC.	(Delaware)
COGENT COMMUNICATIONS OF MARYLAND, INC.	(Delaware)
COGENT COMMUNICATIONS OF TEXAS USA, INC.	(Delaware)
COGENT CANADA, INC.	(Nova Scotia)
CCM COMMUNICATIONS S. de R.L. de C.V.	(Mexico)
COGENT ARGENTINA S.R.L.	(Argentina)
COGENT BRASIL HOLDINGS LTDA.	(Brazil)
COGENT BRASIL TELECOMUNICAÇÕES LTDA.	(Brazil)
COGENT COMMUNICATIONS CHILE LIMITADA	(Chile)
COGENT COLOMBIA S.A.S.	(Colombia)
COGENT PERU S.R.L.	(Peru)
COGENT COMMUNICATIONS AUSTRALIA PTY LTD	(Australia)
COGENT COMMUNICATIONS HONG KONG LIMITED	(Hong Kong)
COGENT JAPAN G.K.	(Japan)
COGENT KOREA, LLC	(South Korea)
COGENT INTERNET SINGAPORE PTE. LTD.	(Singapore)
COGENT TAIWAN LIMITED	(Taiwan)
COGENT SOUTH AFRICA PTY. LTD.	(South Africa)
COGENT EUROPE, S.Á.R.L.	(Luxembourg)
COGENT ALBANIA SH.P.K.	(Albania)
COGENT COMMUNICATIONS BELGIUM SPRL	(Belgium)
COGENT COMMUNICATIONS BULGARIA EOOD	(Bulgaria)
COGENT INTERNET d.o.o.	(Croatia)
COGENT COMMUNICATIONS CZECH REPUBLIC, s.r.o.	(Czech Republic)
COGENT COMMUNICATIONS DENMARK ApS	(Denmark)
COGENT COMMUNICATIONS ESTONIA, OÜ	(Estonia)
COGENT COMMUNICATIONS FINLAND OY	(Finland)
COGENT COMMUNICATIONS FRANCE, SAS	(France)
C.C.D. COGENT COMMUNICATIONS DEUTSCHLAND GMBH (this entity has branch operations in Austria and Sweden)	(Germany)
COGENT HELLAS INTERNET SERVICES SOLE MEMBER LLC	(Greece)
COGENT COMMUNICATIONS HUNGARY, KFT.	(Hungary)
CCE COGENT INTERNET SERVICES LIMITED	(Ireland)
COGENT COMMUNICATIONS ITALIA S.R.L.	(Italy)
COGENT LATVIA SIA	(Latvia)
COGENT LITHUANIA UAB	(Lithuania)
COMPANY FOR INTERNET SERVICES COGENT MACEDONIA DOOEL SKOPJE	(Macedonia)
Î.C.S. COGENT INTERNET MLD S.R.L.	(Moldova)
COGENT COMMUNICATIONS MONTENEGRO d.o.o.	(Montenegro)
COGENT COMMUNICATIONS NETHERLANDS B.V.	(The Netherlands)
COGENT MANAGEMENT BV	(The Netherlands)

COGENT NORWAY AS	(Norway)
COGENT COMMUNICATIONS POLAND Sp. zo. o.	(Poland)
COGENT COMMUNICATIONS PORTUGAL, LDA.	(Portugal)
COGENT COMMUNICATIONS ROMANIA SRL	(Romania)
COGENT SERB d.o.o. BEOGRAD	(Serbia)
COGENT COMMUNICATIONS SLOVAKIA s.r.o.	(Slovak Republic)
COGENT ADRIA, KOMUNIKACIJE , d.o.o.	(Slovenia)
COGENT COMMUNICATIONS ESPAÑA S.L.	(Spain)
COGENT INTERNET SWITZERLAND LLC	(Switzerland)
COGENT COMMUNICATIONS INTERNET SERVICES LLC	(Turkey)
TOV COGENT COMMUNICATIONS UKRAINE	(Ukraine)
COGENT COMMUNICATIONS UK LTD	(United Kingdom)

Consent of Independent Registered Public Accounting Firm

We consent to the incorporation by reference in the following Registration Statements:

- (1) Registration Statement (Form S-8 No. 333-231145) pertaining to the Cogent Communications Holdings, Inc. 2017 Incentive Award Plan.
- (2) Registration Statement (Form S-8 No. 333-217608) pertaining to the Cogent Communications Holdings, Inc. 2017 Incentive Award Plan.
- (3) Registration Statement (Form S-8 No. 333-196528) pertaining to the Cogent Communications Holdings, Inc. 2004 Incentive Award Plan.
- (4) Registration Statement (Form S-8 No. 333-181195) pertaining to the Cogent Communications Holdings, Inc. 2004 Incentive Award Plan.
- (5) Registration Statement (Form S-8 No. 333-166615) pertaining to the Cogent Communications Holdings, Inc. 2004 Incentive Award Plan.
- (6) Registration Statement (Form S-8 No. 333-142759) pertaining to the Cogent Communications Holdings, Inc. 2004 Incentive Award Plan.
- (7) Registration Statement (Form S-8 No. 333-126676) pertaining to the Cogent Communications Holdings, Inc. 2004 Incentive Award Plan.

of our reports dated February 28, 2020, with respect to the consolidated financial statements and schedule listed in the Index at Item 15(a)2 of Cogent Communications Holdings, Inc. and the effectiveness of internal control over financial reporting of Cogent Communications Holdings, Inc. included in this Annual Report (Form 10-K) of Cogent Communications Holdings, Inc. for the year ended December 31, 2019.

/s/ Ernst & Young LLP

Tysons, VA
February 28, 2020

Certification of Chief Executive Officer

I, David Schaeffer, certify that:

1. I have reviewed this Annual Report on Form 10-K of Cogent Communications Holdings, Inc.;
2. Based on my knowledge, this report does not contain any untrue statement of a material fact or omit to state a material fact necessary to make the statements made, in light of the circumstances under which such statements were made, not misleading with respect to the period covered by this report;
3. Based on my knowledge, the financial statements, and other financial information included in this report, fairly present in all material respects the financial condition, results of operations and cash flows of the registrant as of, and for, the periods presented in this report;
4. The registrant's other certifying officer and I are responsible for establishing and maintaining disclosure controls and procedures (as defined in Exchange Act Rules 13a-15(e) and 15d-15(e)) and internal control over financial reporting (as defined in Exchange Act Rules 13a-15(f) and 15d-15(f)) for the registrant and have:
 - a) designed such disclosure controls and procedures, or caused such disclosure controls and procedures to be designed under our supervision, to ensure that material information relating to the registrant, including its consolidated subsidiaries, is made known to us by others within those entities, particularly during the period in which this report is being prepared;
 - b) designed such internal control over financial reporting, or caused such internal control over financial reporting to be designed under our supervision, to provide reasonable assurance regarding the reliability of financial reporting and the preparation of financial statements for external purposes in accordance with generally accepted accounting principles;
 - c) evaluated the effectiveness of the registrant's disclosure controls and procedures and presented in this report our conclusions about the effectiveness of the disclosure controls and procedures, as of the end of the period covered by this report based on such evaluation; and
 - d) disclosed in this report any change in the registrant's internal control over financial reporting that occurred during the registrant's most recent fiscal quarter (the registrant's fourth fiscal quarter in the case of an annual report) that has materially affected, or is reasonably likely to materially affect, the registrant's internal control over financial reporting; and
5. The registrant's other certifying officer and I have disclosed, based on our most recent evaluation of internal control over financial reporting, to the registrant's auditors and the audit committee of the registrant's Board of Directors (or persons performing the equivalent functions):
 - a) all significant deficiencies and material weaknesses in the design or operation of internal control over financial reporting which are reasonably likely to adversely affect the registrant's ability to record, process, summarize and report financial information; and
 - b) any fraud, whether or not material, that involves management or other employees who have a significant role in the registrant's internal control over financial reporting.

Date: February 28, 2020

/s/ DAVID SCHAEFFER

Name: David Schaeffer

Title: *Chief Executive Officer*

Certification of Chief Financial Officer

I, Thaddeus Weed, certify that:

1. I have reviewed this Annual Report on Form 10-K of Cogent Communications Holdings, Inc.;
2. Based on my knowledge, this report does not contain any untrue statement of a material fact or omit to state a material fact necessary to make the statements made, in light of the circumstances under which such statements were made, not misleading with respect to the period covered by this report;
3. Based on my knowledge, the financial statements, and other financial information included in this report, fairly present in all material respects the financial condition, results of operations and cash flows of the registrant as of, and for, the periods presented in this report;
4. The registrant's other certifying officer and I are responsible for establishing and maintaining disclosure controls and procedures (as defined in Exchange Act Rules 13a-15(e) and 15d-15(e)) and internal control over financial reporting (as defined in Exchange Act Rules 13a-15(f) and 15d-15(f)) for the registrant and have:
 - a) designed such disclosure controls and procedures, or caused such disclosure controls and procedures to be designed under our supervision, to ensure that material information relating to the registrant, including its consolidated subsidiaries, is made known to us by others within those entities, particularly during the period in which this report is being prepared;
 - b) designed such internal control over financial reporting, or caused such internal control over financial reporting to be designed under our supervision, to provide reasonable assurance regarding the reliability of financial reporting and the preparation of financial statements for external purposes in accordance with generally accepted accounting principles;
 - c) evaluated the effectiveness of the registrant's disclosure controls and procedures and presented in this report our conclusions about the effectiveness of the disclosure controls and procedures, as of the end of the period covered by this report based on such evaluation; and
 - d) disclosed in this report any change in the registrant's internal control over financial reporting that occurred during the registrant's most recent fiscal quarter (the registrant's fourth fiscal quarter in the case of an annual report) that has materially affected, or is reasonably likely to materially affect, the registrant's internal control over financial reporting; and
5. The registrant's other certifying officer and I have disclosed, based on our most recent evaluation of internal control over financial reporting, to the registrant's auditors and the audit committee of the registrant's Board of Directors (or persons performing the equivalent functions):
 - a) all significant deficiencies and material weaknesses in the design or operation of internal control over financial reporting which are reasonably likely to adversely affect the registrant's ability to record, process, summarize and report financial information; and
 - b) any fraud, whether or not material, that involves management or other employees who have a significant role in the registrant's internal control over financial reporting.

Date: February 28, 2020

/s/ THADDEUS WEED

Name: Thaddeus Weed
 Title: Chief Financial Officer

Certification of Chief Executive Officer

Pursuant to 18 U.S.C. § 1350, as created by Section 906 of the Sarbanes-Oxley Act of 2002, the undersigned officer of Cogent Communications Holdings, Inc. (the “Company”) hereby certifies, to such officer’s knowledge, that:

- (i) the accompanying Annual Report on Form 10-K of the Company for the year ended December 31, 2019 (the “Report”) fully complies with the requirements of Section 13(a) or Section 15(d), as applicable, of the Securities Exchange Act of 1934, as amended; and
- (ii) the information contained in the Report fairly presents, in all material respects, the financial condition and results of operations of the Company.

Date: February 28, 2020

/s/ DAVID SCHAEFFER

David Schaeffer

Chief Executive Officer

The foregoing certification is being furnished solely to accompany the Report pursuant to 18 U.S.C. § 1350, and is not being filed for purposes of Section 18 of the Securities Exchange Act of 1934, as amended, and is not to be incorporated by reference into any filing of the Company, whether made before or after the date hereof, regardless of any general incorporation language in such filing.

Certification of Chief Financial Officer

Pursuant to 18 U.S.C. § 1350, as created by Section 906 of the Sarbanes-Oxley Act of 2002, the undersigned officer of Cogent Communications Holdings, Inc. (the “Company”) hereby certifies, to such officer’s knowledge, that:

- (i) the accompanying Annual Report on Form 10-K of the Company for the year ended December 31, 2019 (the “Report”) fully complies with the requirements of Section 13(a) or Section 15(d), as applicable, of the Securities Exchange Act of 1934, as amended; and
- (ii) the information contained in the Report fairly presents, in all material respects, the financial condition and results of operations of the Company.

Date: February 28, 2020

/s/ THADDEUS WEED

Thaddeus Weed

Chief Financial Officer

The foregoing certification is being furnished solely to accompany the Report pursuant to 18 U.S.C. § 1350, and is not being filed for purposes of Section 18 of the Securities Exchange Act of 1934, as amended, and is not to be incorporated by reference into any filing of the Company, whether made before or after the date hereof, regardless of any general incorporation language in such filing.
