Section 1: 10-K (10-K)

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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**

Commission File Number: 001-35155

BOINGO WIRELESS, INC.
(Exact name of registrant as specified in its charter)

Delaware (State of other jurisdiction of incorporation or organization)	**95-4856877** (I.R.S. Employer Identification Number)

10960 Wilshire Blvd., 23rd Floor
Los Angeles, California 90024
(Address of principal executive offices, Zip Code)

(310) 586-5180
(Registrant's telephone number, including area code)

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

Common Stock, $0.0001 par value	**WIFI**	**The Nasdaq Stock Market LLC**
(Title of each class)	(Trading symbol)	(Name of each exchange on which registered)

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 15(d) of the Act. Yes ☐ No ☒

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

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

Indicate by check mark whether the registrant is a large accelerated filer, an accelerated filer, a non-accelerated filer, a smaller reporting company or an emerging growth company. See the definition 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 ☐

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

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

The aggregate market value of the Registrant's voting and non-voting common equity held by non-affiliates of the Registrant as of the last day of the Registrant's most recently completed second fiscal quarter was $758,673,052 based on the last reported sale price of $17.97 per share on the Nasdaq Global Market on June 28, 2019, the last trading day of the most recently completed second fiscal quarter.

As of February 21, 2020, there were 44,280,374 shares of registrant's common stock outstanding.

DOCUMENTS INCORPORATED BY REFERENCE

Portions of the Company's definitive Proxy Statement for the Annual Meeting of Stockholders to be filed within 120 days of the Company's year ended December 31, 2019 are incorporated by reference into Part III of this Form 10-K where indicated.

BOINGO WIRELESS, INC.
ANNUAL REPORT ON FORM 10-K FOR
THE YEAR ENDED DECEMBER 31, 2019

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Forward-Looking Statements

We have made forward-looking statements in this Annual Report on Form 10-K that are subject to risks and uncertainties. Forward-looking statements within the meaning of Section 27A of the Securities Act of 1933, as amended, and Section 21E of the Securities Exchange Act of 1934, as amended, are subject to the "safe harbor" created by those sections. The forward-looking statements in this report are based on our management's beliefs and assumptions and on information currently available to our management. In some cases, you can identify forward-looking statements by terms such as "anticipates," "aspires," "believes," "can," "continue," "could," "estimates," "expects," "intends," "may," "plans," "projects," "seeks," "should," "will" or "would" or the negative of these terms and similar expressions intended to identify forward-looking statements. These statements involve known and unknown risks, uncertainties and other factors, which may cause our actual results, performance, time frames or achievements to be materially different from any future results, performance, time frames or achievements expressed or implied by the forward-looking statements. We discuss many of these risks, uncertainties and other factors in this document in greater detail under the heading "Risk Factors." We believe it is important to communicate our expectations to our investors. However, there may be events in the future that we are not able to predict accurately or over which we have no control. The risks described in "Risk Factors" included in this report, as well as any other cautionary language in this report, provide examples of risks, uncertainties and events that may cause our actual results to differ materially from the expectations we describe in our forward-looking statements. Before you invest in our common stock, you should be aware that the occurrence of the events described in "Risk Factors" and elsewhere in this report could harm our business.

Given these risks, uncertainties and other factors, you should not place undue reliance on these forward-looking statements. Also, these forward-looking statements represent our estimates and assumptions only as of the date of this filing. You should read this document completely and with the understanding that our actual future results may be materially different from what we expect. We hereby qualify our forward-looking statements by these cautionary statements. Except as required by law, we assume no obligation to update these forward-looking statements publicly, or to update the reasons actual results could differ materially from those anticipated in these forward-looking statements, even if new information becomes available in the future.

Unless the context otherwise requires, we use the terms "Boingo," "company," "we," "us" and "our" in this Annual Report on Form 10-K to refer to Boingo Wireless, Inc. and, where appropriate, its subsidiaries.

PART I

Item 1. Business

Company Overview

Boingo helps the world stay connected to the people and things they love.

We acquire long-term wireless rights at large venues like airports transportation hubs, stadiums/arenas, military bases, multifamily properties, universities, convention centers, and office campuses; we build high-quality wireless networks such as distributed antenna systems (“DAS”), Wi-Fi, and small cells at those venues; and we monetize the wireless networks through a number of products and services.

For nearly 20 years, we have worked to build a global footprint of wireless networks that we estimate reaches more than a billion consumers annually. We operate 73 DAS networks containing approximately 38,100 DAS nodes, and believe we are the largest operator of indoor DAS networks in the world. Our Wi-Fi network, which includes locations we manage and operate ourselves (our “managed and operated locations”) as well as networks managed and operated by third-parties with whom we contract for access (our “roaming” networks), includes over 1.3 million commercial Wi-Fi hotspots in more than 100 countries around the world.

We generate revenue from our wireless networks in a number of ways, including DAS, small cells, multifamily and wholesale Wi-Fi offerings that are targeted towards carriers and venues, and military, retail, and advertising offerings, which are targeted towards consumers.

We generate wholesale DAS revenue from telecom operators that pay us build-out fees and recurring access fees so that their cellular customers may use our DAS or small cell networks at locations where we manage and operate the wireless network. In 2019, DAS revenue accounted for approximately 37% of our revenue.

Military revenue, which is driven by military personnel who purchase Wi-Fi services on military bases, and multifamily revenue, which is driven by property owners who purchase network installation services and recurring monthly Wi-Fi services and support, accounted for approximately 37% of our total revenue in 2019. As of December 31, 2019, our military subscriber base was approximately 133,000, a 3.6% decrease over the prior year. Retail revenue, which is driven by consumers who purchase a recurring monthly subscription plan or one-time Wi-Fi access, accounted for approximately 6% of our total revenue in 2019. As of December 31, 2019, our retail subscriber base was approximately 81,000, a decrease of approximately 33.6% over the prior year.

Our wholesale customers such as telecom operators, cable companies, technology companies, and enterprise software/services companies, pay us usage-based Wi-Fi network access and software licensing fees to allow their customers’ access to our footprint worldwide. Wholesale Wi-Fi revenue also includes financial institutions and other enterprise customers who provide Boingo as a value-added service for their customers. In 2019, wholesale Wi-Fi revenue accounted for approximately 17% of our revenue.

We also generate revenue from advertisers that seek to reach consumers via sponsored Wi-Fi access. In 2019, advertising and other revenue accounted for approximately 3% of our revenue.

We were incorporated in the State of Delaware in April 2001 under the name Project Mammoth, Inc. and changed our name to Boingo Wireless, Inc. in October 2001. Our principal executive offices are located in Los Angeles, California. Our website address is www.boingo.com. The information on, or that can be accessed through, our website is not part of this Annual Report on Form 10-K.

Industry Overview

Today, consumers own multiple connected devices—smartphones, laptops, tablets, wearables, and more. In addition, mobile data growth is exploding, driven by the growth of wireless devices and the increase in high-bandwidth activities like video streaming, online gaming, and mobile apps. According to Cisco’s Visual Networking Index (“CVNI”), global mobile data traffic is forecasted to grow seven-fold from 2017 to 2022, a compound annual growth rate (“CAGR”) of 46%. CVNI further estimates that by 2022, mobile devices and connections will grow to 12.3 billion at a CAGR of 7.5%.

The mobile data explosion has fueled the growth of higher-generation network connectivity to address the demand for more bandwidth, higher security, and faster connectivity. Carriers like AT&T, Sprint, T-Mobile and Verizon have begun the rollout of 5G, which will provide faster speeds and ultra-low latency.

Challenges Facing Our Industry

The mobile Internet is a complex and constantly evolving ecosystem comprised of dozens of manufacturers, many different operating systems, and a number of different wireless technologies utilizing both licensed and unlicensed spectrum. This complexity is amplified as new device models and operating systems are released, new categories of devices become Internet enabled, and new network technologies emerge.

To cope with the significant increase in mobile Internet data traffic, wireless network operators must build denser networks that are closer to the end consumer, explore solutions to offload network traffic from congested, licensed spectrum onto more efficient unlicensed spectrum, and invest in technologies that will enable the convergence of licensed and unlicensed spectrum. We expect our wireless networks to play a significant role in helping meet the ever-increasing data demands of connected consumers.

Our Strategy

We believe we are the leading global provider of neutral-host commercial mobile Wi-Fi Internet solutions and indoor DAS services. Our overall business strategy is simple: acquire long-term wireless rights at large venues; build high-quality wireless networks at those venues; and monetize the wireless networks through a number of products and services. In support of our overall business strategy, we are focused on the following objectives:

- *Leverage our neutral-host business model to grow DAS, small cell, and wholesale roaming partnerships.* Our neutral-host model enables us to effectively partner with venues because we ensure high-quality wireless service. We successfully balance the interests of individual carriers with the goals of our venue partners and build flexible DAS network architectures that can support multiple mobile services. We are also beginning to deploy small cell networks, and we believe this technology will enable us to expand into certain venues where a traditional DAS network is cost-prohibitiv
- *Expand our carrier offload relationships.* As cellular networks become strained due to capacity, carriers are beginning to offload their licensed mobile traffic onto unlicensed spectrum. We are hig partnering with all four Tier 1 carriers in the U.S. and other carriers around the world to offload their mobile traffic onto our Wi-Fi networks.
- *Expand our footprint of managed and operated and aggregated networks*. We intend to continue to grow our global network of managed and operated DAS, Wi-Fi and small cell networks. We fo acquisition strategy on locations with a common profile-large venues with significant population density-as these venues face challenges that we are uniquely qualified to solve. We also plan to ent agreements with network operators to maximize the reach of our aggregated network, which creates a more attractive offering for our wholesale enterprise, multifamily, military, and retail customers.
- *Increase our brand awareness.* We intend to continue to seek new ways to promote our brand through our managed and operated hotspots. We plan to enhance our brand through low-cost co-ma with our partners and through periodic promotional and sponsorship activities and by continuing to leverage the reach of social media and public relations to interact with our customers.

Services

Our solution makes it easy, convenient and cost effective for consumers to access the mobile Internet.

DAS or Small Cell. We offer our telecom operator partners access to our DAS or small cell networks at our managed and operated locations. We deploy our DAS or small cell networks within venues that require additional signal strength to improve the quality of cellular services.

Military/Multifamily. We provide high-speed Wi-Fi services for residential consumers on military bases and at multifamily properties. On military bases, where we are the leading provider of barracks Wi-Fi services at more than 60 U.S. Army, Air Force, and Marines bases around the world, we offer direct-to-consumer transactional and recurring monthly subscription plans. Our plan offerings include Extra Internet (speeds up to 10Mbps) and Blazing Internet (speeds up to 50Mbps). Our subscription plans require no installation or equipment and are portable from base to base, enabling a user to sign up for service immediately and remain a customer even if they are deployed to a new base. At multifamily properties, we primarily offer bulk subscription plans sold directly to the property owner. Our multifamily footprint includes 238 properties throughout the U.S.

Wholesale—Wi-Fi. Our integrated hardware and software platform allow us to provide a range of enhanced services to network operators, device manufacturers, technology companies, enterprise software and services companies, venue operators and financial services companies.

- *Carrier offload services.* We offer services to carriers to move traffic from their licensed cellular networks onto our Wi-Fi networks.
- *Comes with Boingo.* We offer access to our entire network of over 1.3 million hotspot locations to financial institutions and other enterprise customers who then offer them as a loyalty incentive to
- *Wi-Fi roaming and software services.* We offer roaming services across our entire network of over 1.3 million hotspot locations to our partners who can then provide mobile Internet services to thei locations. Our software solution, which provides one-click access to our global footprint of hotspots, has been rebranded for wholesale partners, in addition to being marketed under the Boingo bra with our back-end system infrastructure, it creates a global roaming solution for operators, carriers, other service providers and other businesses.
- *Turn-key solutions.* We offer our venue partners the ability to implement a turn-key Wi-Fi solution through a Wi-Fi network infrastructure that we install, manage and operate. Our turn-key solution service models that are supported through a mix of wholesale Wi-Fi, military, retail, and advertising revenue.

Retail. We enable individuals to purchase Internet access at our managed and operated hotspots and select partner locations around the world. We offer a selection of recurring monthly subscriptions and single-use access plans. Our most common plan is the $14.99 monthly subscription for up to four connected devices that provide users access to a global footprint of over 1.3 million hotspots, and the single-use plan at $7.95 per day or hourly with hourly pricing depending on location. Our single-use access plans provide unlimited access on a single device at a specific hotspot for a defined period of time, tolled from the time the user first logs on to the network. We intend to continue to launch other flexible plans to meet the evolving needs of our customers and venues.

Advertising. Our Wi-Fi platform provides a valuable opportunity for advertisers to reach consumers with sponsored Wi-Fi access, promotional programs and display advertising. We provide brands and advertisers the opportunity to sponsor wireless connectivity to individuals at locations where we manage and operate the Wi-Fi network and locations where we solely provide authorized access to a partner's Wi-Fi network through sponsored access and promotional programs. In addition, our advertising solution is easily integrated into Wi-Fi networks not directly managed by Boingo.

Our Network

For nearly 20 years, we've built a global network of wireless networks that we estimate reaches more than a billion consumers annually. We operate 73 DAS networks containing 38,100 DAS nodes, and believe we are the largest operator of indoor DAS networks in the world. Our Wi-Fi network—which includes our managed and operated locations and our roaming networks—includes over 1.3 million commercial Wi-Fi hotspots in more than 100 countries around the world.

Boingo Wi-Fi hotspot locations by region as of December 31, 2019 included:

Region	Airport	Café / Retail	Convention Center	Hotel	Other(1)
North America	61	116,510	57	2,702	271,622
Latin America	102	4,824	14	227	6,959
Europe, Middle East and Africa	267	41,617	432	11,619	77,491
Asia	274	243,693	1,534	29,042	532,104
Total	704	406,644	2,037	43,590	888,176

[redacted]ces, hospitals and public spaces.

We also operate Wi-Fi networks at over 60 U.S. Army, Air Force, and Marine bases around the world and 238 multi-dwelling properties including student housing, condominiums, apartments, senior living, and hospitality properties throughout the U.S.

[redacted]

Marketing and Business Development

Our marketing and business development efforts are designed to cost effectively expand our footprint of venues where we can deploy DAS, Wi-Fi and small cell networks, secure more carrier contracts, attract and retain new multifamily, military and retail customers, and identify business partners that could leverage our network to provide mobile Internet services to their customers. We focus on efficient customer acquisition through our online presence, social media, public relations, influencer marketing, experiential and event marketing, market research, and other promotional activities.

We seek to maximize customer lifetime value by managing subscriber acquisition cost, extending customer life and determining appropriate pricing. We use information about subscriber behavior to help us retain customers and determine premium offerings. Our segmentation is focused at the product level, so that we provide the right product, plan and price for our military and retail customers. Our consumer plans are available for essentially all Wi-Fi enabled devices and are priced on a month-to-month or per-use basis.

We issue regular press releases announcing important partnerships and product developments and continually update our website with information about our network and services. We leverage our social media accounts, website and blog to further promote Boingo's product availability and applicability for property owners, military personnel, travelers, digital elite and consumers on-the-go. Our executive team speaks at industry events, trade shows and conferences.

Development

Our development efforts are focused primarily on supporting our networks and the businesses that run across these networks. These efforts include developing web applications, clients and profiles for ease of connecting to our managed and operated locations and aggregate partner networks, integrating our software client with our wholesale partners, continuing to adapt our technology to new operating systems and platforms, continuing to develop an advertising system and business and operations support system for managing and monetizing network service, continuing to develop a platform for delivering television services to our military bases , continuing to develop and optimize our networks with a converged edge platform, and developing our systems and functionality for roaming and carrier offload. Our development model is based on Agile development practices so any deviations can be promptly corrected to improve reliability in our network or services and enhance customer satisfaction.

Technology

For nearly 20 years, we have developed proprietary systems that include the Boingo software client and software development kit ("SDK"); authentication, authorization and tracking systems; mediation and billing systems; television management and delivery platform; free user monetization media and advertising platform; and a real-time operational support and software configuration and messaging infrastructure.

Boingo Software Client and SDK

The Boingo software client and SDK are installed on Wi-Fi enabled devices such as smartphones, laptops and tablets to enable our customers and our partners' customers to access our network. The key features of the Boingo software client include:

- *Simple user interface.* The Boingo software client provides individuals with an uncomplicated, user-friendly interface designed to streamline the Wi-Fi network connection process. The software fi monitors the availability of Wi-Fi hotspots in the Boingo network, presents a notification message of the hotspot identified and allows one-click user connections. In some devices, connection to a occurs in the background, providing the user with a seamless, notification-free connectivity experience.
- *Support for all major operating system platforms.* The Boingo software client and SDK support the Android, iOS, Mac OS and Windows operating systems, which represents the majority of all dev managed and operated venues.
- *Automatic updates.* The Boingo software client automatically receives identification information for new hotspot locations as they are added to the Boingo network, including any information neede identify and login to the network. Location information, allowing a user to find Boingo hotspots from the client, is also automatically updated. On all but embedded platforms, software updates are al offered to a user when available.

- *Custom branding and flexible integration alternatives.* We offer wholesale customers the ability to integrate the Boingo software client into their products and services as a SDK. Additionally, we customers the option to utilize a custom, rebranded reference design of the software client used in our retail customer offering.

Authentication, Authorization and Tracking System

Our proprietary authentication, authorization and tracking system enables the reliable, scalable and secure initiation and termination of user Wi-Fi sessions on our network. This system authenticates our network users across a wide variety of hotspots and network operators, through a normalized authentication protocol. Through the authorization process, custom business rules ensure user access based on specific service parameters such as location, type of device, service plan and account information. Our system also captures duration, data traffic, location, and type of device. We normalize and process this data from disparate providers for our use and for our wholesale partners. This system has been enhanced to include support for secure Next Generation Hotspot roaming, which leverages Passpoint-certified devices and network hardware to establish seamless secure connections for customers.

Mediation and Billing System

Our mediation and billing system records and analyzes individual usage sessions required to bill for Wi-Fi usage. Users are charged based on variables such as pricing plan, device type, location, time and amount of use. Our system consolidates usage session information, determines the user identity and applies the appropriate aggregation and flagging to ensure proper usage processing. Our system handles exceptions automatically. Exceptions that cannot be solved automatically are brought to the attention of the operations staff for rectification of any discrepancies. The billing system provides billing based on roaming relationship, user type, device type and account type. Our military and retail customer mediation and billing are handled by the same infrastructure used for wholesale customer and billing, resulting in efficiencies of scale and operation.

Television Management and Delivery Platform

Our television system enables us to deliver content to our military subscribers. The Boingo digital rights management ("DRM") system allows for live linear commercial content to be delivered securely through our encrypted network links that connect our primary data center and the military bases. The central content management system allows for regional content delivery and multiple programming bundle offers. To enhance the viewing experience for mobile and tablet devices, the Boingo delivery system uses HTTP Live Streaming distribution protocol that will accommodate playing content at different network speeds by dynamically reducing content size.

Free User Monetization Media and Advertising Platform

The Boingo Media platform enables brand advertisers to reach a captive audience through high engagement Wi-Fi sponsorships in premium locations worldwide. It delivers engaging advertising experiences, and our partners can place their messaging in the right context to their target audience. It also allows a combination of branding with direct response in a single high-impact format. Frequent travelers can be reached in a way they appreciate—by receiving free Wi-Fi access when they need it most.

Software Configuration and Messaging System

Our software configuration system provides real-time network configuration updates for thousands of networks and many detection and login methodologies used by the Boingo software client to access our network. Our software configuration system automatically registers new network definitions and login methodologies to allow individuals to connect to our hotspot locations. All supported platforms use a single configuration, providing a high level of operational and test efficiency. Our messaging system enables real-time customer notification and system interaction at login, based on location, network, user, account type, device and usage. This approach enables us and our partners to deliver custom marketing or service messages.

Converged Edge Platform

Our converged edge platform enables us to provide enterprise and network software applications at the edge (meaning beyond data centers or the cloud). By running these applications at the edge, we provide faster response times, improved security and enhanced reliability. We have built capabilities to allow us to join these application workloads in the data center, cloud or at the edge through Boingo-built containers, virtual machines, databases, and software defined storage and processing capabilities for all of our Wi-Fi, DAS, and small cell networks. A growing number of applications will reside at the edge and will be a key component of the future of 5G networks.

Operations

We provide significant operational support for our managed and operated wireless infrastructure and the related technical systems in our network. For our managed and operated networks, we design, build, monitor and maintain the network. For roaming partners, we monitor network and related system uptime and report issues so that they can be quickly remedied. We have service level agreements with our roaming partners specifying minimum network uptime requirements and specified quality of service levels for different services that run across the wireless network infrastructure.

Our Wi-Fi deployments are based on the IEEE 802.11 standards and operate in the 2.4 GHz and 5 GHz unlicensed spectrum bands. We design, build, and operate DAS and small cell networks that currently provide 2G, 3G, 4G-LTE, and 5G services. We partner to build these networks with all major mobile network operators, multiple system operators, and private network operators. The networks operate in the available licensed, unlicensed and new Citizens Broadband Radio Service ("CBRS") shared license bands.

Customers

We generate revenue primarily from our DAS and Wi-Fi wholesale partners, multifamily, military and retail customers. Our DAS customers are telecom operators who pay us one-time build-out fees and recurring access fees for our DAS network, enabling their cellular customers to access these networks. Our wholesale Wi-Fi customers pay usage-based network access fees to allow their customers access to our global Wi-Fi network and other wholesale Wi-Fi partners pay us to provide Wi-Fi services in their venue locations under a service provider arrangement. Our multifamily customers are property owners who pay us to provide Wi-Fi services including network installation services, and to provide support to their residents and employees at their properties. Our wholesale customer relationships are generally governed by multi-year contracts. We acquire our wholesale customers through our business development efforts. Our military and retail customers either purchase month-to-month subscription plans that automatically renew, or single-use access to our network. We acquire our military and retail customers primarily from users passing through our managed and operated locations, where we generally have exclusive multi-year agreements. We also generate revenue from advertisers that seek to reach visitors seeking Wi-Fi access at our managed and operated network locations with online advertising, promotional and sponsored programs. For the year ended December 31, 2019, entities affiliated with AT&T Inc. accounted for 12% of total revenue. For the years ended December 31, 2019 and 2018, entities affiliated with Verizon Communications Inc. accounted for 11% and 11%, respectively, of total revenue. For the years ended December 31, 2019 and 2018, entities affiliated with Sprint Corporation accounted for 11% and 14%, respectively, of total revenue. For the year ended December 31,2018, entities affiliated with T-Mobile USA, Inc. accounted for 12% of total revenue. The loss of these groups and the customers could have a material adverse impact on our consolidated statements of operations.

Key Business Metrics

In addition to monitoring traditional financial measures, we also monitor our operating performance using key performance indicators. Our key performance indicators follow:

	Year Ended December 31,		
	2019	2018	2017
		(in thousands)	
DAS nodes	38.1	29.9	23.5
Subscribers—military	133	138	130
Subscribers—retail	81	122	188
Connects	343,121	277,744	223,960

DAS nodes. This metric represents the number of active DAS nodes as of the end of the period. A DAS node is a single communications endpoint, typically an antenna, which transmits or receives radio frequency signals wirelessly. This measure is an indicator of the reach of our DAS network.

Subscribers—military and *Subscribers—retail.* These metrics represent the number of paying customers who are on a month-to-month subscription plan at a given period end.

Connects. This metric shows how often individuals connect to our global Wi-Fi network in a given period. The connects include wholesale and retail customers in both customer pay locations and customer free locations where we are a paid service provider or receive sponsorship or promotion fees. We count each connect as a single connect regardless of how many times that individual accesses the network at a given venue during their 24-hour period. This measure is an indicator of paid activity throughout our network.

Customer Support

We provide support services to our multifamily, military, retail, and enterprise customers 24 hours per day, 7 days per week, and 365 days per year. Support is available by phone, chat, email, or social media channels like Twitter and Facebook. Our website contains a comprehensive knowledge base that includes answers to frequently asked questions for self-help, and we provide video support on our YouTube channel. Tier 1 support is provided by a third-party provider, while Tier 2 and social media support is managed by our internal customer care team.

Competition

The market for mobile Internet services and solutions is fragmented and competitive. We believe the principal competitive factors in our industry include the following:

- price;
- quality of service;
- venue exclusivity;
- ease of access and use;
- bundled service offerings;
- geographic reach; and
- brand name recognition.

Direct and indirect competitors include telecom operators, cable companies, self-managed venue networks and smaller wireless Internet service providers. Some of these competitors have substantially greater resources, larger customer bases, longer operating histories and greater name recognition than we have. They may offer bundled data services with primary service offerings that we do not generally offer such as landline and cellular telephone service, and cable or satellite television. Many of our competitors are also partners from whom we receive revenue when their customers access our network.

We believe that we compete favorably based on our ability to deliver end-to-end solutions, our neutral host business model, deep domain experience in licensed and unlicensed spectrum technology, brand recognition, geographic coverage, network reliability, quality of service, ease of use, and cost.

Intellectual Property

Our ongoing success will depend in part upon our ability to protect our core technology and intellectual property. To accomplish this, we rely on a combination of intellectual property rights, including trade secrets, patents, copyrights and trademarks, as well as contractual restrictions.

We have seven issued U.S. patents, two issued Japanese patents, and two issued Chinese patents. Our registered trademarks in the United States, the European Union, and China include “Boingo” and “Boingo Wi Finder”, and in the United States, “Boingo Broadband” and "Boingo TV". We own additional registrations and have filed other trademark applications in the United States and other countries.

In addition to the foregoing protections, we control access to, and use of, our proprietary software and other confidential information through the use of internal and external controls, including contractual protections with employees, contractors, customers and partners. Our software is protected by United States and international copyright laws.

Employees

As of December 31, 2019, we had 411 employees, including 194 in operations, 78 in development and technology, 81 in sales and marketing and 58 in general and administrative. All of our employees are full-time employees except for 3 part-time employees. We do not have any employees who are covered by a collective bargaining agreement. We have never experienced any employment related work stoppages and consider relations with our employees to be good. As of December 31, 2019, we also had arrangements with third-party call center providers that provided us with 61 full-time equivalent contractors for multifamily, military, retail and enterprise customer support service and similar functions.

Corporate Responsibility and Sustainability

We understand that long-term value creation for shareholders is our core responsibility. We also have an important role to play for our team members, our customers, and the communities we serve and believe that enriching and enabling the lives of our employees and their families, supporting our environment, caring for our communities, and being good corporate stewards over Boingo is fundamental to our culture, and is just plain good business.

Employee Well-Being

- *Financial well-being.* We offer a benefits package that includes equity, competitive pay, a quarterly or annual incentive plan, and a defined contribution savings plan with an employer match, amor and other benefits.
- *Retirement planning.* To help prepare our employees for retirement, our defined contribution savings plan is opt-out, so employees are automatically enrolled in the program when they are hired, ur decline. This behavioral approach means that a significant majority of our employees are actively saving for retirement and receiving a company match that is paid each pay period.
- *Financial literacy.* We conduct financial literacy trainings throughout the year. Seminars have included retirement planning, managing student loan debt, and first-time homebuyer education. Our e contribution savings plan partners also offer monthly webinars, online planning tools and one-on-one consultations.
- *Matching grant program.* Our Matching Grant Program amplifies employees' cash contributions to the charitable organization of their choice.
- *Tomorrow's workforce.* We work with community organizations to help develop the tech pipeline talent. Organizations we actively support include the Bixel Exchange Tech Talent Pipeline, Exceedin Who Code, Kid City/Urban Foundation, Los Angeles, and Path Forward.

We have been named one of the Best Places to Work in Los Angeles—four years running. Our high scores in corporate culture, leadership, and training and development reflect our commitment to create a great work environment for our employees.

Environment

- *Going green.* We continually strive to improve operations and minimize our impact on the environment. Business Intelligence Group ("BIG") recently named Boingo "Green Company of the Year" in Business."
- *Certifications.* We are certified by the City of Los Angeles as a Green Business, meeting sustainability standards set by the City of Los Angeles and the California Green Business Network. The cer a proprietary scoring system used to measure a company's achievements. We were selected for offering e-cycling programs, investing in sustainable business practices, and offering a transportatio program that rewards employees for going green.

Diversity

- *A culture of inclusion and programs.* At Boingo, we believe that fostering a diverse and inclusive culture where all employees can succeed is important to our business. We are a founding member c that promotes civic engagement, diversity and inclusion. We are also a founding member of LightReading's Women in Comms, a platform that empowers women to champion change and redress the the workplace. We host Center for Excellence in Engineering and Diversity programs that help educationally underrepresented students achieve success in math, science and engineering. Women o employee club that celebrates diverse talents and is dedicated to empowering women to follow a fulfilling career through education, networking and mentoring opportunities. We are a sponsor of Gi program focused on closing the gender gap in technology. We participate in the Digital Diversity Networks' Innovation and Inclusion Awards and we are a three-time winner. In 2019, we were name Workplace for Diversity" by the Timmy Awards.

Governance

- *Good governance.* We endeavor to improve corporate governance and executive compensation and practices and have recently implemented various changes to our corporate governance practices
- *Adopted stock ownership guidelines.* We adopted stock ownership guidelines to reinforce our belief that executives who believe in the future of the Company should have meaningful equity holdir
- *Adopted majority voting standard in uncontested elections.* We have implemented a majority voting standard in uncontested elections of director. We have also implemented a majority voting poli resignations, applicable if an incumbent director nominee receives less than a majority of votes cast in an uncontested election.
- *Declassified Board.* Commencing with the 2018 annual meeting of stockholders, director nominees are reelected for a term of one year, but directors elected prior to the 2018 annual meeting of stock serve the remainder of their terms. Therefore, at the 2020 annual meeting of stockholders, all directors who are elected will be elected for a one-year term.

Further information on our corporate governance policies and programs can be found on the Investor Relations section of our website at *http://www.boingo.com*. The information on, or that can be accessed through, our website is not part of this Annual Report on Form 10-K.

Available Information

Our filings with the United States Securities and Exchange Commission or SEC, including this Annual Report on Form 10-K, quarterly reports on Form 10-Q, and current reports on Form 8-K are available free of charge through the Investor Relations section of our website at *http://www.boingo.com* and are accessible as soon as reasonably practicable after being electronically filed with or furnished to the SEC. The information on, or that can be accessed through, our website is not part of this Annual Report on Form 10-K.

Copies of this report are also available free of charge from Boingo Corporate Investor Communications, 10960 Wilshire Boulevard, 23rd Floor, Los Angeles, California 90024. In addition, our Corporate Governance Guidelines, Code of Business Conduct and Ethics and written charters of the committees of the Board of Directors are accessible through the Corporate Governance tab in the Investor Relations section of our website and are available in print to any stockholder who requests a copy. The SEC maintains a website that contains reports and other information we file, and proxy statements to be filed with the SEC. The address of the SEC's website is *http://www.sec.gov*.

Item 1A. Risk Factors

Investing in our common stock involves a high degree of risk. You should consider carefully the risks and uncertainties described below, together with all of the other information in this report on Form 10-K, including our accompanying consolidated financial statements and the related notes, before deciding whether to purchase shares of our common stock. If any of the following risks actually occur, our business, financial condition, results of operations and prospects could be materially and adversely affected. The price of our common stock and the trading price of our Convertible Notes could decline, and you could lose part or all of your investment.

Risks Related to Our Business

A significant portion of our revenue is dependent on our relationships with our venue and network partners, and if these relationships are impaired or terminated, or if our partners do not perform as expected, our business and results of operations could be materially and adversely affected.

We depend on our relationships with venue partners, particularly key venue partners and military bases, in order to manage and operate DAS, small cell, and Wi-Fi networks. These relationships generate a significant portion of our revenue and allow us to generate wholesale revenues and new military, multifamily, and retail customers. Our agreements with our venue partners, telecom operators, and wholesale customers are for defined periods and of varying durations. In order to maintain our relationships with venue partners, we may need to upgrade our networks or make other changes to our products and services we provide such venue partners, which would, in most cases, require significantly higher initial capital expenditures than we have historically incurred, and if we are unsuccessful, our relationships could be impaired. If our venue partners terminate or fail to renew these agreements, our ability to generate and retain wholesale, multifamily, military, and retail customers would be diminished, which might result in a significant disruption of our business and adversely affect our operating results. Further, any delays in our ability to complete the upgrade of our networks or build-out new networks can adversely affect our operating results.

We depend on our relationships with network partners to allow users to roam across networks that we do not manage or operate. A significant portion of our revenue depends on maintaining these relationships with network partners. Some network partners may compete with us for retail customers and may decide to terminate our partnerships and instead develop competing retail products and services. Our network partner agreements are for defined periods and of varying durations. If our network partners terminate these agreements, or fail to renew these agreements, our ability to retain retail customers could be diminished and our network reach could be reduced, which could result in a significant disruption of our business and adversely affect our operating results.

Our operating results may fluctuate unexpectedly, which makes them difficult to predict and may cause us to fail to meet the expectations of investors, adversely affecting our stock price.

We operate in a highly dynamic industry and our future quarterly operating results may fluctuate significantly. Our revenue and operating results may vary from quarter-to-quarter due to many factors, many of which are not within our control. As a result, comparing our operating results on a period-to-period basis may not be meaningful. Further, it is difficult to accurately forecast our revenue, margin and operating results, and if we fail to match our expected results or the results expected by financial analysts, the trading price of our common stock and Convertible Notes and the price at which our convertible noteholders could sell the common stock received upon conversion of the Convertible Notes may be adversely affected.

Factors that contribute to fluctuations in our operating results from quarter-to-quarter include those described in this risk factor section including:

- our gain or loss of a key venue partner, military partner, or wholesale partner;
- the rate at which individuals adopt and continue to use our solutions;
- the timing and success of new technology introductions by us or our competitors;
- the number of air travel passengers;
- the growing prevalence of free Wi-Fi models and our ability to adapt and compete with free Wi-Fi;
- intellectual property disputes; and
- general economic conditions in our domestic and foreign markets.

Due to these and other factors, quarter-to-quarter comparisons of our historical operating results should not be relied upon as accurate indicators of our future performance.

A substantial portion of our business depends on the demand for our DAS and small cell networks, which is driven primarily by demand from our telecom customers and demand for data, and we may be adversely affected by any slowdown in such demand. A reduction in the amount or change in the mix of network investment by our telecom customers may materially and adversely affect our business (including reducing demand for tenant additions or network services).

Customer demand for our DAS and small cell networks depends on the mix of network investment by our telecom customers and the demand for data from end users. The willingness of our customers to utilize our systems, including DAS and small cell networks, or renew or extend existing contracts on our systems, is affected by numerous factors, including:

- availability or capacity of our DAS and small cell networks;
- location of our DAS and small cell networks;
- financial condition of our customers, including their profitability and availability or cost of capital;
- willingness of our customers to maintain or increase their network investment or changes in their capital allocation strategy;
- consumers' and organizations' demand for data;
- need for integrated networks and organizations;
- availability and cost of spectrum for commercial use;
- increased use of network sharing, roaming, joint development, or resale agreements by our customers;
- mergers or consolidations by and among our customers;
- changes in, or success of, our customers' business models;
- governmental regulations and initiatives, including local or state restrictions on the proliferation of communications infrastructure;
- cost of constructing our DAS and small cell networks;
- our market competition;
- technological changes, including those (1) affecting the number or type of communications infrastructure needed to provide data to a given geographic area or which may otherwise serve as substit our communications infrastructure or (2) resulting in the obsolescence or decommissioning of certain existing wireless networks; and
- our ability to efficiently satisfy our customers' service requirements.

A slowdown in demand for our DAS and small cell networks or data generally may negatively impact our growth or otherwise have a material adverse effect on us. If our customers or potential customers are unable to raise adequate capital to fund their business plans, as a result of disruptions in the financial and credit markets or otherwise, they may reduce their spending, which could adversely affect our anticipated growth or the demand for our DAS and small cell networks.

The amount, timing, and mix of our customers' network investment is variable and can be significantly impacted by the various matters described in these risk factors. Changes in customer network investment typically impact the demand for our DAS and small cell networks. As a result, changes in customer plans such as delays in the implementation of new systems, new and emerging technologies, or plans to expand coverage or capacity may reduce demand for our DAS and small cell networks. Furthermore, the industries in which our customers operate (particularly those in the wireless industry) could experience a slowdown or slowing growth rates as a result of numerous factors, including a reduction in consumer demand (including demand for wireless connectivity) or general economic conditions. There can be no assurances that weakness or uncertainty in the economic environment will not adversely impact our customers or their industries, which may materially and adversely affect our business, including by reducing demand for DAS and small cell networks. Such an industry slowdown or a reduction in customer network investment may materially and adversely affect our business.

We may be unsuccessful in expanding into new venue types, which could harm the growth of our business, operating results and financial condition.

We are negotiating with existing and prospective partners to expand our managed and operated Wi-Fi network and small cell footprint in venue types where we historically have had only a limited presence. Expansion into these venue types, which may include shopping malls, stadiums, hospitals, retail stores and quick service restaurants, may require significantly higher initial capital expenditures than we have historically incurred. In contrast to Wi-Fi network build-outs at venues such as airports, where telecom operators typically pay the substantial expense of laying cable or fiber, we may be required to incur the initial capital expense of access points and related hardware and cabling at tens of thousands of quick serve restaurant locations and hundreds of shopping malls, hospitals, retail stores and stadium locations. Additionally, in August 2018 we closed the acquisition of substantially all of the assets of Elauwit Networks, LLC for our entrance into the multifamily venue type. We have minimal experience in servicing the multifamily venues and we may not be successful in growing and managing this business.

We may not be able to execute on our strategy or there may not be returns on these investments in the near future or at all. As a result, our business, financial condition and results of operations could be materially and adversely affected.

Our business depends upon demand for connected services that rely on wireless network infrastructure. Our ability to adapt to the speed of changes and anticipate market adoption of new technologies may adversely impact our business.

Our future success depends upon growing demand for wireless connected services. The demand for wireless connectivity may decrease or may grow more slowly than expected. Any such decrease in the demand or slowing rate of growth could have a material adverse effect on our business. The continued demand for wireless connectivity services depends on the continued proliferation of smartphones, tablets and other wireless connection enabled devices. Our revenue is derived from the demand from consumers for internet connectivity, including our military and retail offerings, and from our telecom, venue, multifamily, and other wholesale partners attempting to provide consumers with greater connectivity. We may face challenges as we seek to increase the revenue generated from the usage on smartphones, tablets and other wireless connected devices.

A portion of our business depends on the continued integration of Wi-Fi as a standard feature in wireless connected devices. If Wi-Fi ceases to be a standard feature in wireless connected devices, or if the rate of integration of Wi-Fi on devices decreases or is slower than expected, the market for our services may be substantially diminished.

Competing technologies pose a risk to the continued use of Wi-Fi as a mobile wireless connectivity technology. The introduction and market acceptance of emerging wireless technologies such as 5G, LTE-U, Super Wi-Fi and CBRS, could cause significant disruption to our Wi-Fi business, which may result in a loss of customers, users and revenue. If users find emerging wireless technologies to be sufficiently fast, convenient or cost effective, we may not be able to compete effectively, and our ability to attract or retain users will be impaired. Additionally, one or more of our partners may deploy emerging wireless technologies that could reduce the partner's need to work with us and may result in significant loss of revenue and reduction of the Wi-Fi hotspots in our network.

We deliver value to our users by providing simple access to Wi-Fi hotspots, regardless of whether we manage and operate the hotspot, or the hotspot is operated by a partner. As a result, our business depends on our ability to anticipate and quickly adapt to changing technological standards and advances. If technological standards change and we fail to adapt accordingly, our business and revenue may be adversely affected. Furthermore, the proliferation of new mobile devices and operating platforms poses challenges for our research and development efforts. If we are unable to create simple solutions for a particular device or operating platform, we will be unable to effectively attract users of these devices or operating platforms and our business will be adversely affected.

We may not maintain recent rates of revenue growth.

Although our revenue has increased substantially over the last few years, we may not be able to maintain historical rates of revenue growth. We believe that our continued growth will depend, among other factors, on successfully implementing our business strategies, including our ability to:

- retain our existing partners and attract new partners;
- develop new sources of revenue from our users and partners;
- attract new users and keep existing subscribers actively using our services;

- react to changes in the way individuals access and use the mobile Internet;
- identify and integrate the acquisition of new businesses;
- expand into new markets;
- increase the awareness of our brand; and
- provide our users with a superior experience, including customer support and payment experiences.

However, we cannot guarantee that we will successfully implement any of these business strategies.

The U.S. government may modify, curtail or terminate one or more of our contracts.

We have dedicated a significant amount of resources to building out Wi-Fi networks for troops stationed on military bases pursuant to our contracts with the U.S. government. Military revenue comprises a substantial part of our overall revenue and the U.S. government may modify, curtail or terminate its contracts with us, either at its convenience or for default based on performance. Any such modification, curtailment, or termination of one or more of our government contracts could have a material adverse effect on our earnings, cash flow and/or financial position.

Negotiations with prospective or existing partners and telecom operators and network operators can be lengthy and unpredictable, which may cause our operating results to vary.

Our negotiations with prospective or existing venue partners, including large venues like airports, transportation hubs, stadiums, arenas, military bases, multifamily properties, universities, convention centers, office campuses and other partners, to acquire Wi-Fi locations to operate or to acquire roaming rights on partners' networks, or for new partners to implement our solutions or to extend or amend current arrangements, can be lengthy, and in some cases can last over 12 months. Because of the lengthy negotiation cycle, the time required to reach a final or amended agreement with a partner is unpredictable and may lead to variances in our operating results from quarter to quarter. Negotiations with prospective and existing partners also require substantial time, effort and resources. We may ultimately fail in our negotiations, resulting in costs to our business without any associated benefits.

Additionally, our negotiations with telecom operators and network operators who pay us build-out fees and recurring access fees can likewise be lengthy and, therefore, the time required to reach a final or amended agreement with telecom or network operators is unpredictable and may lead to variances in our operating results from quarter to quarter.

Our industry is competitive and if we do not compete successfully, we could lose market share, experience reduced revenue or suffer losses.

The market for commercial wireless infrastructure solutions is competitive and impacted by technological change, and we expect competition with our current and potential competitors to intensify in the future.Some of our competitors have taken steps or may decide to more aggressively compete against us, particularly in the market for venue build-outs of Wi-Fi, DAS, and small cell solutions.

Our competitors, many of whom are also our partners, include a variety of telecom operators and network operators, including Verizon, AT&T, T-Mobile, Sprint, Comcast, Charter, Altice and local operators. These and other competitors have developed or may develop technologies that compete directly with our solutions. Many of our competitors are substantially larger than we are and have substantially longer operating histories. We may not be able to fund or invest in certain areas of our business to the same degree as our competitors. Many have substantially greater product development and marketing budgets and other financial and personnel resources than we do. Some also have greater name and brand recognition and a larger base of subscribers or users than we have. In addition, our competitors may provide services that we generally do not, such as cellular, local exchange and long-distance services, voicemail and digital subscriber line. Users that desire these services may choose to also obtain mobile wireless connectivity services from a competitor that provides these additional services rather than from us.

Furthermore, we rely on several of our competitors as partners in roaming agreements. The roaming agreements provide that our retail customers and our wholesale partners' customers may use the Wi-Fi networks of our partners. One or more of our partners may deploy competing technologies that could reduce the partner's need to work with us under a roaming agreement. If our partners decide to terminate our roaming agreements, our global network of wireless networks may be reduced, which may result in a significant disruption to our business.

Competition could increase our selling and marketing expenses and related customer acquisition costs. We may not have the financial resources, technical expertise or marketing and support capabilities to continue to compete successfully. A failure to respond to established and new competitors may adversely impact our business and operating results.

We process, store, transfer and use personally identifiable information, confidential information and other data, which subjects us to laws and regulations and other legal obligations, of which the actual or perceived failure to comply could adversely affect our business.

We process, store, transfer and use data from or about our certain of our customers, including certain personally identifiable information and confidential information. These activities subject, or may subject, us to various federal, state, local and international laws and regulations regarding data privacy, protection, and security. In addition, we are also subject to the terms of our privacy policies and other third-party obligations regarding data privacy, protection and security. Although we strive to comply with applicable laws, regulations, policies and other legal obligations, the regulatory framework for data privacy, protection and security is complex and ambiguous, and thus our current rules and practices may not, or allegedly may not, be complaint. Such noncompliance or alleged noncompliance could increase our costs and require us to modify our services and products, possibly in a material manner, and could limit or prevent us from processing, storing, transferring or using certain customer data in our services and products.

In addition, data privacy, protection and security laws, regulations and industry standards are constantly evolving and being adopted in various jurisdictions. For example, the General Data Protection Regulation ("GDPR") became effective May 2018, superseding existing European Union data protection legislation. Additionally, the California Consumer Privacy Act ("CCPA") was passed in June 2018 and became effective January 2020. The GDPR and CCPA both provide certain data subjects with new data privacy rights, compel new operational requirements for companies, and impose potentially significant penalties for noncompliance. The cost to comply with the GDPR, CCPA and other new laws, regulations and industry standards, including costs associated with any related governmental investigations, enforcement actions, or litigations or claims, may limit the use and adoption of our products and services and could have an adverse impact on our business.

Advances in computer capabilities, new discoveries in the field of cryptography or other cyber-security developments may result in a compromise or breach of the technology we use to protect user transaction data and cyber-security attacks are becoming more sophisticated. Cyber-security risks such as malicious software and attempts to gain unauthorized access to data are rapidly evolving and could lead to disruptions in our network, unauthorized release of personally identifiable, confidential or otherwise protected information or corruption of data. Any compromises of our security could damage our reputation and brand and expose us to possible liability such as litigation claims or fines, which would substantially harm our business and operating results. We have incurred costs and may need to expend significant additional resources to appropriately protect against security breaches, implement processes to adequately respond to security breaches (including as may be required by applicable law, such as the GDPR), or to address problems caused by breaches.

Many countries, such as European Union member countries as a result of the 2006 E.U. Data Retention Directive, are introducing, or have already introduced into local law some form of traffic and user data retention requirements, which are generally applicable to providers of electronic communications services. Retention periods and data types vary from country to country, and the various local data protection and other authorities may implement traffic and user retention requirements regarding certain data in different and potentially overlapping ways. Although the constitutionality of the 2006 E.U. Data Retention Directive has been questioned, we may be required to comply with data retention requirements in one or more jurisdictions, or we may be required to comply with these requirements in the future as a result of changes or modifications to the Boingo solution or changes or modifications to the technological infrastructure on which the Boingo solution is based. Failure to comply with these retention requirements may result in the imposition of costly penalties. Compliance with these retention requirements can be difficult and costly from a legal, operational and technical perspective and could harm our business and operational results.

Various events could disrupt our networks, information systems or properties and could impair our operating activities and negatively impact our reputation and financial results.

Network and information systems technologies are critical to our operating activities, both for our internal uses and supplying services to our customers. Network or information system shutdowns or other service failure disruptions, such as access point failure at one of our managed and operated wireless infrastructure networks or a backhaul disruption, caused by events such as computer hacking, dissemination of computer viruses, worms and other destructive or disruptive software, “cyber-attacks,” process breakdowns, denial of service attacks and other malicious activity pose increasing risks. Both unsuccessful and successful “cyber-attacks” on companies have continued to increase in frequency, scope and potential harm in recent years. While we develop and maintain systems seeking to prevent systems-related events and security breaches from occurring, the development and maintenance of these systems is costly and requires ongoing monitoring and updating as techniques used in such attacks become more sophisticated and change frequently. We, and the third parties on which we rely, may be unable to anticipate these techniques or implement adequate preventive measures. While from time to time attempts have been made to access our network, these attempts have not yet resulted in any material release of information, degradation or disruption to our network and information systems. We maintain cyber liability insurance; however, this insurance may be insufficient to cover the financial, legal, business or reputational losses that may result from an interruption or breach of our systems.

Our network and information systems are also vulnerable to damage or interruption from power outages, telecommunications failures, accidents, natural disasters (including extreme weather arising from short-term or any long-term changes in weather patterns), terrorist attacks and similar events. Further, the impacts associated with extreme weather or long-term changes in weather patterns, such as increased and intensified storm activity, may cause increased business interruptions. Our system redundancy may be ineffective or inadequate, and our disaster recovery planning may be insufficient for all eventualities.

Any of these events, if directed at, or experienced by, us or technologies upon which we depend, could have adverse consequences on our network, our customers and our business, including damage to our or our customers’ equipment and data and could result in lengthy interruptions in the availability of the Boingo solution. Large expenditures may be necessary to repair or replace damaged property, networks or information systems or to protect them from similar events in the future. Moreover, the amount and scope of insurance, if any, that we maintain against losses resulting from any such events or security breaches may not be sufficient to cover our losses or otherwise adequately compensate us for any disruptions to our business that may result. Any such significant service disruption could result in damage to our reputation, brand and credibility, customer dissatisfaction and ultimately a loss of customers or revenue. Any significant loss of customers or revenue, significant increase in costs of serving those customers, or damage to our reputation, brand or credibility could adversely affect our growth, financial condition and results of operations.

We may be unsuccessful in expanding our international operations, which could harm the growth of our business, operating results and financial condition.

We operate in several foreign markets, including Brazil, the U.K., and the United Arab Emirates and we continue to assess expansion in international markets. Our ability to expand internationally involves various risks, including the need to invest significant resources in unfamiliar markets, and the possibility that there may not be returns on these investments in the near future or at all. In addition, we have incurred and expect to continue to incur expenses before we generate any material revenue in these new markets. Our expansion plans will require significant management attention and resources. We have limited experience in selling our solutions in international markets or in conforming to local cultures, standards or policies. We may not be able to compete successfully in these international markets. Our ability to expand will also be limited by the demand for mobile Internet in international markets. Different privacy, censorship and liability standards and regulations and different intellectual property laws in foreign countries may cause our business and operating results to suffer.

Any future international operations may fail to succeed due to risks inherent in foreign operations, including:

- different technological solutions for mobile Internet than those used in North America;
- varied, unfamiliar and unclear legal and regulatory restrictions;
- unexpected changes in international regulatory requirements and tariffs;

- legal, political, social or systemic restrictions on the ability of U.S. companies to do business in foreign countries;
- currency fluctuations;
- Foreign Corrupt Practices Act compliance and related risks;
- difficulties in staffing and managing foreign operations;
- difficulties in enforcing contracts and collecting accounts receivable, and longer payment cycles, especially in emerging markets;
- reduced protection for intellectual property rights in some countries; and
- potential adverse tax consequences.

Some of our business partners also have international operations and are subject to the risks described above. Even if we successfully manage the risks of international operations, our business may be adversely affected if our business partners are not able to successfully manage these risks.

As a result of these obstacles, we may find it difficult or prohibitively expensive to expand internationally or we may be unsuccessful in our attempt to do so, which could harm our business, operating results and financial condition.

Acquisitions could be difficult to identify, pose integration challenges, divert the attention of management, disrupt our business, dilute stockholder value, and adversely affect our operating results and financial condition.

We have in the past acquired and may in the future seek to acquire or invest in businesses, products or technologies that we believe could complement or expand our business or otherwise offer growth opportunities. Acquisitions may disrupt our business, divert our resources and require significant management attention that would otherwise be available for development of our existing business.

In addition, we may not be able to integrate the acquired personnel, operations and technologies successfully, or effectively manage the combined business following the acquisition. We also may not achieve the anticipated benefits from the acquired business due to a number of factors, including:

- inability to integrate or benefit from acquired technologies or services in a profitable manner;
- unanticipated costs, accounting charges or other liabilities associated with the acquisition;
- incurrence of acquisition-related costs;
- difficulty integrating operations, personnel and accounting and other systems of the acquired business;
- difficulty in forecasting future revenues and costs of any acquired business due to unfamiliarity with the business or challenges in integrating or benefit from acquired technologies or services in a p
- difficulties and additional expenses associated with supporting legacy products and hosting infrastructure of the acquired business, including due to language, geographical or cultural differences;
- difficulty converting the customers of the acquired business onto our contract terms, including disparities in the revenues, licensing, support or services model of the acquired company;
- adverse effects to our existing business relationships with business partners and customers as a result of the acquisition;
- the potential loss of key employees;
- use of resources that are needed in other parts of our business; and
- use of substantial portions of our available cash to consummate the acquisition.

In addition, a significant portion of the purchase price of companies we acquire may be allocated to acquired goodwill and other intangible assets, which must be assessed for impairment at least annually. In the future, if our acquisitions do not yield expected returns, we may be required to take charges to our operating results based on this impairment assessment process, which could adversely affect our results of operations. In addition, our exposure to risks associated with various claims, including the use of intellectual property, may be increased as a result of acquisitions of other companies. For example, we may have a lower level of visibility into the development process with respect to intellectual property or the care taken to safeguard against infringement risks with respect to the acquired company or technology. In addition, third parties may make infringement and similar or related claims after we have acquired technology that has not been asserted prior to our acquisition.

Acquisitions could also result in dilutive issuances of equity securities or the incurrence of debt, which could adversely affect our operating results. In addition, if an acquired business fails to meet our expectations, our operating results, business and financial position may suffer.

We rely on our credit facility to fund a significant portion of our capital expenditures and other capital needs. If we are unable to achieve compliance with the credit facility covenants, or interest rates increase significantly, or we are unable to renew our credit facility on favorable terms, or at all, our business would be negatively impacted.

In February 2019, we entered into a Credit Agreement (“Credit Agreement”) and related agreements with Bank of America, N.A. acting as agent for lenders named therein. The Credit Agreement places restrictions on our ability to take certain actions and sets standards for minimum financial performance. If we fail to comply with the terms and conditions of this Credit Agreement, then the line of credit may be withdrawn, and the additional funds will not be available to us to fund our capital needs. Further such restrictions on our ability to take certain actions could reduce our flexibility to run and manage our business which could have an adverse effect on our results of operations.

We may fail to achieve the expected cost savings and related benefits from our December 2019 restructuring.

In December 2019, our Board of Directors approved a plan to restructure the Company's business operations to drive long term sustainable revenue growth, better align resources, improve operational efficiencies and to increase profitability. Upon the completion of this plan, our management and employees will be primarily focused on managing our key businesses of (i) providing services to the wireless carriers, (ii) generating business on military bases and (iii) growing the Company's multifamily business, in addition to managing the profitability of the Company's legacy businesses such as retail and advertising. As part of this business realignment plan, we will eliminate approximately 80 positions, or 16% of our workforce. We recorded a restructuring charge during the quarter ended December 31, 2019 of approximately $2.3 million, primarily related to employee severance and benefit costs. Affected employees have received notification and are eligible to receive severance payments based on their responsibilities within the organization and years of service, contingent upon an affected employee's execution (and non-revocation) of a separation agreement, which includes a general release of claims against the Company. Overall, we expect that the workforce reduction will decrease operating costs by approximately $11.0 million on an annualized basis. The actions associated with this restructuring are anticipated to be completed in the first half of 2020. It is anticipated that the related cash payments will occur by the end of March 31, 2020.

We may fail to effectively execute on our business realignment. These actions may cost more and take more time than we currently estimate and we may not be able to drive long term sustainable revenue growth, better align resources, improve operational efficiencies and to increase profitability. Any failure to properly execute our business realignment plan could cause us not to achieve the expected benefits of these actions, and adversely affect our financial condition.

Worldwide economic and other conditions, and their impact on travel and consumer spending, may adversely affect our business, operating results and financial condition.

Our business is impacted by travel and consumer spending, because users seek to access the mobile Internet while they are on-the-go, and because spending on Internet access is often a consumer discretionary spending decision. Factors that tend to negatively impact levels of travel include the impact of public health epidemics, such as the coronavirus currently impacting China and many other countries, high unemployment, high energy prices, low business and consumer confidence, the fear of terrorist attacks, war and other macroeconomic factors. Economic conditions that tend to negatively impact levels of discretionary consumer spending include high unemployment, high consumer debt, reductions in net worth, depressed real estate markets, increased taxation, high energy prices, high interest rates, low consumer confidence and other macroeconomic factors. If the current global economic growth is slower than expected, or if it weakens, our military and retail customer base, new military and retail customer acquisition and usage-based revenue could be materially harmed, and our results of operations would be adversely affected.

The regulation of Internet communications, products and services is currently uncertain, which poses risks for our business from changes in laws, regulations, and interpretation or enforcement of existing laws or regulations.

The current regulatory environment for Internet communications, products and services is uncertain. Many laws and regulations were adopted prior to the advent of the Internet and related technologies and often do not contemplate or address the specific issues associated with the Internet and related technologies. The scope of laws and regulations applicable to the Internet remains uncertain and is subject to statutory or interpretive change. We cannot be certain that we, our partners or our users are currently in compliance with regulatory or other legal requirements in the numerous countries in which our service is used. Our failure or the failure of our partners, users and others with whom we transact business, or to whom we license the Boingo solution, to comply with existing or future regulatory or other legal requirements could materially adversely affect our business, financial condition and results of operations. Regulators may disagree with our interpretations of existing laws or regulations or the applicability of existing laws or regulations to our business, and existing laws, regulations and interpretations may change in unexpected ways.

We believe that the Boingo solution is on the forefront of wireless infrastructure connectivity, and therefore it may face greater regulatory scrutiny than other communications products and services. We enter into various exclusive agreements for our DAS services with venues such as airports, transportation hubs, stadiums/arenas, universities, convention centers, and office campuses. Recently, there has been action and commentary within the Federal Communications Commission that is adverse to exclusive access arrangements for DAS and other exclusive arrangements. If the FCC continues to move forward on regulations that are adverse to our exclusive DAS arrangements or our other exclusive arrangements, our business, revenues and profits could be significantly harmed. Further, we cannot be certain what positions regulators may take regarding our compliance with, or lack of compliance with, other current and future legal and regulatory requirements or what positions regulators may take regarding any past or future actions we have taken or may take in any jurisdiction. Regulators may determine that we are not in compliance with legal and regulatory requirements, and impose penalties, or we may need to make changes to the Boingo solution, which could be costly and difficult. Any of these events would adversely affect our operating results and business.

If we lose key personnel or are unable to attract and retain personnel on a cost-effective basis, our business could be harmed.

Our performance is substantially dependent on the continued services and performance of our senior management and our highly qualified team of engineers, many of whom have numerous years of experience and specialized expertise in our business and technology. If we are not successful in hiring and retaining highly qualified engineers, we may not be able to extend or maintain our engineering and technological expertise and our future product and service development efforts could be adversely affected. Additionally, the process of attracting and retaining suitable replacements for any executive officers or any of our highly qualified engineers we lose in the future would result in transition costs and would divert the attention of other members of our senior management from our existing operations. Additionally, such a loss could be negatively perceived in the capital markets. If we lose members of our senior management, this may significantly delay or prevent the achievement of our strategic objectives and adversely affect our operating results.

Our future success also depends on our ability to identify, attract, hire, train, retain and motivate highly skilled managerial, operations, business development and marketing personnel, especially personnel that has experience in our business and industry. We have in the past maintained a rigorous, highly selective and time-consuming hiring process. We believe that our approach to hiring has significantly contributed to our success to date. However, our highly selective hiring process has made it more difficult for us to hire a sufficient number of qualified employees, and, as we grow, our hiring process may prevent us from hiring the personnel we need in a timely manner. Moreover, the cost of living in the Los Angeles area, where our corporate headquarters is located, has been an impediment to attracting new employees in the past, and we expect that this will continue to impair our ability to attract and retain employees in the future. If we fail to attract, integrate and retain the necessary personnel, we may not be able to grow effectively, and our business could suffer significantly.

In December 2019, we announced a plan to restructure and realign our business operations to drive long term sustainable revenue growth, better align resources, improve operational efficiencies and to increase profitability. This restructuring included eliminating approximately 80 positions, or 16% of our workforce. We believe it may be more challenging to attract and retain highly skilled managerial, operations, business development and marketing personnel due to our recent business realignment, which could harm our ability grow effectively, and our business could suffer significantly.

Material defects or errors in our software could harm our reputation and brand, result in significant costs to us and impair our ability to sell the Boingo solution.

The software underlying the Boingo solution is inherently complex and may contain material defects or errors, particularly when the software is first introduced or when new versions or enhancements are released. We have from time to time found defects or errors in our software, and defects or errors in our existing software may be detected in the future. Any defects or errors that cause interruptions to the availability of our services could result in:

- a reduction in sales or delay in market acceptance of the Boingo solution;
- sales credits or refunds to our users and wholesale partners;
- loss of existing users and difficulty in attracting new users;
- diversion of development resources;
- harm to our reputation and brand image; and
- increased insurance costs.

The costs incurred in correcting any material defects or errors in our software may be substantial and could harm our operating results.

Our business depends on strong brands, and if we do not cost effectively develop, maintain and enhance our brand, our financial condition and operating results could be harmed.

We believe that the Boingo brand is a critical part of our business and that developing and maintaining awareness of our brand is important to achieving widespread acceptance of the Boingo solution and is an important element in attracting and retaining customers and partners. We continue to seek new ways to promote our brand through our managed and operated hotspots. We intend to enhance our brand through low-cost co-marketing arrangements with our partners and through periodic promotional and sponsorship activities and by continuing to leverage the reach of social media to interact with our customers. In order to maintain strong relationships with our venue and network partners, we may have to reduce the visibility of the Boingo brand or make other decisions that do not promote and maintain the Boingo brand, such as our custom branding alternatives that we offer to wholesale clients. If we fail to promote and maintain the Boingo brand, or if we incur significant expenses to promote the brand and are still unsuccessful in maintaining a strong brand, our financial condition and operating results could be harmed.

Additionally, we believe that developing this brand in a cost-effective manner is important in meeting our expected margins. Brand promotion activities may not result in increased revenue, and any increased revenue resulting from these promotion activities may not offset the expenses we incurred in building our brand. If we fail to cost effectively build and maintain our brand, we may fail to attract or retain customers or partners, and our financial condition and results of operations could be harmed.

The growth of free Wi-Fi networks may compete with our paid mobile Wi-Fi Internet solutions.

Many venues offer free mobile Wi-Fi as an incentive or value-added benefit to their customers. Free Wi-Fi may reduce retail customer demand for our services and put downward pressure on the prices we charge our retail customers. In addition, telecom operators may offer free mobile Wi-Fi as part of a home broadband or other service contract, which also may force down the prices we charge our retail customers. If we are unable to effectively offset this downward pressure on our prices by being a Wi-Fi service provider or sufficiently grow our DAS and small cell business, or if we are unable to acquire and retain retail customers, we will have lower profit margins and our operating results and financial condition may be adversely impacted.

We rely on third-party customer support service providers for the majority of our customer support calls. If these service providers experience operational difficulties or disruptions, our business could be adversely affected.

We depend on third-party customer support service providers to handle most of our routine multifamily, military and retail customer support cases. While we maintain limited customer support operations in our Los Angeles headquarters and our Columbia office, if our relationships with our customer support service providers terminate unexpectedly, or if our customer service providers experience operational difficulties, we may not be able to respond to customer support calls in a timely manner and the quality of our customer service would be adversely affected. This could harm our reputation and brand image and make it difficult for us to attract and retain users. In addition, the loss of our customer support service providers would require us to identify and contract with alternative sources, which could prove time-consuming and expensive.

If we are not successful in developing our mobile application for new devices and platforms, or if those solutions are not widely adopted, our results of operations and business could be adversely affected.

As new mobile devices and platforms are developed, we may encounter problems in developing products for such new mobile devices and platforms, and we may need to devote significant resources to the creation, support, and maintenance of such products. In addition, if we experience difficulties integrating our mobile applications into mobile devices, or if we face increased costs to distribute our mobile applications, our future growth and our results of operations could suffer.

If we fail to maintain relationships with providers of mobile operating systems or mobile application download stores, our business could be adversely affected.

We rely on the integration of our software into mobile operating systems to allow mobile devices to connect to our global network of wireless networks. If problems arise with our relationships with providers of mobile operating systems or mobile application download stores, such as the Apple App Store and Google Play, or if our mobile application receives unfavorable treatment compared to the promotion and placement of competing applications, such as the order of our products in the mobile application download stores, we may fail to attract or retain customers or partners, and our business could be adversely affected.

Risks Related to Our Intellectual Property

Claims by others that we infringe their proprietary technology could harm our business.

In recent years there has been significant litigation involving intellectual property rights in many technology-based industries, including the wireless communications industry. While we have not been specifically targeted, similar companies have been subject to patent lawsuits. As we face increasing competition and gain an increasingly high profile, the possibility of intellectual property rights claims against us grows. We may be subject to third-party claims in the future. The costs of supporting these litigations and disputes are considerable, and there can be no assurance that a favorable outcome will be obtained. We may be required to settle these litigations and disputes on terms that are unfavorable to us, given the complex technical issues and inherent uncertainties in intellectual property litigation. Claims that the Boingo solution infringes third-party intellectual property rights, regardless of their merit or resolution, could also divert the efforts and attention of our management and technical personnel. The terms of any settlements or judgments may require us to:

- cease distribution and back-end operation of the Boingo solution;
- pay substantial damages for infringement;
- expend significant resources to develop non-infringing solutions;
- license technology from the third-party claiming infringement, which may not be available on commercially reasonable terms, or at all;
- cross-license our technology to a competitor to resolve an infringement claim, which could weaken our ability to compete with that competitor; or
- pay substantial damages to our partners to discontinue their use of or to replace infringing solutions sold to them with non-infringing solutions.

Any of these unfavorable outcomes could have a material adverse effect on our business, financial condition and results of operations.

We utilize unlicensed spectrum in certain of our offerings, which is subject to intense competition, low barriers of entry and slowdowns due to multiple users.

We presently utilize unlicensed spectrum to provide our Wi-Fi Internet solutions. Unlicensed or “free” spectrum is available to multiple users and may suffer bandwidth limitations, interference and slowdowns if the number of users exceeds traffic capacity. The availability of unlicensed spectrum is not unlimited, and others do not need to obtain permits or licenses to utilize the same unlicensed spectrum that we currently, or may in the future, utilize. The inherent limitations of unlicensed spectrum could potentially threaten our ability to reliably deliver our services. Moreover, the prevalence of unlicensed spectrum creates low barriers to entry in our industry.

Our use of open source software could limit our ability to commercialize the Boingo solution.

We have incorporated open source software into the Boingo solution. Although we closely monitor our use of open source software, we are subject to the terms of open source licenses that have not been interpreted by U.S. or foreign courts, and there is a risk that in the future these licenses could be construed in a manner that imposes unanticipated conditions or restrictions on our ability to commercialize the Boingo solution. In that event, we could be required to seek licenses from third parties or to re-engineer our software in order to continue offering the Boingo solution, or to discontinue operations, any of which could materially adversely affect our business.

If we are unable to protect our intellectual property rights, our competitive position could be harmed, or we could be required to incur significant expenses to enforce our rights.

Our business depends on our ability to protect our proprietary technology. We rely on trade secret, patent, copyright and trademark laws and confidentiality agreements with employees and third parties, all of which offer only limited protection. We own seven patents in the United States, two patents in Japan and two patents in China. Despite our efforts, the steps we have taken to protect our proprietary rights may not be adequate to prevent the use or misappropriation of our proprietary information or infringement of our intellectual property rights. Our ability to police the use, misappropriation or infringement of our intellectual property is uncertain, particularly in countries other than the United States. Moreover, the rights granted under any issued patents may not provide us with complete proprietary protection or any competitive advantages, and, as with any technology, competitors may be able to develop similar or superior technologies on their own now or in the future. Protecting against the unauthorized use of our solutions, trademarks, and other proprietary rights is expensive, difficult and, in some cases, impossible. Litigation may be necessary in the future to enforce or defend our intellectual property rights, to protect our trade secrets, or to determine the validity and scope of the proprietary rights of others. Litigation could result in substantial costs and diversion of management resources, either of which could harm our business. Furthermore, many of our current and potential competitors can dedicate substantially greater resources to enforce their intellectual property rights than we do. Accordingly, despite our efforts, if the protection of our proprietary rights is inadequate to prevent use or misappropriation by third parties, the value of our brand and other intangible assets may be diminished and competitors may be able to more effectively mimic our service and methods of operations. Any of these events would have a material adverse effect on our business, financial condition and results of operations.

Risks Related to Our Convertible Notes

We have incurred substantial indebtedness that may decrease our business flexibility, access to capital, and/or increase our borrowing costs, and we may still incur substantially more debt, which may adversely affect our operations and financial results.

In October 2018, we issued $201.25 million aggregate principal amount of 1.00% convertible senior notes due 2023 (“Convertible Notes”). Our indebtedness may:

- limit our ability to borrow additional funds for working capital, capital expenditures, acquisitions or other general business purposes;
- limit our ability to use our cash flow or obtain additional financing for future working capital, capital expenditures, acquisitions or other general business purposes;
- require us to use a substantial portion of our cash flow from operations to make debt service payments;

- limit our flexibility to plan for, or react to, changes in our business and industry;
- place us at a competitive disadvantage compared to our less leveraged competitors; and
- increase our vulnerability to the impact of adverse economic and industry conditions.

Further, the indenture governing the Convertible Notes does not restrict our ability to incur additional indebtedness and we and our subsidiaries may incur substantial additional indebtedness in the future, subject to the restrictions contained in any future debt instruments existing at the time, some of which may be secured indebtedness.

Servicing our debt will require a significant amount of cash. We may not have sufficient cash flow from our business to pay our substantial debt, and we may not have the ability to raise the funds necessary to settle conversions of the Convertible Notes in cash or to repurchase the Convertible Notes upon a fundamental change, which could adversely affect our business and results of operations.

Our ability to make scheduled payments of the principal of, to pay interest on, or to refinance our indebtedness, including the amounts payable under the Convertible Notes, depends on our future performance, which is subject to economic, financial, competitive, and other factors beyond our control. Our business may not continue to generate enough cash flow from operations in the future to service our indebtedness and make necessary capital expenditures. If we are unable to generate such cash flow, we may be required to adopt one or more alternatives, such as selling assets, restructuring debt, or obtaining additional equity capital on terms that may be onerous or highly dilutive. Our ability to refinance our indebtedness will depend on the capital markets and our financial condition at such time. We may not be able to engage in any of these activities or engage in these activities on desirable terms, which could result in a default on our debt obligations.

Further, holders of the Convertible Notes have the right to require us to repurchase all or a portion of their Convertible Notes upon the occurrence of a “fundamental change” (as defined in the indenture governing the Convertible Notes (the “indenture”)) before the maturity date at a repurchase price equal to 100% of the principal amount of the Convertible Notes to be repurchased, plus accrued and unpaid interest, if any. In addition, upon conversion of the Convertible Notes, unless we elect to deliver solely shares of our common stock to settle such conversion (other than paying cash in lieu of delivering any fractional share), we will be required to make cash payments in respect of the Convertible Notes being converted. However, we may not have enough available cash or be able to obtain financing at the time we are required to make repurchases of Convertible Notes surrendered therefor or pay cash with respect to Convertible Notes being converted.

The conditional conversion feature of the Convertible Notes, when triggered, may adversely affect our financial condition and operating results.

In the event the conditional conversion feature of the Convertible Notes is triggered, holders of the Convertible Notes will be entitled to convert their Convertible Notes at any time during specified periods at their option. If one or more holders elect to convert their Convertible Notes, unless we elect to satisfy our conversion obligation by delivering solely shares of our common stock (other than paying cash in lieu of delivering any fractional share), we would be required to settle a portion or all of our conversion obligation in cash, which could adversely affect our liquidity.

In addition, even if holders of Convertible Notes do not elect to convert their Convertible Notes, we could be required under applicable accounting rules to reclassify all or a portion of the outstanding principal of the Convertible Notes as a current rather than long-term liability, which would result in a material reduction of our net working capital.

The accounting method for convertible debt securities that may be settled in cash, such as the Convertible Notes, could have a material effect on our reported financial results.

Under Accounting Standards Codification 470-20, *Debt with Conversion and Other Options* (“ASC 470-20”), an entity must separately account for the liability and equity components of the convertible debt instruments (such as the Convertible Notes) that may be settled entirely or partially in cash upon conversion in a manner that reflects the issuer’s economic interest cost. The effect of ASC 470-20 on the accounting for the Convertible Notes is that the equity component is required to be included in the additional paid-in capital section of stockholders’ equity on our consolidated balance sheet at the issuance date and the value of the equity component would be treated as debt discount for purposes of accounting for the debt component of the Convertible Notes. As a result, we will be required to record a greater amount of non-cash interest expense as a result of the amortization of the discounted carrying value of the Convertible Notes to their face amount over the term of the Convertible Notes. We will report larger net losses (or lower net income) in our financial results because ASC 470-20 will require interest to include both the amortization of the debt discount and the instrument's non-convertible coupon interest rate, which could adversely affect our reported or future financial results, the trading price of our common stock and the trading price of the Convertible Notes.

In addition, under certain circumstances, convertible debt instruments (such as the Convertible Notes) that may be settled entirely or partly in cash may be accounted for utilizing the treasury stock method, the effect of which is that the shares issuable upon conversion of such Convertible Notes are not included in the calculation of diluted earnings per share except to the extent that the conversion value of such Convertible Notes exceeds their principal amount. Under the treasury stock method, for diluted earnings per share purposes, the transaction is accounted for as if the number of shares of common stock that would be necessary to settle such excess, if we elected to settle such excess in shares, are issued. We cannot be sure that the accounting standards in the future will continue to permit the use of the treasury stock method. If we are unable or otherwise elect not to use the treasury stock method in accounting for the shares issuable upon conversion of the Convertible Notes, then our diluted earnings per share could be adversely affected.

The capped call transactions may affect the value of the Convertible Notes and our common stock.

In connection with the pricing the Convertible Notes and exercise of the over-allotment option to purchase additional Convertible Notes, we entered into capped call transactions with a financial institution. The capped call transactions are expected generally to reduce potential dilution upon conversion of the Convertible Notes and/or offset any cash payments we are required to make in excess of the principal amount of converted Convertible Notes, as the case may be, with such reduction and/or offset subject to a cap.

In connection with establishing its initial hedges of the capped call transactions, the financial institution or its affiliate likely purchased shares of our common stock and/or entered into various derivative transactions with respect to our common stock concurrently with or shortly after the pricing of the Convertible Notes. The financial institution or its affiliate may modify its hedge positions by entering into or unwinding various derivatives with respect to our common stock and/or purchasing or selling our common stock or other securities of ours in secondary market transactions following the pricing of the Convertible Notes and prior to the maturity of the Convertible Notes (and are likely to do so during any observation period related to a conversion of Convertible Notes). This activity could also cause or avoid an increase or a decrease in the market price of our common stock or the Convertible Notes.

The potential effect, if any, of these transactions and activities on the price of our common stock or the Convertible Notes will depend in part on market conditions and cannot be ascertained at this time. Any of these activities could adversely affect the value of our common stock.

Any conversion of the Convertible Notes will dilute the ownership interest of existing stockholders, including holders who had previously converted their Convertible Notes, or may otherwise depress the price of our common stock.

The conversion of some or all of the Convertible Notes will dilute the ownership interests of existing stockholders to the extent we deliver shares of our common stock upon conversion of any of the Convertible Notes. The Convertible Notes are currently convertible and may from time to time in the future be convertible at the option of their holders prior to their scheduled terms under certain circumstances. Any sales in the public market of the common stock issuable upon such conversion could adversely affect prevailing market prices of our common stock. In addition, the existence of the Convertible Notes may encourage short selling by market participants because the conversion of the Convertible Notes could be used to satisfy short positions, or anticipated conversion of the Convertible Notes into shares of our common stock could depress the price of our common stock.

Risks Related to Ownership of Our Common Stock

The market price of our common stock may be volatile, which could result in substantial losses for investors.

Fluctuations in market price and volume are particularly common among securities of technology companies. As a result, you may be unable to sell your shares of common stock at or above the price you paid. The market price of our common stock and trading price of our Convertible Notes may fluctuate significantly in response to the factors described in this risk factor section as well as the following factors, among others, many of which are beyond our control:

- the status of relationships with our venue partner or the military;
- decrease in demand for our DAS and small cell networks;
- general market conditions;
- domestic and international economic factors unrelated to our performance;
- actual or anticipated fluctuations in our quarterly operating results;
- changes in or failure to meet publicly disclosed expectations as to our future financial performance;
- changes in the regulatory environment related to our business, including exclusive arrangements;
- changes in securities analysts' estimates of our financial performance or lack of research and reports by industry analysts;
- changes in market valuations or earnings of similar companies;
- developments or disputes concerning patents or proprietary rights, including increases or decreases in litigation expenses associated with intellectual property lawsuits we may initiate, or in which defendants;
- failure to complete significant sales;
- any future sales of our common stock or other securities; and
- additions or departures of key personnel.

If securities or industry analysts publish misleading or unfavorable research about our business, our stock price and trading volume could decline.

The trading market for our common stock and our Convertible Notes depends in part on the research and reports that securities or industry analysts publish about us or our business. If one or more of these analysts downgrades our stock or publishes misleading or unfavorable research about our business, our stock price and the trading price of our Convertible Notes would likely decline. If one or more of these analysts ceases coverage of our company or fails to publish reports on us regularly, demand for our stock could decrease, which could cause our stock price or the trading price of our Convertible Notes or trading volume to decline. Announcements by analysts that may have a significant impact on the market price of our common stock and the trading price of our Convertible Notes may relate to:

- our operating results or forecasts;
- new issuances of equity, debt or convertible debt by us;
- developments in our relationships with corporate customers;
- announcements by our customers or competitors;
- changes in regulatory policy or interpretation;
- governmental investigations;
- changes in the industries in which we operate;
- changes in the ratings of our stock by rating agencies or securities analysts;
- our acquisitions of complementary businesses; or
- our operational performance.

As a public company, we are subject to financial and other reporting and corporate governance requirements that may be difficult for us to satisfy and may divert resources and management attention from operating our business.

We are required to file annual, quarterly and other reports with the SEC. We must prepare and timely file financial statements that comply with SEC reporting requirements. We are also subject to other reporting and corporate governance requirements, under the listing standards of the Nasdaq Stock Market, or Nasdaq, which imposes significant compliance obligations upon us. We are required, among other things, to:

- prepare and file periodic reports, and distribute other stockholder communications, in compliance with the federal securities laws and Nasdaq rules; and
- evaluate and maintain our system of internal control over financial reporting, and report on management's assessment thereof, in compliance with rules and regulations of the SEC and the Public Co Oversight Board. Further, we are required to obtain an opinion on the effectiveness of our internal control over financial reporting as of December 31st each year from our independent registered publ

If we fail to comply with the rules of Section 404 of the Sarbanes-Oxley Act of 2002 related to accounting controls and procedures, or, if we discover material weaknesses and deficiencies in our internal control and accounting procedures, our financial results may be adversely effected and we may be subject to sanctions by regulatory authorities and our stock price and the trading price of our Convertible Notes could decline.

Section 404 of the Sarbanes-Oxley Act (the "Act") requires that we evaluate and determine the effectiveness of our internal control over financial reporting and requires an attestation and report by our external auditing firm on our internal control over financial reporting. We believe our system and process evaluation and testing comply with the management certification and auditor attestation requirements of Section 404. We cannot be certain, however, that we will be able to satisfy the requirements in Section 404 in all future periods, especially as we grow our business. If we are not able to continue to meet the requirements of Section 404 in a timely manner or with adequate compliance, we may be subject to sanctions or investigation by regulatory authorities, such as the SEC or the Nasdaq Stock Market. Any such action could adversely affect our financial results or investors' confidence in us and could cause our stock price and the trading price of our Convertible Notes to fall. Moreover, if we are not able to comply with the requirements of Section 404 in a timely manner, or if we or our independent registered public accounting firm identifies deficiencies in our internal controls that are deemed to be material weaknesses, we may be required to incur significant additional financial and management resources to achieve compliance.

If we need additional capital in the future, it may not be available on favorable terms, or at all.

We may require additional capital from equity or debt financing in the future to fund our operations or respond to competitive pressures or strategic opportunities. We may not be able to secure timely additional financing on favorable terms, or at all. The terms of additional financing may place limits on our financial and operating flexibility. If we raise additional funds through further issuances of equity, convertible debt securities or other securities convertible into equity, our existing stockholders could suffer significant dilution in their percentage ownership of our company, and any new securities we issue could have rights, preferences and privileges senior to those of holders of our common stock. If we are unable to obtain adequate financing or financing on terms satisfactory to us, if and when we require it, our ability to grow or support our business and to respond to business challenges and opportunities could be significantly limited.

Investors may experience dilution of their ownership interests because of the future issuance of additional shares of our capital stock.

We are authorized to issue 100,000,000 shares of common stock and 5,000,000 shares of preferred stock. As of December 31, 2019, there were approximately 44,224,000 shares of our common stock issued and outstanding and no shares of preferred stock outstanding. In addition, as of December 31, 2019, we had approximately 633,000 unvested restricted stock units, approximately 235,000 exercisable stock options, approximately 2,478,000 shares available for grant under the 2011 Plan, and approximately 4,756,000 shares subject to conversion under the Convertible Notes.

In the future, we may issue additional authorized but previously unissued equity securities resulting in the dilution of the ownership interests of our present stockholders. We may also issue additional shares of our capital stock or other securities that are convertible into or exercisable for our capital stock in connection with hiring or retaining employees or for other business purposes, including future sales of our securities for capital raising purposes. The future issuance of any such additional shares of capital stock may create downward pressure on the trading price of our common stock and our Convertible Notes.

Anti-takeover provisions in our charter documents and Delaware law and provisions in the indenture for our Convertible Notes could discourage, delay, or prevent a change in control of our company and may affect the trading price of our common stock.

We are a Delaware corporation and the anti-takeover provisions of the Delaware General Corporation Law may discourage, delay, or prevent a change in control by prohibiting us from engaging in a business combination with an interested stockholder for a period of three years after the person becomes an interested stockholder, even if a change of control would be beneficial to our existing stockholders. In addition, our amended and restated certificate of incorporation and amended and restated bylaws may discourage, delay, or prevent a change in our management or control over us that stockholders may consider favorable. Institutional shareholder representative groups, shareholder activists and others may disagree with our corporate governance provisions or other practices, such as those listed below. We generally will consider recommendations of institutional shareholder representative groups, but we will make decisions based on what our board and management believe to be in the best long-term interests of our company and stockholders. These groups could make recommendations to our stockholders against our practices or our board members if they disagree with our positions. Our amended and restated certificate of incorporation and amended and restated bylaws include provisions that:

- authorize the issuance of “blank check” preferred stock that could be issued by our board of directors to thwart a takeover attempt;
- provide that vacancies on the board of directors, including newly-created directorships, may be filled only by a majority vote of directors then in office;
- limit who may call special meetings of stockholders;
- prohibit stockholder action by written consent, thereby requiring all actions to be taken at a meeting of the stockholders; and
- require supermajority stockholder voting to effect certain amendments to our amended and restated certificate of incorporation and amended and restated bylaws.

In addition, as a Delaware corporation, we are subject to Section 203 of the Delaware General Corporation Law. These provisions may prohibit large stockholders, in particular those owning 15% or more of our outstanding voting stock, from merging or combining with us for a certain period of time.

In addition, if a fundamental change occurs prior to the maturity date of the Convertible Notes, holders of the Convertible Notes will have the right, at their option, to require us to repurchase all or a portion of their Convertible Notes. If a “make-whole fundamental change” (as defined in the indenture) occurs prior to the maturity date, we will in some cases be required to increase the conversion rate of the Convertible Notes for a holder that elects to convert its Convertible Notes in connection with such make-whole fundamental change. Furthermore, the indenture prohibits us from engaging in certain mergers or acquisitions unless, among other things, the surviving entity assumes our obligations under the Convertible Notes.

These and other provisions in our charter documents, Convertible Notes, indenture and in Delaware law could deter or prevent a third party from acquiring us or could make it more difficult for stockholders or potential acquirors to obtain control of our board of directors or initiate actions that are opposed by our then-current board of directors, including to delay or impede a merger, tender offer, or proxy contest involving our company. The existence of these provisions could negatively affect the price of our common stock and the trading price of the Convertible Notes and limit opportunities for you to realize value in a corporate transaction.

We have incurred substantial losses in past and current years and may incur additional losses in the future.

As of December 31, 2019, our accumulated deficit was $141.0 million. We generated a net loss for the year ended December 31, 2019 and we are also currently investing in our future growth through expanding our network and buildouts, investing in our software, and consideration of future business acquisitions. As a result, we will incur higher depreciation and other operating expenses, as well as potential acquisition costs, that may negatively impact our ability to achieve profitability in future periods unless and until these growth efforts generate enough revenue to exceed their operating costs and cover our additional overhead needed to scale our business for this anticipated growth. The current global financial condition may also impact our ability to achieve profitability if we generate insufficient revenue to offset the increased costs. In addition, costs associated with the acquisition and integration of any acquired companies may also negatively impact our ability to achieve profitability. For example, in August 2018 we closed the acquisition of substantially all of the assets of Elauwit Networks, LLC and our integration costs may negatively impact our ability to achieve profitability. Finally, given the competitive and evolving nature of the industry in which we operate, we may not be able to achieve or increase profitability.

We do not intend to pay dividends on our common stock and, consequently, your ability to achieve a return on your investment will depend on appreciation in the price of our common stock.

We do not intend to declare and pay dividends on our capital stock for the foreseeable future. We currently intend to invest our future earnings, if any, to fund our growth. Therefore, you are not likely to receive any dividends on your common stock for the foreseeable future and the success of an investment in shares of our common stock will depend upon any future appreciation in its value.

Changes in accounting standards and their interpretations could adversely affect our operating results.

U.S. GAAP are subject to interpretation by the Financial Accounting Standards Board ("FASB"), the Public Company Accounting Oversight Board (“PCAOB”), the SEC, and various other bodies that promulgate and interpret appropriate accounting principles. These principles and related implementation guidelines and interpretations can be highly complex and involve subjective judgments. A change in these principles or interpretations, including the accounting for the Convertible Notes could have a significant effect on our reported financial results, and could affect the reporting of transactions completed before or after the announcement of a change. Additionally, the adoption of these standards may potentially require enhancements or changes in our systems and will require significant time and cost on behalf of our financial management. A discussion of these standards and other pending changes in accounting principles generally accepted in the United States, are further discussed in Footnote 2 in the notes to our consolidated financial statements.

Item 1B. Unresolved Staff Comments

None.

Item 2. Properties

Our corporate headquarters is located in Los Angeles, California. We lease additional office space throughout the U.S., including Columbia, South Carolina for our multifamily business, and internationally. We believe that our office facilities will be adequate for the foreseeable future.

Item 3. Legal Proceedings

From time to time, we may be involved in or subject to claims, suits, investigations and proceedings arising out of the normal course of business. We are not currently a party to any litigation that we believe could have a material adverse effect on our business, financial position, results of operations or cash flows.

Item 4. Mine Safety Disclosures

Not applicable.

PART II

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

Market Information

Our common stock is traded on the Nasdaq Global Market under the symbol "WIFI."

Registered Stockholders

As of February 21, 2020, there were 21 stockholders of record of our common stock. Stockholders of record do not include a substantially greater number of "street name" holders or beneficial holders of our common stock whose shares are held of record by banks, brokers and other financial institutions.

Dividends

We have never declared or paid cash dividends on our common stock, and currently do not anticipate paying cash dividends in the foreseeable future. Any future determination to pay dividends on our common stock, if permissible, will be at the discretion of our board of directors and will depend upon, among other factors, our financial condition, operating results, current and anticipated cash needs, plans for expansion and other factors that our board of directors may deem relevant.

Recent Sales of Unregistered Securities; Use of Proceeds from Sale of Registered Securities

We did not sell any equity securities not registered under the Securities Act during the year ended December 31, 2019.

Issuer Purchases of Equity Securities

On April 1, 2013, the Company approved a stock repurchase program to repurchase up to $10,000,000 of the Company's common stock in the open market, exclusive of any commissions, markups or expenses. On July 30, 2019, the Company authorized a new stock repurchase program under which we may repurchase up to $20,000,000 of our outstanding shares of common stock through July 31, 2020. The program replaced and superseded our existing stock repurchase program. Under the program, the Company may repurchase shares in accordance with all applicable securities laws and regulations, including Rule 10b-18 of the Securities Exchange Act of 1934. The extent to which we may repurchase the Company's shares, and the timing of such repurchases, will depend upon a variety of factors, including market conditions, regulatory requirements and other corporate considerations, as determined by our management. The repurchase program may be extended, suspended or discontinued at any time.

In 2019, the Company repurchased and retired approximately 56,000 shares under this program for approximately $745,000, excluding commissions paid, at a weighted average price per share of $13.24. As of December 31, 2019, the remaining approved amount for repurchases was approximately $19,255,000. Activity under the program in 2019 was as follows:

	Total Number of Shares Purchased (1) (000's)	Weighted Average Price Paid Per Share	App Valu Purc Pr
As of December 31, 2018	—	$ —	
September 1 – September 30, 2019	56	$ 13.24	
Total	56		

[redacted] part of a publicly announced program discussed above, in open-market transactions.

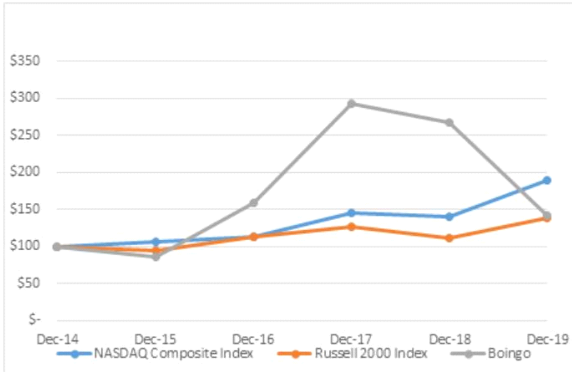
[redacted]

Performance Measurement Comparison

The following performance graph shows the total stockholder return of an investment of $100 in cash made on December 31, 2014 in each of (i) our common stock, (ii) a broad equity market index, the securities comprising the Nasdaq Composite Index, and (iii) issuers with similar market capitalizations, the securities comprising the Russell 2000 index.

The performance graph assumes that $100 was invested on December 31, 2014 in our common stock and in each index, and that all dividends were reinvested. No dividends have been declared nor paid on our common stock. The comparisons in the graph below are required by the SEC and are not intended to forecast or be indicative of possible future performance of our common stock.

COMPARISON OF 60 MONTHS CUMULATIVE TOTAL RETURN*
Among Boingo Wireless, Inc., The Nasdaq Composite Index and The Russell 2000 Index**



	12/31/14	12/31/15	12/31/16	12/31/17	12/31/18
Nasdaq Composite Index	$ 100.00	$ 105.73	$ 113.66	$ 145.76	$ 140.1
Russell 2000 Index	$ 100.00	$ 94.29	$ 112.65	$ 127.46	$ 111.9
Boingo	$ 100.00	$ 86.31	$ 158.93	$ 293.35	$ 268.1

[redacted] ting material” and is not deemed “filed” with the SEC. It is not to be incorporated by reference into any filing of Boingo Wireless, Inc. made under the Securities Act of 1933, as amended, or the Exchange Act, whether made before or after the date hereof and irrespective of any general incorporation language in any such filing, except to the extent we specifically incorporate this section by reference.

** We chose the Russell 2000 index because it is comprised of issuers with similar market capitalizations. We do not believe that we can reasonably identify a peer group of issuers or an industry or line-of-business index.

ITEM 6. SELECTED FINANCIAL DATA

The following selected consolidated financial data should be read in conjunction with “Management’s Discussion and Analysis of Financial Condition and Results of Operations” in Part II, Item 7 and our accompanying consolidated financial statements in Part II, Item 8 of this report.

[redacted]

The consolidated statements of operations data set forth below for years 2019, 2018 and 2017 and the consolidated balance sheets data as of the end of years 2019 and 2018 are derived from the audited consolidated financial statements included in Item 8 of this report. The consolidated statements of operations data for years 2016 and 2015 and the consolidated balance sheets data as of the end of years 2017, 2016 and 2015 are derived from the audited financial statements previously filed with the SEC on Form 10-K. The results of businesses acquired in a business combination are included in the Company's consolidated financial statements from the date of the acquisition.

In December 2019, we approved and adopted a plan to restructure our business operations to drive long term sustainable revenue growth, better align resources, improve operational efficiencies and to increase profitability. Under this plan, our management and employees will be focused primarily on managing our key business of i) providing services to the wireless carriers, ii) generating business on military bases, and iii) growing our multifamily business, in addition to managing the profitability of our legacy business such as retail and advertising. As part of the business realignment plan, we expect to eliminate approximately 80 positions. We expect these actions to be substantially completed in the first half of 2020 and to modify our reportable segments in the period that such actions are completed.

Restructuring charges, which were comprised of employee severance and benefits expense, recorded in the consolidated statement of operations for the year ended December 31, 2019 were as follows:

		Restructuring Charges
Network operations	$	931
Development and technology		910
Selling and marketing		263
General and administrative		194
Total restructuring charges	$	2,298

On August 1, 2018, we acquired the assets of Elauwit Networks, LLC ("Elauwit") for $28.6 million, which included cash paid at closing, holdback consideration, and the fair value of additional contingent consideration that would be due and payable subject to certain conditions and the successful achievement of annual revenue targets during the specified periods. Elauwit provided data and video services to multi-unit dwelling properties including student housing, condominiums, apartments, senior living, and hospitality industries throughout the U.S. In addition, Elauwit built and maintained the network that supported these services for property owners and managers and provided support for residents and employees. For further information on our Elauwit acquisition, refer to Footnote 3 in the notes to our consolidated financial statements.

Prior to August 4, 2015, we had a 70% ownership of Concourse Communications Detroit, LLC. On August 4, 2015, we purchased the remaining 30% ownership interest from the non-controlling interest owners for $1.15 million. We accounted for this transaction as an acquisition of the remaining interest of an entity that had already been majority-owned by the Company. The purchase resulted in a reduction to additional paid-in capital of $1.15 million, representing excess purchase price over the carrying amount of the non-controlling interests. Prior to this purchase, we had a controlling interest in this subsidiary, and therefore, this subsidiary had been and will continue to be consolidated with the Company's operations.

In February 2016, the FASB issued a new standard related to leases, which was codified into ASC 842, *Leases*. ASC 842 requires lessees to recognize assets and liabilities for all leases with lease terms of more than 12 months on the balance sheet. Under ASC 842, the recognition, measurement, and presentation of expenses and cash flows arising from a lease by a lessee will depend on its classification as a finance or operating lease. We adopted ASC 842 on January 1, 2019. ASC 842 permits two methods of adoption and we elected to apply the guidance to each lease that had commenced as of January 1, 2019 with a cumulative-effect adjustment to the opening balance of retained earnings as of that date. Adoption of the new standard resulted in the recording of $16,916,000 of operating lease ROU assets and $22,338,000 of operating lease ROU liabilities as of January 1, 2019.

In May 2014, the FASB issued Accounting Standards Update (“ASU”) 2014-09, *Revenue from Contracts with Customers*, which replaced the accounting standards for revenue recognition under ASC 605, *Revenue Recognition*, with a single comprehensive five-step model, eliminating industry-specific accounting rules. The core principle is to recognize revenue upon the transfer of control of goods or services to a customer at an amount that reflects the consideration expected to be received. The FASB amended several aspects of the guidance after the issuance of ASU 2014-09, and the new revenue recognition accounting standard, as amended, was codified within ASC 606, *Revenue from Contracts with Customers*. On January 1, 2018, we adopted ASC 606 using the modified retrospective method applied to those contracts which were not completed as of January 1, 2018. Results for reporting periods beginning on January 1, 2018 are presented under ASC 606, while prior period amounts are not adjusted and continue to be reported in accordance with ASC 605.

Adoption of ASC 606 using the modified retrospective method required us to record a cumulative effect adjustment, net of tax, to accumulated deficit and non-controlling interests of $3,257,000 and $69,000, respectively, on January 1, 2018. In addition, adoption of the standard resulted in the following changes to the consolidated balance sheet as of January 1, 2018:

	January 1, 2018 (Per ASC 605)	Adjustment for Adoption	January 1, 2018 (Per ASC 606)
		(in thousands)	
Accounts receivable, net	$ 26,148	$ (1,069)	$ 25,079
Prepaid expenses and other current assets	$ 6,369	$ 170	$ 6,539
Other assets	$ 10,082	$ (2,179)	$ 7,903
Deferred revenue, current	$ 61,708	$ 14,176	$ 75,884
Deferred revenue, net of current portion	$ 149,168	$ (20,580)	$ 128,588

The changes to the consolidated balance sheet as of January 1, 2018 were primarily due to the following factors: (i) reclassification of unbilled receivables (contract assets) to a contra-liability account under ASC 606; and (ii) recognition of revenue related to our single performance obligation for our DAS contracts monthly over the contract term once the customer has the ability to access the DAS network and we commence maintenance on the DAS network under ASC 606 as compared to recognition of build-out fees for our DAS contracts monthly over the term of the estimated customer relationship period once the build-out is complete and minimum monthly access fees for our DAS contracts monthly over the term of the telecom operator agreement under ASC 605. The changes to the consolidated balance sheet as of January 1, 2018 are reflected as non-cash changes within cash provided by operating activities in our consolidated statement of cash flows for the year ended December 31, 2018.

We early adopted FASB ASU 2016-09, *Compensation—Stock Compensation (Topic 718): Improvements to Employee Share-Based Payment Accounting*, as of January 1, 2016. As a result of this adoption, we recorded $6,933,000 and $589,000 of net deferred tax assets related to our federal and state net operating losses for excess windfall tax benefits, respectively, as of January 1, 2016. We established a full valuation allowance against those deferred tax assets as of January 1, 2016 based on the determination that it was more likely than not that those deferred tax assets would not be realized. We also elected to change our accounting policy to account for forfeitures when they occur on a modified retrospective basis. The change in our accounting policy resulted in a $94,000 increase to additional paid-in capital and accumulated deficit as of January 1, 2016.

	Year Ended December 31,			
	2019	2018	2017 (2)	2016 (2)
	(in thousands, except per share amounts)			
Consolidated Statements of Operations Data:				
Revenue	$ 263,790	$ 250,821	$ 204,369	$ 159,344
Costs and operating expenses:				
Network access	119,613	113,572	90,702	69,112
Network operations	57,027	52,215	47,615	42,307
Development and technology	34,575	31,372	26,754	22,126
Selling and marketing	24,443	22,647	20,933	18,729
General and administrative	27,265	30,302	35,568	29,719
Amortization of intangible assets	4,571	3,710	3,498	3,448
Total costs and operating expenses	267,494	253,818	225,070	185,441
Loss from operations	(3,704)	(2,997)	(20,701)	(26,097)
Interest expense and amortization of debt discount	(8,618)	(2,400)	(187)	(309)
Interest income and other expense, net	2,017	513	34	(150)
Loss before income taxes	(10,305)	(4,884)	(20,854)	(26,556)
Income tax benefit (expense)	28	5,153	2,078	(427)
Net (loss) income	(10,277)	269	(18,776)	(26,983)
Net income attributable to non-controlling interests	19	1,489	590	348
Net loss attributable to common stockholders	$ (10,296)	$ (1,220)	$ (19,366)	$ (27,331)
Net loss per share attributable to common stockholders:				
Basic	$ (0.23)	$ (0.03)	$ (0.49)	$ (0.72)
Diluted	$ (0.23)	$ (0.03)	$ (0.49)	$ (0.72)
Other Financial Data:				
Operating cash flows	$ 108,710	$ 93,321	$ 97,728	$ 115,205
Investing cash flows	(173,280)	(133,354)	(74,458)	(107,331)
Financing cash flows	(44,428)	162,825	(16,054)	(3,121)
Adjusted EBITDA(1)	82,623	91,818	68,916	40,798

	As of December 31,			
	2019	2018	2017	2016
			(in thousands)	
Consolidated Balance Sheets Data:				
Cash and cash equivalents	$ 40,401	$ 149,412	$ 26,685	$ 19,485
Marketable securities	40,214	—	—	—
Working capital	(36,200)	28,802	(63,146)	(31,388)
Total assets	600,467	602,900	384,309	380,981
Deferred revenue, net of current portion	166,660	137,205	149,168	152,719
Long-term portion of operating leases	17,357	—	—	—
Long-term debt	162,708	151,670	—	15,875
Long-term portion of finance leases	572	3,293	3,817	2,951
Long-term portion of notes payable	95	1,618	2,930	1,661
Total liabilities	506,986	472,778	285,279	282,435
Total stockholders' equity	93,481	130,122	99,030	98,546

[redacted]ss attributable to common stockholders plus depreciation and amortization of property and equipment, stock-based compensation expense, amortization of intang (benefit) expense, interest expense and amortization of debt discount, interest income and other expense, net, non-controlling interests, and excludes charges or gains that are non-recurring, infrequent

We believe that Adjusted EBITDA is useful to investors and other users of our financial statements in evaluating our operating performance because it provides them with an additional tool to compare business performance across companies and across periods. We believe that:

- Adjusted EBITDA provides investors and other users of our financial information consistency and comparability with our past financial performance, facilitates period-to-period comparisons of ope comparisons with other companies, many of which use similar non-generally accepted accounting principles in the United States ("GAAP") financial measures to supplement their GAAP results; an
- it is useful to exclude (i) non-cash charges, such as depreciation and amortization of property and equipment, amortization of intangible assets and stock-based compensation, from Adjusted EBITD of such expenses in any specific period may not directly correlate to the underlying performance of our business operations, and these expenses can vary significantly between periods as a result of previously acquired tangible and intangible assets or the timing of new stock-based awards and (ii) restructuring charges, settlement expense related to a claim from one of our venue partners, and c contested proxy election for the 2016 annual meeting of stockholders because they represent non-recurring charges and are not indicative of the underlying performance of our business operations.

We use Adjusted EBITDA in conjunction with traditional GAAP measures as part of our overall assessment of our performance, for planning purposes, including the preparation of our annual operating budget and quarterly forecasts, to evaluate the effectiveness of our business strategies and to communicate with our board of directors concerning our financial performance.

We do not place undue reliance on Adjusted EBITDA as our only measure of operating performance. Adjusted EBITDA should not be considered as a substitute for other measures of financial performance reported in accordance with GAAP. There are limitations to using non-GAAP financial measures, including that other companies may calculate these measures differently than we do.

We compensate for the inherent limitations associated with using Adjusted EBITDA through disclosure of these limitations, presentation of our financial statements in accordance with GAAP and reconciliation of Adjusted EBITDA to the most directly comparable GAAP measure, net loss attributable to common stockholders.

[redacted]

The following provides a reconciliation of net loss attributable to common stockholders to Adjusted EBITDA:

	Year Ended December 31,			
	2019	2018	2017(2)	2016(2)
	(in thousands)			
Net loss attributable to common stockholders	$ (10,296)	$ (1,220)	$ (19,366)	$ (27,331)
Depreciation and amortization of property and equipment	70,862	78,837	69,097	49,202
Stock-based compensation expense	8,596	12,268	14,215	12,805
Amortization of intangible assets	4,571	3,710	3,498	3,448
Income tax (benefit) expense	(28)	(5,153)	(2,078)	427
Interest expense and amortization of debt discount	8,618	2,400	187	309
Interest income and other expense, net	(2,017)	(513)	(34)	150
Non-controlling interests	19	1,489	590	348
Restructuring charges	2,298	—	—	—
Contested proxy election expense	—	—	—	1,440
Settlement expense	—	—	2,807	—
Adjusted EBITDA	$ 82,623	$ 91,818	$ 68,916	$ 40,798

[redacted]ave not been adjusted upon adoption of ASC 606 under the modified retrospective method.

[redacted]

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

The following discussion and analysis of our financial condition and results of operations should be read together with "Selected Consolidated Financial Data" and our audited consolidated financial statements and accompanying notes included elsewhere in this filing. This discussion contains forward-looking statements, based on current expectations and related to our plans, estimates, beliefs and anticipated future financial performance. These statements involve risks and uncertainties and our actual results may differ materially from those anticipated in these forward-looking statements as a result of many factors, including those set forth under "Risk Factors," "Forward-Looking Statements" and elsewhere in this filing. For discussion and analysis of our financial condition and results of operations for the year ended December 31, 2017, please refer to "Management's Discussion and Analysis of Financial Condition and Results of Operations" in Part II, Item 7 in the annual report on Form 10-K for the year ended December 31, 2018 filed by us with the SEC on March 1, 2019, which is incorporated herein by this reference.

Overview

We believe we are the leading global provider of neutral-host commercial mobile Wi-Fi Internet solutions and indoor DAS services in the world. Our software applications and solutions enable individuals to access our extensive global Wi-Fi networks that cover over 1.3 million hotspots. We operate 73 DAS networks containing approximately 38,100 nodes. Our offerings provide compelling cost and performance advantages to our customers and partners.

We grew revenue from $250.8 million in 2018 to $263.8 million in 2019, an increase of 5.2%. Our net loss attributable to common stockholders increased from $1.2 million in 2018 to $10.3 million in 2019. Adjusted EBITDA decreased from $91.8 million in 2018 to $82.6 million in 2019, a decrease of 10.0%. For a discussion of Adjusted EBITDA and a reconciliation of net loss attributable to common stockholders to Adjusted EBITDA, see footnote 1 to "Selected Financial Data" in Part II, Item 6.

The proliferation of smartphones, tablets, laptops, wearables, and other Wi-Fi enabled devices—in conjunction with the increased consumption of high-bandwidth activities like video, online gaming, streaming, cloud-based applications and mobile apps—has created a demand for high-speed, high-bandwidth Internet access in public places both large and small. These data intensive activities are driving a global surge in mobile Internet data traffic that is expected to increase seven-fold between 2017 and 2022, according to Cisco's Visual Networking Index. We believe these trends present us with opportunities to generate significant growth in revenue and profitability.

Critical Accounting Policies and Estimates

The preparation of financial statements in conformity with U.S. GAAP and rules and regulations of the SEC requires us to make estimates and assumptions that affect the reported amounts of assets and liabilities, as well as the disclosure of contingent assets and liabilities, at the date of the financial statements. Such estimates and assumptions also affect the reported amounts of revenues and expenses during the reporting period. Although we believe these estimates are reasonable, actual results could differ from these estimates. On a regular basis, we evaluate our assumptions, judgments and estimates. We also discuss our critical accounting policies and estimates with the Audit Committee of the Board of Directors.

We believe that the assumptions and estimates associated with revenue recognition, goodwill, measuring recoverability of long-lived assets, stock-based compensation and income taxes have the greatest potential impact on our consolidated financial statements. Therefore, we believe the accounting policies discussed below are paramount to understanding our historical and future performance, as these policies relate to the more significant areas involving our management's judgments, assumptions and estimates.

Revenue Recognition

We generate revenue from several sources including: (i) DAS customers that are telecom operators under long-term contracts for access to our DAS at our managed and operated locations, (ii) military and retail customers under subscription plans for month-to-month network access that automatically renew, and military and retail single-use access from sales of hourly, daily or other single-use access plans, (iii) arrangements with property owners for multifamily properties that provide for network installation and monthly Wi-Fi services and support to the residents and employees, (iv) arrangements with wholesale Wi-Fi customers that provide software licensing, network access, and/or professional services fees, and (v) display advertisements and sponsorships on our walled garden sign-in pages. Software licensed by our wholesale platform services customers can only be used during the term of the service arrangements and has no utility to them upon termination of the service arrangement.

Post-ASC 606 Adoption

Revenues are recognized when a contract with a customer exists and control of the promised goods or services is transferred to our customers, in an amount that reflects the consideration we expect to be entitled to in exchange for those goods or services and the identified performance obligation has been satisfied. Contracts entered into at or near the same time with the same customer are combined and accounted for as a single contract if the contracts have a single commercial objective, the amount of consideration is dependent on the price or performance of the other contract, or the services promised in the contracts are a single performance obligation. Contract amendments are routine in the performance of our DAS, wholesale Wi-Fi, and advertising contracts. Contracts are often amended to account for changes in contract specifications or requirements to expand network access services. In most instances, our DAS and wholesale Wi-Fi contract amendments are for additional goods or services that are distinct, and the contract price increases by an amount that reflects the standalone selling price of the additional goods or services; therefore, such contract amendments are accounted for as separate contracts. Contract amendments for our advertising contracts are also generally for additional goods or services that are distinct; however, the contract price does not increase by an amount that reflects the standalone selling price of the additional goods or services. Advertising contract amendments are therefore generally accounted for as contract modifications under the prospective method. Contract amendments to transaction prices with no change in remaining services are accounted for as contract modifications under the cumulative catch-up method.

A performance obligation is a promise in a contract to transfer a distinct good or service to the customer and is the unit of account in ASC 606. A contract's transaction price is allocated to each distinct performance obligation and is recognized as revenue when, or as, the performance obligation is satisfied, which typically occurs when the services are rendered. Determining whether products and services are considered distinct performance obligations that should be accounted for separately versus together may require significant judgment. Our contracts with customers may include multiple performance obligations. For such arrangements, we allocate revenue to each performance obligation based on its relative standalone selling price. We generally determine standalone selling prices based on the prices charged to customers. Judgment may be used to determine the standalone selling prices for items that are not sold separately, including services provided at no additional charge. Most of our performance obligations are satisfied over time as services are provided. We generally recognize revenue on a gross basis as we are primarily responsible for fulfilling the promises to provide the specified goods or services, we are responsible for paying all costs related to the goods or services before they have been transferred to the customer, and we have discretion in establishing prices for the specified goods or services. Revenue is presented net of any sales and value added taxes.

Payment terms vary on a contract-by-contract basis, although terms generally include a requirement of payment within 30 to 60 days for non-recurring payments, the first day of the monthly or quarterly billing cycle for recurring payments for DAS and wholesale Wi-Fi contracts, and the first day of the month prior to the month that services are provided for multifamily contracts. We apply a practical expedient for purposes of determining whether a significant financing component may exist for our contracts if, at contract inception, we expect that the period between when we transfer the promised good or service to the customer and when the customer pays for that good or service will be one year or less. In instances where the customer pays for a good or service one year or more in advance of the period when we transfer the promised good or service to the customer, we have determined our contracts generally do not include a significant financing component. The primary purpose of our invoicing terms is not to receive financing from our customers or to provide customers with financing but rather to maximize our profitability on the customer contract. Specifically, inclusion of non-refundable upfront fees in our long-term customer contracts increases the likelihood that the customer will be committed through the end of the contractual term and ensures recoverability of the capital outlay that we incur in expectation of the customer fulfilling its contractual obligations. We may also provide service credits to our customers if we fail to meet contractual monthly system uptime requirements and we account for the variable consideration related to these service credits using the most likely amount method.

For contracts that include variable consideration, we estimate the amount of consideration at contract inception under the expected value method or the most likely amount method and include the amount of variable consideration that is not considered to be constrained. Significant judgment is used in constraining estimates of variable consideration. We update our estimates at the end of each reporting period as additional information becomes available.

Timing of revenue recognition may differ from the timing of invoicing to customers. We record unbilled receivables (contract assets) when revenue is recognized prior to invoicing, deferred revenue (contract liabilities) when revenue is recognized after invoicing, and receivables when we have an unconditional right to consideration to invoice and receive payment in the future. We present our DAS, multifamily, and wholesale Wi-Fi contracts in our consolidated balance sheet as either a contract asset or a contract liability with any unconditional rights to consideration presented separately as a receivable. Our other customer contracts generally do not have any significant contract asset or contract liability balances. Generally, a significant portion of the billing for our DAS contracts occurs prior to revenue recognition, resulting in our DAS contracts being presented as contract liabilities. In contrast, our wholesale Wi-Fi contracts that contain recurring fees with annual escalations are generally presented as contract assets as revenue is recognized prior to invoicing. Our multifamily contracts can be presented as either contract liabilities or contract assets primarily as a result of timing of invoicing for the network installations.

We recognize an asset for the incremental costs of obtaining a contract with a customer if we expect the benefit of those costs to be longer than one year. We have determined that certain sales incentive programs meet the requirements to be capitalized. Total capitalized costs to obtain a contract were immaterial during the years ended December 31, 2019 and 2018 and are included in prepaid expenses and other current assets and non-current other assets on our consolidated balance sheets. We apply a practical expedient to expense costs as incurred for costs to obtain a contract with a customer when the amortization period would have been one year or less, the most significant of which relates to sales commissions related to obtaining our advertising customer contracts. Contract costs are evaluated for impairment in accordance with ASC 310, *Receivables*.

DAS

We enter into long-term contracts with telecom operators at our managed and operated locations. The initial term of our contracts with telecom operators generally range from five to twenty years and the agreements generally contain renewal options. Some of our contracts provide termination for convenience clauses that may or may not include substantive termination penalties. We apply judgment in determining the contract term, the period during which we have present and enforceable rights and obligations. Our DAS customer contracts generally contain a single performance obligation—provide non-exclusive access to our DAS or small cell networks to provide telecom operators' customers with access to the licensed wireless spectrum, together with providing telecom operators with construction, installation, optimization/engineering, maintenance services and agreed-upon storage space for the telecom operators' transmission equipment, each related to providing such licensed wireless spectrum to the telecom operators. The performance obligation is considered a series of distinct services as the performance obligation is satisfied over time and the same time-based input method would be used to measure our progress toward complete satisfaction of the performance obligation to transfer each distinct service in the series to the customer. Our contract fee structure generally includes a non-refundable upfront fee and we evaluated whether customer options to renew services give rise to a material right that should be accounted for as a separate performance obligation because of those non-refundable upfront fees. We apply significant judgment in determining whether the customer options to renew services give rise to a material right that should be accounted for as a separate performance obligation. We believe that a material right generally does not exist for our DAS customer contracts that contain renewal options because the telecom operators' decision to renew is highly dependent upon our ability to maintain our exclusivity as the DAS service provider at the venue location and our limited operating history with venue and customer renewals. The telecom operators will make the decision to incur the capital improvement costs at the venue location irrespective of our remaining exclusivity period with the venue as the telecom operators expect that the assets will continue to be serviced regardless of whether we will remain such exclusive DAS service provider. Our contracts also provide our DAS customers with the option to purchase additional future services such as upgrades or enhancements. This option is not considered to provide the customer with a material right that should be accounted for as a separate performance obligation since the cost of the additional future services depends entirely on the market rate of such services at the time such services are requested and we are not automatically obligated to stand ready to deliver these additional goods or services as the customer may reject our proposal. Periodically, we install and sell DAS networks to customers where we do not have service contracts or remaining obligations beyond the installation of those networks and we recognize build-out fees for such projects as revenue when the installation work is completed, and the network has been accepted by the customer.

Our contract fee structure may include varying components of an upfront build-out fee and recurring access, maintenance, and other fees. The upfront build-out fee is generally structured as a firm-fixed price or cost-plus arrangement and becomes payable as certain contract and/or construction milestones are achieved. Our DAS and small cell networks are generally neutral-host networks that can accommodate multiple telecom operators. Some of our DAS customer contracts provide for credits that may be issued to existing telecom operators for additional telecom operators subsequently joining the DAS network. The credits are generally based upon a fixed dollar amount per additional telecom operator, a fixed percentage amount of the original build-out fee paid by the telecom operator per additional telecom operator, or a proportionate share based upon the split among the relevant number of telecom operators for the actual costs incurred by all telecom operators to construct the DAS network. In most cases, there is significant uncertainty on whether additional telecom operator contracts will be executed at inception of the contract with the existing telecom operator. We believe that the upfront build-out fee is fixed consideration once the build-out is complete and any subsequent credits that may be issued would be accounted for in a manner similar to a contract modification under the prospective method because (i) the execution of customer contracts with additional telecom carriers is at our sole election and (ii) we would not execute agreements with additional telecom carriers if it would not increase our revenues and gross profits at the venue level. Further, the credits issued to the existing telecom operator changes the transaction price on a go-forward basis, which corresponds with the decline in service levels for the existing telecom operator once the neutral-host DAS network can be accessed by the additional telecom operator. The recurring access, maintenance, and other fees generally escalate on an annual basis. The recurring fees are variable consideration until the contract term and annual escalation dates are fixed. We estimate the variable consideration for our recurring fees using the most likely amount method based on the expected commencement date for the services. We evaluate our estimates of variable consideration each period and record a cumulative catch-up adjustment in the period in which changes occur for the amount allocated to satisfied performance obligations.

We generally recognize revenue related to our single performance obligation for our DAS customer contracts monthly over the contract term once the customer has the ability to access the DAS network and we commence maintenance on the DAS network.

Military and Retail

Military and retail customers must review and agree to abide by our standard “Customer Agreement (With Acceptable Use Policy) and End User License Agreement” before they are able to sign up for our subscription or single-use Wi-Fi network access services. Our military and retail customer contracts generally contain a single performance obligation—provide non-exclusive access to Wi-Fi services, together with performance of standard maintenance, customer support, and the Wi-Finder app to facilitate seamless connection to the Company’s Wi-Fi network. The performance obligation is considered a series of distinct services as the performance obligation is satisfied over time and the same time-based input method would be used to measure our progress toward complete satisfaction of the performance obligation to transfer each distinct service in the series to the customer. Our contracts also provide our military and retail subscription customers with the option to renew the agreement when the subscription term is over. We do not consider this option to provide the customer with a material right that should be accounted for as a separate performance obligation because the customer would not receive a discount if it decided to renew and the option to renew is cancellable within 5 days’ notice prior to the end of the then current term by either party.

The contract transaction price is determined based on the subscription or single-use plan selected by the customer. Our military and retail service plans are for fixed price services as described on our website. From time to time, we offer promotional discounts that result in an immediate reduction in the price paid by the customer. Subscription fees from military and retail customers are paid monthly in advance. We provide refunds for our military and retail services on a case-by-case basis. Refunds and credit card chargeback amounts are not significant and are recorded as contra-revenue in the period the refunds are made, or chargebacks are received.

Subscription fee revenue is recognized ratably over the subscription period. Revenue generated from military and retail single-use access is recognized when access is provided, and the performance obligation is satisfied.

Multifamily

We enter into long-term contracts with property owners. The initial term of our contracts with property owners generally range from three to five years and the contracts may contain renewal options. Some of our contracts provide termination for convenience clauses that may or may not include substantive termination penalties. We apply judgment in determining the contract term, which is the period during which we have present and enforceable rights and obligations. Our customer contracts generally contain two performance obligations: (i) install the network required to provide Wi-Fi services; and (ii) provide Wi-Fi services and technical support to the residents and employees. Our contracts may also provide our property owners with the option to renew the agreement. We do not consider this option to provide the property owner with a material right that should be accounted for as a separate performance obligation because the property owner would not receive a discount if it decided to renew and the option to renew is generally cancellable by either party subject to the notice of non-renewal requirements specified in the contract. Our contracts may also provide our customers with the option to purchase additional future services. We do not consider this option to provide the customer with a material right that should be accounted for as a separate performance obligation since the cost of the additional future services are generally at market rates for such services and we are not automatically obligated to stand ready to deliver these additional goods or services because the customer may reject our proposal.

Our contract fee structure generally includes a network installation fee and recurring Wi-Fi service and support fees. The network installation fee is generally structured as a firm-fixed price arrangement and becomes payable as certain contract and/or installation milestones are achieved. We generally estimate variable consideration for unpriced change orders using the most likely amount method based on the expected price for those services. If network installations are not completed by specified dates, we may be subject to network installation penalties. We estimate the variable consideration for our network installation fees using the most likely amount method based on the amount of network installation penalties we expect to incur. Title to the network generally transfers to the property owner once installation is completed and the network has been accepted. We generally recognize revenue related to our network installation performance obligation using a cost-to-cost method over the network installation period. We may provide latent defect warranties for materials and installation labor services related to our network installation services. Our warranty obligations are generally not accounted for as separate performance obligations as warranties cannot be separately purchased and warranties do not provide a service in addition to the assurance that the network will function as expected.

The recurring fees commence once the network is launched with recurring fees generally based upon a fixed or variable occupancy rate. The recurring Wi-Fi service fees may be adjusted prospectively for changes in circuit and/or video content costs, and Wi-Fi support fees may escalate on an annual basis. We estimate the variable consideration for our recurring fees using the expected value method except for the variable consideration related to actual occupancy rates, which we record when we have the contractual right to bill. We evaluate our estimates of variable consideration each period and record a cumulative catch-up adjustment in the period in which changes occur for the amount allocated to satisfied performance obligations. We recognize revenue related to the recurring fees on a monthly basis over the contract term as the Wi-Fi services and support is rendered, and the performance obligation is satisfied.

Wholesale Wi-Fi

We enter into long-term contracts with enterprise customers such as telecom operators, cable companies, technology companies, and enterprise software/services companies, that pay us usage-based Wi-Fi network access and software licensing fees to allow their customers' access to our footprint worldwide. We also enter into long-term contracts with financial institutions and other enterprise customers who provide access to our Wi-Fi footprint as a value-added service for their customers. The initial term of our contracts with wholesale Wi-Fi customers generally range from one to three years and the agreements generally contain renewal options. Some of our contracts provide termination for convenience clauses that may or may not include substantive termination penalties. We apply judgment in determining the contract term, the period during which we have present and enforceable rights and obligations. Our wholesale Wi-Fi customer contracts generally contain a single performance obligation—provide non-exclusive rights to access our Wi-Fi networks to provide wholesale Wi-Fi customers' end customers with access to the high-speed broadband network that may be bundled together with integration services, support services, and/or performance of standard maintenance. The performance obligation is considered a series of distinct services as the performance obligation is satisfied over time and the same time-based input method or usage-based output method would be used to measure our progress toward complete satisfaction of the performance obligation to transfer each distinct service in the series to the customer. Our contracts may also provide our enterprise customers with the option to renew the agreement. This option is not considered to provide the customer with a material right that should be accounted for as a separate performance obligation because the customer would not receive a discount if it decided to renew and the option to renew is generally cancellable by either party subject to the notice of non-renewal requirements specified in the contract. Our contracts may also provide our wholesale Wi-Fi customers with the option to purchase additional future services. We do not consider this option to provide the customer with a material right that should be accounted for as a separate performance obligation since the cost of the additional future services are generally at market rates for such services and we are not automatically obligated to stand ready to deliver these additional goods or services because the customer may reject our proposal. Periodically, we install and sell Wi-Fi networks to customers where we do not have service contracts or remaining obligations beyond the installation of those networks and we recognize build-out fees for such projects as revenue when the installation work is completed, and the network has been accepted by the customer.

Our contract fee structure may include varying components of a minimum fee and usage-based fees. Minimum fees represent fixed price consideration while usage-based fees represent variable consideration. With respect to variable consideration, our commitment to our wholesale Wi-Fi customers consists of providing continuous access to the network. It is therefore a single performance obligation to stand ready to perform and we allocate the variable fees charged for usage when we have the contractual right to bill. The variable component of revenue is recognized based on the actual usage during the period.

Wholesale Wi-Fi revenue is recognized as it is earned over the relevant contract term with variable consideration recognized when we have the contractual right to bill.

Advertising

We generally enter into short-term cancellable insertion orders with our advertising customers for advertising campaigns that are served at our managed and operated locations and other locations where we solely provide authorized access to a partner's Wi-Fi network through sponsored and promotional programs. Our sponsorship advertising arrangements are generally priced under a cost per engagement structure, which is a set price per click or engagement, or a cost per install structure for third party application downloads. Our display advertising arrangements are priced based on cost per thousand impressions. Insertion orders may also include bonus items. Our advertising customer contracts may contain multiple performance obligations with each distinct service. These distinct services may include an advertisement video or banner impressions in the contract bundled with the requirement to provide network, space on the website, and integration of customer advertisement onto the website, and each is generally considered to be its own performance obligation. The performance obligations are considered a series of distinct services as the performance obligations are satisfied over time and the same action-based output method would be used to measure our progress toward complete satisfaction of the performance obligation to transfer each distinct service in the series to the customer.

The contract transaction price is comprised of variable consideration based on the stated rates applied against the number of units delivered inclusive of the bonus units subject to the maximums provided for in the insertion order. It is customary for us to provide additional units over and above the amounts contractually required; however, there are a number of factors that can also negatively impact our ability to deliver the units required by the customer such as service outages at the venue resulting from power or circuit failures and customer cancellation of the remaining undelivered units under the insertion order due to campaign performance or budgetary constraints. Typically, the advertising campaign periods are short in duration. We therefore use the contractual rates per the insertion orders and actual units delivered to determine the transaction price each period end. The transaction price is allocated to each performance obligation based on the standalone selling price of each performance obligation.

Advertising revenue is recognized ratably over the service period based on actual units delivered subject to the maximums provided for in the insertion order.

Pre-ASC 606 Adoption

We recognize revenue when an arrangement exists, services have been rendered, fees are fixed or determinable, no significant obligations remain related to the earned fees and collection of the related receivable is reasonably assured. Revenue is presented net of any sales and value added taxes.

Revenue generated from access to our DAS networks consists of build-out fees and recurring access fees under certain long-term contracts with telecom operators. Build-out fees paid upfront are generally deferred and recognized ratably over the term of the estimated customer relationship period, once the build-out is complete. Periodically, we install and sell Wi-Fi and DAS networks to customers where we do not have service contracts or remaining obligations beyond the installation of those networks and we recognize build-out fees for such projects as revenue when the installation work is completed, and the network has been accepted by the customer. Minimum monthly access fees for usage of the DAS networks are non-cancellable and generally escalate on an annual basis. These minimum monthly access fees are recognized ratably over the term of the telecom operator agreement. The initial term of our contracts with telecom operators generally range from five to twenty years and the agreements generally contain renewal clauses. Revenue from DAS network access fees in excess of the monthly minimums is recognized when earned.

Subscription fees from military and retail customers are paid monthly in advance and revenue is deferred for the portions of monthly recurring subscription fees collected in advance. We provide refunds for our military and retail services on a case-by-case basis. These amounts are not significant and are recorded as contra-revenue in the period the refunds are made. Subscription fee revenue is recognized ratably over the subscription period. Revenue generated from military and retail single-use access is recognized when access is provided.

Services provided to wholesale Wi-Fi partners generally contain several elements including: (i) a term license to use our software to access our Wi-Fi network, (ii) access fees for Wi-Fi network usage, and/or (iii) professional services for software integration and customization and to maintain the Wi-Fi service. The term license, monthly minimum network access fees and professional services are billed monthly based upon predetermined fixed rates. Once the term license for integration and customization are delivered, the fees from the arrangement are recognized ratably over the remaining term of the service arrangement. The initial term of the license agreements is generally between one to three years and the agreements generally contain renewal clauses. Revenue for Wi-Fi network access fees in excess of the monthly minimum amounts is recognized when earned. All elements within existing service arrangements are generally delivered and earned concurrently throughout the term of the respective service arrangement.

In instances where the minimum monthly Wi-Fi and DAS network access fees escalate over the term of the wholesale service arrangement, an unbilled receivable is recognized when performance is within our control and when we have reasonable assurance that the unbilled receivable balance will be collected.

We adopted the provisions of ASU 2009-13, *Revenue Recognition (Topic 605)—Multiple-Deliverable Revenue Arrangements*, on a prospective basis on January 1, 2011. For multiple-deliverable arrangements entered into prior to January 1, 2011 that are accounted for under ASC 605-25, *Revenue Recognition—Multiple-Deliverable Revenue Arrangements*, we defer recognition of revenue for the full arrangement and recognize all revenue ratably over the term of the estimated customer relationship period for DAS arrangements and the wholesale service period for Wi-Fi platform service arrangements, as we do not have evidence of fair value for the undelivered elements in the arrangement. For multiple-deliverable arrangements entered into or materially modified after January 1, 2011 that are accounted for under ASC 605-25, we evaluate whether separate units of accounting exist and then allocate the arrangement consideration to all units of accounting based on the relative selling price method using estimated selling prices if vendor specific objective evidence and third-party evidence is not available. We recognize the revenue associated with the separate units of accounting upon completion of such services or ratably over the term of the estimated customer relationship period for DAS arrangements and the wholesale service period for Wi-Fi platform service arrangements.

Advertising revenue is generated from advertisements on our managed and operated or partner networks. In determining whether an arrangement exists, we ensure that a binding arrangement is in place, such as a standard insertion order or a fully executed customer-specific agreement. Obligations pursuant to our advertising revenue arrangements typically include a minimum number of units or the satisfaction of certain performance criteria. Advertising and other revenue is recognized when the services are performed.

Goodwill

Goodwill represents the excess of purchase price over fair value of net assets acquired. Goodwill is not amortized but instead is tested annually for impairment, or more frequently when events or changes in circumstances indicate that fair value of the reporting unit has been reduced to less than its carrying value. We perform our impairment test annually as of December 31st. Entities have the option to first assess qualitative factors to determine whether it is more likely than not that the fair value of a reporting unit is less than its carrying amount as a basis for determining whether it is necessary to perform the goodwill impairment test described in ASC 350, *Intangibles—Goodwill and Other*. If, after assessing qualitative factors, an entity determines it is not more likely than not that the fair value of a reporting unit is less than its carrying amount, then performing the impairment test is unnecessary. The impairment loss, if any, is measured by comparing the implied fair value of the reporting unit goodwill with the carrying amount of goodwill.

At December 31, 2019 and 2018, we tested our goodwill for impairment using a market-based approach and no impairment was identified as the fair value of our sole reporting unit was substantially in excess of its carrying amount. To date, we have not recorded any goodwill impairment charges.

Measuring Recoverability of Long-Lived Assets

Our long-lived assets are depreciated and amortized over the estimated useful lives of the related asset type using the straight-line method. The estimated useful lives for property and equipment are as follows:

Software	2 to 5 years
Computer equipment	3 to 5 years
Furniture, fixtures and office equipment	3 to 5 years
Leasehold improvements	The shorter of the estimated useful life or the remaining term of the agreements, generally ranging from 2 to 20 years

We perform an impairment review of long-lived assets held and used whenever events or changes in circumstances indicate that the carrying value may not be recoverable. Factors we consider important that could trigger an impairment review include, but are not limited to, significant under-performance relative to projected future operating results, significant changes in the manner of our use of the acquired assets or our overall business and/or product strategies and significant industry or economic trends. When we determine that the carrying value of a long-lived asset may not be recoverable based upon the existence of one or more of these indicators, we determine the recoverability by comparing the carrying amount of the asset to net future undiscounted cash flows that the asset is expected to generate or other indices of fair value. We would then recognize an impairment charge equal to the amount by which the carrying amount exceeds the fair market value of the asset.

Stock-based Compensation

Stock-based compensation consists of stock options and restricted stock units (“RSUs”), which are granted to employees and non-employees. We recognize compensation expense equal to the grant date fair value on a straight-line basis, net of forfeitures, over the employee requisite service period. We recognize stock-based compensation expense for performance-based RSUs when we believe that it is probable that the performance objectives will be met. The grant date fair value of our stock option awards is determined using the Black-Scholes option pricing model.

Income Taxes

Income taxes are provided based on the liability method, which results in income tax assets and liabilities arising from temporary differences. Temporary differences are differences between the tax basis of assets and liabilities and their reported amounts in the financial statements that will result in taxable or deductible amounts in future years. The liability method requires the effect of tax rate changes on current and accumulated deferred income taxes to be reflected in the period in which the rate change was enacted. The liability method also requires that deferred tax assets be reduced by a valuation allowance unless it is more likely than not that the assets will be realized.

We may recognize the tax benefit from uncertain tax positions only if it is at least more likely than not that the tax position will be sustained on examination by the taxing authorities, based on the technical merits of the position. The tax benefits recognized in the financial statements from such a position should be measured based on the largest benefit that has a greater than 50% likelihood of being realized upon settlement with the taxing authorities.

We establish valuation allowances when necessary to reduce deferred tax assets to the amounts expected to be realized. We evaluate the need for, and the adequacy of, valuation allowances based on the expected realization of our deferred tax assets. The factors used to assess the likelihood of realization include historical earnings, our latest forecast of taxable income and available tax planning strategies that could be implemented to realize the net deferred tax assets.

Our effective tax rates are primarily affected by changes in our valuation allowances, the amount of our taxable income or losses in the various taxing jurisdictions in which we operate, the amount of federal and state net operating losses and tax credits, the extent to which we can utilize these net operating loss carryforwards and tax credits and certain benefits related to stock option activity.

Recent Accounting Pronouncements

Information regarding recent accounting pronouncements is contained in Note 2 “Significant Accounting Policies” to the accompanying consolidated financial statements included in Part II, Item 8, which is incorporated herein by this reference.

Key Business Metrics

In addition to monitoring traditional financial measures, we also monitor our operating performance using key performance indicators. Our key performance indicators follow:

	Year Ended December 31,	
	2019	2018
	(in thousands)	
DAS nodes	38.1	29.9
Subscribers—military	133	138
Subscribers—retail	81	122
Connects	343,121	277,744

DAS nodes. This metric represents the number of active DAS nodes as of the end of the period. A DAS node is a single communications endpoint, typically an antenna, which transmits or receives radio frequency signals wirelessly. This measure is an indicator of the reach of our DAS network. We continue to experience strong customer demand from telecom operators to gain access to our DAS networks; accordingly, we expect to continue to invest in securing, building out and upgrading our DAS networks to meet this demand.

Subscribers—military and Subscribers—retail. These metrics represent the number of paying customers who are on a month-to-month subscription plan at a given period end. Military subscribers are generally expected to increase when we deploy our service on new military bases. We also expect to see modest increases in military subscribers as we increase signups for new customers on existing military bases through targeted marketing and by continuing to build the Boingo brand in the military vertical. Military subscribers are also impacted by troop movements and training schedules. Retail subscribers have continued to decline as we have expanded our product offerings and enhanced our focus on our wholesale and advertising service offerings.

Connects. This metric shows how often individuals connect to our global Wi-Fi network in a given period. The connects include wholesale and retail customers in both customer pay locations and customer free locations where we are a paid service provider or receive sponsorship or promotion fees. We count each connect as a single connect regardless of how many times that individual accesses the network at a given venue during their 24-hour period. This measure is an indicator of paid activity throughout our network.

Key Components of our Results of Operations

Revenue

Our revenue consists of DAS revenue, military/multifamily revenue, retail revenue, wholesale Wi-Fi revenue, and advertising and other revenue.

DAS. We generate revenue from telecom operator partners that pay us network build-out fees, inclusive of network upgrades, and access fees for our DAS and small cell networks.

Military/multifamily and retail. We generate revenue from sales to military and retail individuals of month-to-month network access subscriptions that automatically renew and hourly, daily or other single-use access, primarily through charge card transactions. We also generate multifamily revenue from property owners who pay us a recurring monthly fee for Wi-Fi services including building and maintaining the network that supports these services and providing support for residents and employees of the properties.

Wholesale—Wi-Fi. We generate revenue from wholesale Wi-Fi partners that license our software and pay usage-based monthly network access fees to allow their customers to access our global Wi-Fi network. Usage-based network access fees may be measured in minutes, connects, megabytes or gigabytes, and in most cases are subject to minimum volume commitments. Other wholesale Wi-Fi partners pay us monthly fees to provide a Wi-Fi infrastructure that we install, manage and operate at their venues for their customers under a service provider arrangement.

Advertising and other. We generate revenue from advertisers that seek to reach visitors to our landing pages at our managed and operated network locations with online advertising, promotional and sponsored programs and at locations where we solely provide authorized access to a partner's Wi-Fi network through sponsored access and promotional programs. In addition, we receive revenue from partners in certain venues where we manage and operate the Wi-Fi network.

For the year ended December 31, 2019, entities affiliated with AT&T Inc. accounted for 12% of total revenue. For the years ended December 31, 2019 and 2018, entities affiliated with Verizon Communications Inc. accounted for 11% and 11%, respectively, of total revenue. For the years ended December 31, 2019 and 2018, entities affiliated with Sprint Corporation accounted for 11% and 14%, respectively, of total revenue. For the year ended December 31, 2018, entities affiliated with T-Mobile USA, Inc. accounted for 12% of total revenue. The loss of these groups and the customers could have a material adverse impact on our consolidated statements of operations.

Costs and Operating Expenses

We classify our costs and operating expenses as network access, network operations, development and technology, selling and marketing, general and administrative, and amortization of intangible assets. Network access costs consist primarily of payments to venues and network partners in our network. Other costs and operating expenses primarily consist of personnel costs, costs for contracted labor and development, marketing, legal, accounting and consulting services, and other professional service fees. Personnel costs include salaries, bonuses, stock-based compensation and employee benefits. Facilities costs are generally allocated based on headcount. Depreciation and amortization expenses associated with specifically identifiable property and equipment are allocated to the appropriate expense categories.

Network access. Network access costs consist of revenue share payments to venue owners where our managed and operated hotspots are located, usage-based fees to our roaming network partners for access to their networks, depreciation of equipment related to network build-out projects in our managed and operated locations, sale of equipment, and bandwidth and other Internet connectivity expenses in our managed and operated locations.

Network operations. Network operations expenses consist of costs for our customer service department and for our operations staff who design, build, monitor and maintain our networks. Also included are expenses for our customer service provider that handles customer care inquiries and expenses for network operations contractors, equipment depreciation, and software and hardware maintenance fees.

Development and technology. Development and technology expenses consist of costs for our product development and engineering departments, developers and our information systems services staff, depreciation of our equipment and internal-use software, cloud computing, and hardware and software maintenance fees.

Selling and marketing. Selling and marketing expenses consist of costs for our business development and marketing employees and executives, travel and entertainment, and marketing programs.

General and administrative. General and administrative expenses consist of costs for our executive, finance and accounting, legal and human resources personnel, as well as legal, accounting, tax and other professional service fees. Also included are other corporate expenses such as charge card processing fees and bad debt expense.

Amortization of intangible assets. Amortization of intangible assets consists primarily of acquired backlog, customer and partnership relationships, technology, patents, trademarks, and non-compete agreements.

Interest Expense and Amortization of Debt Discount

Interest expense and amortization of debt discount primarily consists of interest expense and amortization of debt discount and debt issuance costs, net of amounts capitalized.

Interest Income and Other Expense, Net

Interest income and other expense, net, primarily consists of interest income offset by other income (expense), net.

Income Tax Benefit

We established a full valuation allowance as a result of our assessment that it was more likely than not that certain federal and state deferred tax assets would not be realized, and we have continued to maintain the full valuation allowance as of December 31, 2019 and 2018.

Non-controlling Interests

Non-controlling interests are comprised of minority holdings by third parties in our subsidiaries Chicago Concourse Development Group, LLC ("CCDG") and Boingo Holding Participacoes Ltda. ("BHPL").

We are generally required to pay a portion of allocated net profits less capital expenditures of the preceding year to the non-controlling interest holders of CCDG. The limited liability company agreement for CCDG does not have a term. CCDG can be dissolved upon the unanimous agreement of the members, upon the sale of CCDG, upon declaration of bankruptcy, or upon the termination of the license agreement between CCDG and the City of Chicago.

We attributed profits and losses to the non-controlling interest in BHPL under the terms of the limited liability company agreement in proportion to their holdings. The limited liability company agreement with BHPL does not have a term. We, by resolution of the members, may distribute profits against retained earnings or profit reserves existing on the most recent annual balance sheet or may draw up financial statements and distribute profits in shorter periods. BHPL can be dissolved by resolution of the members and as otherwise provided for by law.

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Results of Operations

The following tables set forth our results of operations for the specified periods.

	Year Ended De	
	2019	
	(in thousa	
Consolidated Statements of Operations Data:		
Revenue	$	263,790
Costs and operating expenses:		
Network access		119,613
Network operations		57,027
Development and technology		34,575
Selling and marketing		24,443
General and administrative		27,265
Amortization of intangible assets		4,571
Total costs and operating expenses		267,494
Loss from operations		(3,704)
Interest expense and amortization of debt discount		(8,618)
Interest income and other expense, net		2,017
Loss before income taxes		(10,305)
Income tax benefit		28
Net (loss) income		(10,277)
Net income attributable to non-controlling interests		19
Net loss attributable to common stockholders	$	(10,296)
Depreciation and amortization expense included in the above line items:		
Network access	$	41,101
Network operations		17,325
Development and technology		11,142
General and administrative		1,294
Total	$	70,862
Stock-based compensation expense included in the above line items:		
Network operations	$	1,660
Development and technology		1,264
Selling and marketing		2,228
General and administrative		3,444
Total	$	8,596

Depreciation and amortization expense

Depreciation and amortization of property and equipment decreased $8.0 million, or 10.1%, in 2019, as compared to 2018, primarily due to a decrease in depreciation expense related to certain DAS build-out projects that were depreciated over a longer estimated useful life resulting from the successful extension of certain venue agreements, which was partially offset be depreciation expense for new DAS build-out projects that were completed and launched in 2018 and 2019.

Stock-based compensation expense

Stock-based compensation expense decreased $3.7 million, or 29.9%, in 2019, as compared to 2018, primarily due to the decrease of stock-based compensation expense related to the multi-year 2016 RSUs granted to our previous Chief Executive Officer and our Chief Financial Officer, the performance conditions of which vested in 2018, but which became fully vested in February 2019. No similar multi-year RSUs have been granted to any of our executives after 2016.

We issue RSUs that vest over a specified service period. We also issue performance-based RSUs to executive personnel. We recognize stock-based compensation expense for performance-based RSUs when we believe that it is probable that the performance objectives will be met and based on the expected achievement levels. In 2019 and 2018, we capitalized $0.9 million and $0.8 million, respectively, of stock-based compensation expense.

At December 31, 2019, the total remaining stock-based compensation expense for unvested RSU awards is approximately $10.5 million, which is expected to be recognized over a weighted average period of 1.9 years.

The following table sets forth our results of operations for the specified periods as a percentage of our revenue for those periods.

	Year Ended Decer
	2019
	(as a percentage of
Consolidated Statements of Operations Data:	
Revenue	100.0 %
Costs and operating expenses:	
Network access	45.3
Network operations	21.6
Development and technology	13.1
Selling and marketing	9.3
General and administrative	10.3
Amortization of intangible assets	1.7
Total costs and operating expenses	101.4
Loss from operations	(1.4)
Interest expense and amortization of debt discount	(3.3)
Interest income and other expense, net	0.8
Loss before income taxes	(3.9)
Income tax benefit	0.0
Net (loss) income	(3.9)
Net income attributable to non-controlling interests	0.0
Net loss attributable to common stockholders	(3.9)%

Years ended December 31, 2019 and 2018

Revenue

	Year Ended December 31,		
	2019	2018	Change
	(in thousands, except percentages)		
Revenue:			
Military/multifamily	$ 97,899	$ 77,721	$ 20,1
DAS	97,447	95,216	2,2
Wholesale—Wi-Fi	44,052	47,481	(3,4
Retail	14,728	17,630	(2,9
Advertising and other	9,664	12,773	(3,1
Total revenue	$ 263,790	$ 250,821	$ 12,9
Key business metrics:			
DAS nodes	38.1	29.9	8
Subscribers—military	133	138	
Subscribers—retail	81	122	(
Connects	343,121	277,744	65,3

Military/multifamily. Military/multifamily revenue increased $20.2 million, or 26.0% in 2019, as compared to 2018, primarily due to a $13.8 million increase in multifamily revenues resulting from our multifamily operations, which we acquired in August 2018, and a $6.5 million increase in military subscriber revenue, which was driven primarily by an 11.1% increase in the average monthly revenue per military subscriber in 2019 compared to 2018.

DAS. DAS revenue increased $2.2 million, or 2.3% in 2019, as compared to 2018, due to a $12.1 million increase in access fees from our telecom operators, which was partially offset by a $9.9 million decrease from build-out projects in our managed and operated locations. DAS access fees in 2019 include $4.8 million of one-time access fees.

Wholesale- Wi-Fi. Wholesale Wi-Fi revenue decreased $3.4 million, or 7.2% in 2019, as compared to 2018, due to a $6.3 million decrease in partner usage based fees, which was partially offset by a $2.9 million increase in fees primarily earned from our venue partners who pay us to provide a Wi-Fi infrastructure that we install, manage and operate at their venues.

Retail. Retail revenue decreased $2.9 million, or 16.5% in 2019, as compared to 2018, due to a $2.5 million decrease in retail subscriber revenue, which was driven primarily by the decrease in retail subscribers, and a $0.4 million decrease in retail single-use revenue.

Advertising and other. Advertising and other revenue decreased $3.1 million, or 24.3% in 2019, as compared to 2018, primarily due to a $3.5 million decrease in advertising sales at our managed and operated locations resulting from a decline in the number of premium ad units sold.

Costs and Operating Expenses

	Year Ended December 31,		
	2019	2018	Change
	(in thousands, except percentages)		
Costs and operating expenses:			
Network access	$ 119,613	$ 113,572	$ 6,0
Network operations	57,027	52,215	4,8
Development and technology	34,575	31,372	3,2
Selling and marketing	24,443	22,647	1,7
General and administrative	27,265	30,302	(3,0
Amortization of intangible assets	4,571	3,710	8
Total costs and operating expenses	$ 267,494	$ 253,818	$ 13,6

Network access. Network access costs increased $6.0 million, or 5.3% in 2019, as compared to 2018. The increase is primarily due to a $10.1 million increase in expenses related to our multifamily operations, which we acquired in August 2018, a $3.4 million increase in revenue share paid to venues in our managed and operated locations, a $1.1 million increase in direct cost of sales, and a $1.2 million increase in other cost of revenue, which were partially offset by $8.7 million decrease in depreciation expense related to our decreased fixed assets from our DAS build-out projects and a $1.1 million decrease from customer usage at partner venues.

Network operations. Network operations expenses increased $4.8 million, or 9.2% in 2019, as compared to 2018, primarily due to a $2.5 million increase in personnel related expenses, a $0.9 million increase in restructuring charges, a $0.5 million increase in network maintenance expenses, and a $0.3 million increase in travel and entertainment expenses. Network operations expenses related to our multifamily operations, which we acquired in August 2018, increased by $3.0 million.

Development and technology. Development and technology expenses increased $3.2 million, or 10.2% in 2019, as compared to 2018, primarily due to a $1.0 million increase in hardware and software maintenance expenses, a $0.9 million increase in restructuring charges, a $0.7 million increase in depreciation expense related to our increased software assets, a $0.5 million increase in cloud computing expenses, and a $0.4 million increase in personnel related expenses. Development and technology expenses related to our multifamily operations, which we acquired in August 2018, increased by $0.1 million.

Selling and marketing. Selling and marketing expenses increased $1.8 million, or 7.9% in 2019, as compared to 2018, due to a $0.9 million increase in personnel related expenses,a $0.3 million increase in restructuring charges, and a $0.6 million increase in other marketing expenses. Selling and marketing expenses related to our multifamily operations, which we acquired in August 2018, increased by $1.8 million.

General and administrative. General and administrative expenses decreased $3.0 million, or 10.0% in 2019, as compared to 2018, due to a $2.0 million decrease in personnel related expenses and a $1.0 million decrease in the fair value of contingent consideration. General and administrative expenses related to our multifamily operations, which we acquired in August 2018, increased by $2.0 million.

Amortization of intangible assets. Amortization of intangible assets expense increased $0.9 million, or 23.2% in 2019, as compared to 2018, primarily due to the $1.6 million increase resulting from our Elauwit acquisition in August 2018.

Interest Expense and Amortization of Debt Discount

Interest expense and amortization of debt discount increased $6.2 million in 2019, as compared to 2018, primarily due to interest expense incurred in connection with the Convertible Notes we issued in October 2018. During 2019 and 2018, we capitalized $3.3 million and $1.1 million, respectively, of interest expense.

Interest Income and Other Expense, Net

Interest income and other expense, net increased $1.5 million in 2019, as compared to 2018, primarily due to increased interest income related to our cash equivalents and marketable securities balances in 2019.

Income Tax Benefit

Income tax benefit decreased $5.1 million in 2019, as compared to 2018. In 2019, our effective tax rate was 0.3%. In 2018, our effective tax rate of 105.5%, which was inclusive of a $5.7 million benefit related to the reversal of our valuation allowance for the tax effect on the equity component of our Convertible Notes. Our effective tax rate also differs from the statutory rate primarily due to our valuation allowance for the years ended December 31, 2019 and 2018, as well as minimum state taxes and foreign tax expense for the year ended December 31, 2018. Income tax benefit for the year ended December 31, 2018 included an increase of $0.4 million resulting from the adoption of ASC 606 as of January 1, 2018.

Our future effective tax rate depends on various factors, such as our level of future taxable income, tax legislation and credits and the geographic compositions of our pre-tax income. We do not expect to incur any significant income taxes until such time that we reverse our valuation allowance against our federal and state deferred tax assets upon return to sustained profitability.

Non-controlling Interests

Non-controlling interests decreased $1.5 million, or 98.7% in 2019, as compared to 2018 resulting from decreased net income for a subsidiary from DAS build-out projects that were completed in 2018.

Net Loss Attributable to Common Stockholders

Our net loss attributable to common stockholders in 2019 increased $9.1 million as compared to 2018, primarily due to the $13.7 million increase in costs and operating expenses, the $6.2 million increase in interest expense and amortization of debt discount, and the $5.1 million decrease in income tax benefit, which were partially offset by the $13.0 million increase in revenues, the $1.5 million increase in interest income and other expense, net, and the $1.5 million decrease in non-controlling interests. Our diluted net loss per share increased primarily as a result of the increase in our net loss.

Adjusted EBITDA

Adjusted EBITDA was $82.6 million in 2019, a decrease of 10.0% from $91.8 million recorded in 2018. As a percent of revenue, Adjusted EBITDA was 31.3% in 2019, down from 36.6% of revenue in 2018. The Adjusted EBITDA decrease was due primarily to the $9.1 million increase in our net loss attributable to common stockholders, the $7.1 million decrease in depreciation and amortization expense, the $3.7 million decrease in stock based compensation expense, the $1.5 million increase in interest income and other expense, net, and the $1.5 million decrease in non-controlling interests, which were partially offset by the $6.2 million increase in interest expense and amortization of debt discount, the $5.1 million decrease in income tax benefit, and the $2.3 million increase in restructuring charges in 2019 compared to 2018. We define Adjusted EBITDA as net loss attributable to common stockholders plus depreciation and amortization of property and equipment, stock-based compensation expense, amortization of intangible assets, income tax (benefit) expense, interest expense and amortization of debt discount, interest income and other expense, net, non- controlling interests, and excludes charges or gains that are non-recurring, infrequent, or unusual. For a discussion of Adjusted EBITDA and a reconciliation of net loss attributable to common stockholders to Adjusted EBITDA, see footnote 1 to “Selected Financial Data” in Part II, Item 6.

Liquidity and Capital Resources

We have financed our operations primarily through cash provided by operating activities and borrowings under our Convertible Notes (defined below) and credit facilities. Our primary sources of liquidity as of December 31, 2019 consisted of $40.4 million of cash and cash equivalents, $40.2 million of marketable securities, $150.0 million available for borrowing under our Credit Facility, $12.6 million of which is reserved for our outstanding Letter of Credit Authorization agreements.

Our principal uses of liquidity have been to fund our operations, working capital requirements, capital expenditures and acquisitions. We expect that these requirements will be our principal needs for liquidity over the near term. Our capital expenditures in 2019 were $133.7 million, of which $107.1 million was reimbursed through revenue for DAS build-out projects from our telecom operators.

In February 2019, we entered into a Credit Agreement (the “Credit Agreement”) and related agreements with Bank of America, N.A. acting as agent for lenders named therein, including Bank of America, N.A., Silicon Valley Bank, Bank of the West, Zions Bancorporation, N.A. dba California Bank & Trust, and Barclays Bank PLC (the “Lenders”), for a secured credit facility in the form of a revolving line of credit up to $150.0 million (the “Revolving Line of Credit”) and a term loan of $3.5 million (the “Term Loan” and together with the Revolving Line of Credit, the “Credit Facility”). Our Credit Facility will mature on April 3, 2023. Amounts borrowed under the Revolving Line of Credit and Term Loan will bear variable interest at the greater of LIBOR plus 1.75% - 2.75% or Lender’s Prime Rate plus 0.75% - 1.75% per year and we will pay a fee of 0.25% - 0.5% per year on any unused portion of the Revolving Line of Credit. As of December 31, 2019, we had $2.7 million outstanding under the Term Loan, and we had no amounts outstanding under the Revolving Line of Credit. The Term Loan requires quarterly payments of interest and principal, amortizing fully over the term such that it is repaid in full on the maturity date of April 3, 2023. For the year ended December 31, 2019, interest rates for our Credit Facility ranged from 3.9% to 4.4%.

Repayment of amounts borrowed under the Credit Facility may be accelerated in the event that we are in violation of the representation, warranties and covenants made in the Credit Agreement, including certain financial covenants set forth therein, and under other specific default events including, but not limited to, non-payment or inability to pay debt, breach of cross default provisions, insolvency provisions, and change in control. We are subject to customary covenants, including a minimum quarterly consolidated senior secured leverage ratio, a minimum quarterly consolidated total leverage ratio, a maximum quarterly consolidated fixed charge coverage ratio, and cash on hand minimums. We complied with all such financial and non-financial covenants through the date of this report. The Credit Facility provides us with significant additional flexibility and liquidity to pursue our strategic objectives for capital expenditures and acquisitions that we may pursue from time to time.

In October 2018, we sold, through the initial purchasers, convertible senior notes (“Convertible Notes”) to qualified institutional buyers pursuant to Rule 144A of the Securities Act of 1933, as amended, for gross proceeds of $201.25 million. The Convertible Notes are senior, unsecured obligations with interest payable semi-annually in cash at a rate of 1.00% per annum on April 1st and October 1st of each year, beginning on April 1, 2019. The Convertible Notes will mature on October 1, 2023 unless they are redeemed, repurchased or converted prior to such date. Prior to April 1, 2023, the Convertible Notes are convertible at the option of holders only during certain periods and upon satisfaction of certain conditions. Thereafter, the Convertible Notes will be convertible at any time until the close of business on the second scheduled trading day immediately preceding the maturity date. Upon conversion, the Convertible Notes may be settled in shares of our common stock, cash or a combination of cash and shares of our common stock, at our election.

The Convertible Notes have an initial conversion rate of 23.6323 shares of common stock per $1,000 principal amount of the Convertible Notes, which will be subject to customary anti-dilution adjustments in certain circumstances. This represents an initial effective conversion price of approximately $42.31 per share, which represents a premium of approximately 30% to the $32.55 per share closing price of our common stock on October 2, 2018, the day we priced the offering.

We may redeem all or any portion of the Convertible Notes, at our option, on or after October 5, 2021, at a redemption price equal to 100% of the principal amount of the Convertible Notes to be redeemed, plus accrued and unpaid interest to, but excluding, the redemption date, if the last reported sale price of our stock has been at least 130% of the conversion price then in effect for at least 20 trading days (whether or not consecutive) during any 30 consecutive trading day period (including the last trading day of such period) ending on, and including, the trading day immediately preceding the date on which we provide written notice of redemption.

Holders of Convertible Notes may require us to repurchase their Convertible Notes upon the occurrence of certain events that constitute a fundamental change under the indenture governing the Convertible Notes at a fundamental change repurchase price equal to 100% of the principal amount thereof, plus accrued and unpaid interest to, but excluding, the date of repurchase. In connection with certain corporate events or if we issue a notice of redemption prior to the maturity date, it will, under certain circumstances, increase the conversion rate for holders who elect to convert their Convertible Notes in connection with such corporate event or notice of redemption.

In connection with the pricing of the Convertible Notes, we entered into privately negotiated capped call transactions with a financial institution. The capped call transactions initially cover, subject to customary anti-dilution adjustments, the number of shares of our common stock that initially underlie the Convertible Notes. The cap price of the capped call transactions is initially $65.10 per share of our common stock, representing a premium of 100% above the closing price of $32.55 per share of our common stock on October 2, 2018, and is subject to certain adjustments under the terms of the capped call transactions. The capped call transactions are expected generally to reduce potential dilution to our common stock upon conversion of the Convertible Notes and/or offset the potential cash payments that we could be required to make in excess of the principal amount of any converted Convertible Notes upon conversion thereof, with such reduction and/or offset subject to a cap based on the cap price. We paid approximately $24.0 million for the capped call transactions using a portion of the gross proceeds from the sale of the Convertible Notes.

We believe that our existing cash and cash equivalents, marketable securities, cash flow from operations and availability under the Credit Facility will be sufficient to fund our operations and planned capital expenditures for at least the next 12 months from the date of issuance of our financial statements. There can be no assurance, however, that future industry-specific or other developments, general economic trends, or other matters will not adversely affect our operations or our ability to meet our future cash requirements. Our future capital requirements will depend on many factors, including our rate of revenue growth and corresponding timing of cash collections, the timing and size of our managed and operated location expansion efforts, the timing and extent of spending to support product development efforts, the timing of introductions of new solutions and enhancements to existing solutions and the continuing market acceptance of our solutions. We expect our capital expenditures for 2020 will range from $140.0 million to $150.0 million, including $110.0 million to $115.0 million of capital expenditures for DAS build-out projects, which are reimbursed through revenue from our telecom operator customers. We anticipate the majority of our 2020 capital expenditures will be used to build out and upgrade Wi-Fi and DAS networks at our managed and operated venues. In 2018, we used $15.0 million of the net proceeds from the offering of the Convertible Notes to repay the outstanding balance under our previous Credit Facility and we expect to use and are using the remainder of the net proceeds from the offering of the Convertible Notes for general corporate purposes as well as potential acquisitions and strategic transactions, although we have no agreements or understandings with respect to any acquisitions or strategic transactions at this time and may not enter into any or consummate any transaction. We have also used and may continue to use a portion of the net proceeds for ongoing repurchases of common stock to satisfy withholding obligations related to vesting and settlement of RSUs.

We have contracts with the U.S. government. The U.S. government may modify, curtail or terminate its contracts with us, either at its convenience or for default based on performance. Any such modification, curtailment, or termination of one or more of our government contracts could have a material adverse effect on our earnings, cash flow and/or financial position. We may also enter into other acquisitions of complementary businesses, applications or technologies, which could require us to seek additional equity or debt financing. Additional funds may not be available on terms favorable to us, or at all.

The following table sets forth cash flow data for the periods indicated therein:

	Year Ended December 31,	
	2019	2018
	(in thousands)	
Net cash provided by operating activities	$ 108,710	$ 93,321
Net cash used in investing activities	(173,280)	(133,354)
Net cash (used in) provided by financing activities	(44,428)	162,825

Net Cash Provided by Operating Activities

In 2019, we generated $108.7 million of net cash from operating activities, an increase of $15.4 million from 2018. The increase is primarily due to a $24.2 million change in our operating assets and liabilities, which is primarily driven by a higher rate of cash collections from our customers, a $6.2 million increase in the addback for amortization of deferred financing costs and debt discounts, a $5.5 million change in deferred taxes, and a $2.4 million increase in the addback for the non-cash operating lease costs. The changes were partially offset by a $10.5 million increase in our net loss, a $7.1 million decrease in depreciation and amortization expenses, a $3.7 million decrease in stock-based compensation expenses, a $1.0 million change in fair value of contingent consideration, and a $0.6 million increase in gains and amortization of premiums/discounts on marketable securities in 2019.

In 2018, we generated $93.3 million of net cash from operating activities, a decrease of $4.4 million from 2017. The decrease is primarily due to a $29.3 million change in our operating assets and liabilities, which is primarily driven by a lower rate of cash collections and invoicing for our DAS build-out projects, a $3.0 million increase in the change in our deferred income taxes, a $1.9 million change in stock-based compensation expenses, a $0.9 million decrease in the addback for impairment loss and loss on disposal of fixed assets, net, and a $0.4 million change in bad debt expense in 2018. The changes were partially offset by a $19.0 million reduction of our net loss, a $10.0 million change in depreciation and amortization expenses primarily related to our recent increased fixed assets from our DAS build-out projects, Wi-Fi networks, and software development, a $2.2 million increase in the addback for amortization of deferred financing costs and debt discounts.

Net Cash Used in Investing Activities

In 2019, we used $173.3 million in investing activities, an increase of $39.9 million from 2018. The increase is primarily due to a $39.6 million increase in net purchases of marketable debt securities resulting from our investment of some of the cash proceeds received from our issuance of the Convertible Notes, and a $25.0 million increase in purchases of property and equipment resulting from our continued build out and upgrade of Wi-Fi and DAS networks at our managed and operated venues. The increases were partially offset by a $24.6 million decrease in cash paid for asset acquisitions.

In 2018, we used $133.4 million in investing activities, an increase of $58.9 million from 2017. The increase is due to a $35.4 million increase in purchases of property and equipment and a $23.5 million increase in cash paid for asset and business acquisitions.

Net Cash (Used in) Provided by Financing Activities

In 2019, we used $44.4 million of cash in financing activities compared to $162.8 million of cash provided by financing activities in 2018. This change is primarily due to a $171.7 million decrease in net proceeds from our Convertible Notes, a $23.9 million increase in payments for federal, state, and local employment payroll taxes related to our RSUs that vested during the period, an $11.5 million decrease in proceeds from our Credit Facility, a $9.5 million decrease in proceeds from exercise of stock options, a $3.0 million increase in cash paid for business acquisitions, a $1.1 million increase in cash paid for debt issuance costs, a $0.7 million increase in cash paid for stock repurchases, a $0.4 million increase in principal payments for our finance leases and notes payable, and a $0.4 million increase in cash paid to non-controlling interests. The changes were partially offset by a $15.1 million decrease in cash principal payments on our Credit Facility.

In 2018, we received $162.8 million of cash provided by financing activities, an increase of $178.9 million from 2017. This increase is due to a $195.7 million increase in net proceeds from our Convertible Notes offering, a $15.0 million increase in proceeds from our Credit Facility, and a $0.7 million increase in proceeds from exercise of stock options. The increases were partially offset by a $24.0 million payment for capped call options in connection with the Convertible Notes offering, a $5.7 million increase in payments for federal, state, and local employment payroll taxes related to our RSUs that vested during the period, a $2.0 million increase in principal payments for our capital leases and notes payable, a $0.7 million increase in cash paid for debt issuance costs, and a $0.5 million increase in cash payments to our non-controlling interests.

Contractual Obligations and Commitments

The following table sets forth our contractual obligations and commitments as of December 31, 2019:

	Payments Due by Period			
	Total	Less than 1 Year	2 - 3 Years	4 - 5 Years
			(in thousands)	
Venue revenue share minimums(1)	$ 46,163	$ 9,630	$ 17,507	$ 13,382
Operating and finance leases(2)	23,345	5,416	6,454	6,434
Open purchase commitments(3)	32,594	32,468	126	—
Convertible Notes(4)	201,250	—	201,250	—
Credit Facility(5)	2,722	778	1,556	388
Notes payable(6)	1,622	1,527	95	—
Total	$ 307,696	$ 49,819	$ 226,988	$ 20,204

[redacted]on-cancellable contracts to provide wireless communications network access to venues such as airports.

(2) Non-cancellable operating leases for office and other spaces and finance leases for equipment, primarily for data communication equipment and database software.

(3) Open purchase commitments are for the purchase of property and equipment, supplies and services. They are not recorded as liabilities on our consolidated balance sheet as of December 31, 2019 as v the related goods or services.

(4) Long-term debt associated with our Convertible Notes are based on contractual terms and intended timing of repayments of long-term debt.

(5) Debt associated with our Credit Agreement with Bank of America N.A. Payments are based on contractual terms and intended timing of repayments.

(6) Payments under notes payable related to purchases of prepaid maintenance service.

Off-Balance Sheet Arrangements

We do not have any off-balance sheet financing arrangements and we do not have any relationships with unconsolidated entities or financial partnerships, such as entities often referred to as structured finance or special purpose entities, which have been established for the purpose of facilitating off-balance sheet arrangements or other contractually narrow or limited purposes.

Transactions with Related Parties

Under our Audit Committee charter, our Audit Committee is responsible for reviewing and approving all related party transactions on a quarterly basis. In addition, our Board of Directors determines annually whether any related party relationships exist among the directors which would interfere with the judgment of individual directors in carrying out his responsibilities as director.

Inflation

Inflationary factors have not had a significant effect on our performance over the past several years. A significant increase in inflation may affect our future performance since we may not be able to recover the increases in our costs with similar increases in our prices.

[redacted]

Item 7A. Quantitative and Qualitative Disclosures About Market Risk

Market risk represents the potential loss arising from adverse changes in the value of financial instruments. The risk of loss is assessed based on the likelihood of adverse changes in fair values, cash flows or future earnings. We are exposed to various market risks including: (i) investment portfolio risk, (ii) interest rate risk, and (iii) foreign currency exchange rate risk.

Investment portfolio risk. We have established guidelines relative to the diversification and maturities of investments to maintain safety and liquidity. These guidelines are reviewed periodically and may be modified depending on market conditions. Although investments may be subject to credit risk, our investment policy specifies credit quality standards for our investments and limits the amount of credit exposure from any single issue, issuer, or type of investment. At December 31, 2019, our market risk sensitive instruments consisted of marketable securities available-for-sale, which are comprised of highly rated short-term commercial paper, corporate debt instruments and US treasury and agencies obligations.

Our marketable available-for-sale securities are carried at fair value and are intended for use in meeting our ongoing liquidity needs. Unrealized gains and losses on available-for-sale securities, which are deemed temporary, are reported as a separate component of stockholders' equity, net of tax. The cost of debt securities is adjusted for amortization of premiums and accretion of discounts to maturity. The amortization, along with realized gains and losses, would be included in interest income and other expense, net.

Interest rate risk. Our Convertible Notes bear a coupon rate of 1.00% per annum. We do not have economic interest rate expense exposure on our Convertible Notes due to their fixed interest rate nature. However, the values of the Convertible Notes are exposed to interest rate risk. Generally, the fair value of our fixed interest rate Convertible Notes will increase as interest rates fall and decrease as interest rates rise. In addition, the fair values of the Convertible Notes are affected by our stock price. The fair value of the Convertible Notes will generally increase as our common stock price increases and will generally decrease as our common stock price declines in value. Additionally, we carry the Convertible Notes at face value less unamortized discount and issuance costs on our consolidated balance sheet, and we disclose their fair value in the financial statements. See Footnote 11 in the notes to our consolidated financial statements for the fair value disclosure.

Our Credit Facility bears interest at a variable rate equal to the greater of LIBOR plus 1.75% - 2.75% or the Lender's Prime Rate plus 0.75% - 1.75% per year. Our use of variable rate debt exposes us to interest rate risk. A 100-basis point increase in the LIBOR or Lender's Prime Rate as of December 31, 2019 would not have a material impact on net (loss) income and cash flow.

Foreign currency exchange rate risk. We are exposed to foreign currency exchange rate risk inherent in conducting business globally in numerous currencies, of which the most significant to our operations in 2019 was the Brazilian Real. We are primarily exposed to foreign currency fluctuations related to the operations of our subsidiary in Brazil whose financial statements are not denominated in the U.S. dollar. Our foreign operations are not material to our operations as a whole. As such, we currently do not enter into currency forward exchange or option contracts to hedge foreign currency exposures.

Item 8. Financial Statements and Supplementary Data

The information required by this Item is included in Part IV, Items 15(a)(1) and (2) of this Annual Report on Form 10-K.

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

None.

Item 9A. Controls and Procedures

Disclosure Controls and Procedures

The Company maintains a system of disclosure controls and procedures that are designed to provide reasonable assurance that information required to be disclosed in the reports that the Company files or submits under the Securities Exchange Act of 1934, as amended, or the Exchange Act, is processed, recorded, summarized and reported within the time periods specified in the Securities and Exchange Commission's rules and forms. These disclosure controls and procedures include, among other processes, controls and procedures designed to ensure that information required to be disclosed in the reports that the Company files or submits under the Exchange Act is accumulated and communicated to management, including our Chief Executive Officer and Chief Financial Officer (our principal executive officer and principal financial officer, respectively), as appropriate, to allow for timely decisions regarding required disclosure.

The Company carried out an evaluation, under the supervision and with the participation of management, including our Chief Executive Officer and Chief Financial Officer, of the effectiveness of the design and operation of our disclosure controls and procedures as of December 31, 2019 pursuant to Exchange Act Rule 13a-15. Based upon that evaluation, the Company's Chief Executive Officer and Chief Financial Officer have concluded that the Company's disclosure controls and procedures, as defined in Exchange Act Rule 13a-15(e) and 15d-15(e), were effective as of the end of the period covered by this Annual Report.

Management's Report on Internal Control over Financial Reporting

Management is responsible for establishing and maintaining adequate internal control over financial reporting at the Company. Our internal control over financial reporting is a process designed under the supervision of our Chief Executive Officer and Chief Financial Officer to provide reasonable assurance regarding the reliability of financial reporting and the preparation of the Company's financial statements for external reporting purposes in accordance with GAAP. A company's internal control over financial reporting includes those policies and procedures that:

- pertain to the maintenance of records that, in reasonable detail, accurately and fairly reflect the transactions and dispositions of the assets of the Company;
- provide reasonable assurance that transactions are recorded as necessary to permit preparation of financial statements in accordance with GAAP, and that receipts and expenditures of the Company in accordance with authorizations of management and the directors of the Company; and
- provide reasonable assurance regarding prevention or timely detection of unauthorized acquisition, use or disposition of the Company's assets that could have a material effect on the financial stat

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.

Under the supervision and with the participation of management, including the certifying officers, the Company conducted an evaluation of the effectiveness of the Company's internal control over financial reporting as of December 31, 2019 based on the framework in *Internal Control—Integrated Framework (2013)* issued by the Committee of Sponsoring Organizations of the Treadway Commission (COSO). Management's assessment included an evaluation of the design of the Company's internal control over financial reporting and testing of the operational effectiveness of its internal control over financial reporting.

Based on this assessment, management determined that, as of December 31, 2019, the Company maintained effective internal control over financial reporting. The effectiveness of the Company's internal control over financial reporting has been audited by PricewaterhouseCoopers LLP, an independent registered public accounting firm. The Report of Independent Registered Public Accounting Firm is filed with this Annual Report on Form 10-K in a separate section following Part IV, as shown on the index under Item 15 of this Annual Report.

Changes in Internal Control over Financial Reporting

There have been no changes in the Company's internal control over financial reporting (as defined by Exchange Act Rule 13a-15(f) and 15d-15(f)) that have materially affected, or are reasonably likely to materially affect, the Company's internal control over financial reporting during the quarter ended December 31, 2019.

Item 9B. Other Information

None.

PART III

Item 10. Directors, Executive Officers and Corporate Governance

The information required by Item 10 will be included in the Company's definitive Proxy Statement under the caption "Directors, Executive Officers and Corporate Governance" and "Section 16(a) Beneficial Ownership Reporting Compliance," to be filed with the Commission within 120 days after the end of fiscal year 2019 pursuant to Regulation 14A, which information is incorporated herein by this reference.

Item 11. Executive Compensation

The Company maintains employee benefit plans and programs in which its executive officers are participants. Copies of certain of these plans and programs are set forth or incorporated by reference as Exhibits to this report. Information required by Item 11 will be included in the Company's definitive Proxy Statement under the captions "Director Compensation," "Executive Compensation," "Compensation Discussion and Analysis," and "Directors, Executive Officers and Corporate Governance," to be filed with the Commission within 120 days after the end of fiscal year 2019 pursuant to Regulation 14A, which information is incorporated herein by this reference.

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

The information required by Item 12 will be included in the Company's definitive Proxy Statement under the caption "Security Ownership of Certain Beneficial Owners and Management," to be filed with the Commission within 120 days after the end of fiscal year 2019 pursuant to Regulation 14A, which information is incorporated herein by this reference. The information required to be disclosed by Item 201(d) of Regulation S-K regarding our equity securities authorized for issuance under our equity incentive plans is incorporated herein by reference to the section entitled "Securities Authorized for Issuance under Equity Compensation Plans" in our definitive Proxy Statement for our Annual Meeting of Stockholders to be filed with the Commission within 120 days after the end of fiscal year 2019 pursuant to Regulation 14A.

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

The information required by Item 13 of Form 10-K regarding transactions with related persons, promoters and certain control persons, if any, will be included in the Company's definitive Proxy Statement under the caption "Certain Relationships and Related Party Transactions" to be filed with the Commission within 120 days after the end of fiscal year 2019 pursuant to Regulation 14A, which information is incorporated herein by this reference. The information required by Item 13 of Form 10-K regarding director independence will be included in the Company's definitive Proxy Statement under the caption "Directors, Executive Officers and Corporate Governance—Corporate Governance and Board Matters—Independence of the Board of Directors," to be filed with the Commission within 120 days after the end of fiscal year 2019 pursuant to Regulation 14A, which information is incorporated herein by this reference.

Item 14. Principal Accounting Fees and Services

The information required by Item 14 will be included in the Company's definitive Proxy Statement under the caption "Independent Registered Public Accounting Firm" to be filed with the Commission within 120 days after the end of fiscal year 2019 pursuant to Regulation 14A, which information is incorporated herein by this reference.

PART IV

Item 15. Exhibits

(a) The following documents are filed as part of, or incorporated by reference into, this Annual Report on Form 10-K:

(1)(2) *Financial Statements.* The following consolidated financial statements of Boingo Wireless, Inc., and Report of Independent Registered Public Accounting Firm are included in a separate section of this Annual Report on Form 10-K beginning on page F-1.

Description

All financial statement schedules have been omitted because the required information is not applicable or not present in amounts sufficient to require submission of the schedule, or because the information required is included in our consolidated financial statements or the notes thereto.

(3) *Exhibits*. The exhibits listed under Item 15(b) hereof are filed with, or incorporated by reference into, this Annual Report on Form 10-K. Each management contract or compensatory plan or arrangement is identified separately in item 15(b) hereof.

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(b) The following exhibits are filed as part of, or incorporated by reference into, this Annual Report on Form 10-K:

		Incorporated by Reference		
Exhibit No.	**Description**	**Form**	**Date**	**Number**
3.1	Amended and Restated Certificate of Incorporation.	S-1	03/21/2011	3.2
3.2	Certificate of Amendment to the Certificate of Incorporation.	8-K	06/09/2017	3.1
3.3	Amended and Restated Bylaws.	8-K	06/09/2017	3.2
4.1	Amendment No. 1 to Amended and Restated Investor Rights Agreement, dated April 12, 2011.	S-1	04/13/2011	4.1
4.2	Amended and Restated Investor Rights Agreement among the Registrant and certain stockholders, dated June 27, 2006.	S-1	01/14/2011	4.2
4.3	Indenture (including form of Note) with respect to the Company’s 1.00% Convertible Senior Notes due 2023, dated as of October 5, 2018, between the Company and Wilmington Trust, National Association, as trustee.	8-K	10/05/2018	4.1
4.4	Description of Capital Stock.			
10.1	Form of Indemnification Agreement to be entered into between the Registrant and each of its directors and officers.	S-1	03/21/2011	10.1
10.2	Amended and Restated 2001 Stock Incentive Plan.†	S-1	01/14/2011	10.2
10.3	2001 Stock Incentive Plan Notice of Option Grant and Option Agreement.†	10-Q	08/04/2017	10.1
10.4	Form of Vesting Extension Agreement.†	8-K	02/03/2016	99.1
10.5	Amended and Restated 2011 Equity Incentive Plan.	10-Q	08/10/2015	10.1
10.6	2011 Equity Incentive Plan Notice of Restricted Stock Unit Award and Restricted Stock Unit Agreement (Performance Stock Units).†	10-Q	08/04/2017	10.2
10.7	2011 Equity Incentive Plan Notice of Restricted Stock Unit Award and Restricted Stock Unit Agreement.†	10-Q	08/04/2017	10.3
10.8	2010 Management Incentive Compensation Plan.†	S-1	01/14/2011	10.7
10.9	Office Lease Agreement, dated April 2007, between CA-10960 Wilshire Limited Partnership and Registrant.	S-1	01/14/2011	10.8

Exhibit No.	Description	Incorporated by Reference Form	Date	Number
10.10	Lease Amendment dated August 19, 2014 between CA-10960 Wilshire Limited Partnership and Registrant.	10-Q	11/10/2014	10.1
10.11	License Agreement for Wireless Communications Access System, dated November 17, 2005, between City of Chicago and Chicago Concourse Development Group, LLC.^	S-1	04/29/2011	10.9
10.12	Consent to Change in Ownership and Amendment of Agreement, dated June 22, 2006, between City of Chicago and Chicago Concourse Development Group, LLC.	S-1	2/25/2011	10.9A
10.13	Amendment Agreement, dated December 31, 2014 between the Registrant and the City of Chicago.^	10-K	03/16/2015	10.11
10.14	2018 Amendment to License Agreement for Wireless Communications Access System between City of Chicago and Chicago Concourse Development Group, LLC, dated as of March 31, 2018	10-Q/A	07/20/2018	10.1
10.15	Telecommunications Network Access Agreement, dated August 26, 1999, between The Port Authority of New York and New Jersey and New York Telecom Partners, LLC.^	S-1	04/29/2011	10.10
10.16	Supplemental Agreement, dated March 28, 2001 between The Port Authority of New York and New Jersey and New York Telecom Partners, LLC.^	S-1	04/29/2011	10.10A
10.17	Supplemental Agreement, dated June 30, 2002 between the Port Authority of New York and New Jersey and New York Telecom Partners, LLC.^	10-Q	11/10/2014	10.2
10.18	Supplemental Agreement, dated November 30, 2006 between the Port Authority of New York and New Jersey and New York Telecom Partners, LLC.^	10-Q	11/10/2014	10.3
10.19	Letter, dated August 19, 2013, from New York Telecom Partners, LLC to The Port Authority of New York and New Jersey.#	10-Q	11/12/2013	10.17
10.20	Supplemental Agreement, dated July 21, 2014 between the Port Authority of New York and New Jersey and New York Telecom Partners, LLC.^	10-Q	11/10/2014	10.4
10.21	Management Incentive Compensation Plan.	S-1	03/21/2011	10.11
10.22	Letter agreement between the Registrant and Peter Hovenier, dated April 1, 2013.†	8-K	04/02/2013	10.1

Exhibit No.	Description	Incorporated by Reference		
		Form	Date	Number
10.23	Letter agreement between the Registrant and Dawn Callahan, dated January 1, 2013.†	10-K	03/17/2014	10.15
10.24	Letter agreement between the Registrant and Derek Peterson, dated January 30, 2013.†	10-K	03/17/2014	10.17
10.25	Notice of Restricted Stock Unit Award and Restricted Stock Unit Agreement (2016 Performance Stock Units) under 2011 Equity Incentive Plan.†	8-K	02/03/2016	99.2
10.26	Cooperation Agreement, dated June 1, 2016, by and among Boingo Wireless, Inc., each of Ides Capital Management LP, Ides Capital Opportunities Fund, LP, Ides Capital Advisors LLC, Ides Capital Partners LP, Ides Capital GP LLC, Dianne McKeever, Robert Longnecker, and each of Legion Partners, L.P. I, Legion Partners, L.P. II, Legion Partners, LLC, Legion Partners Asset Management, LLC, Legion Partners Holdings, LLC, Christopher S. Kiper, Bradley S. Vizi and Raymond White.	8-K	06/01/2016	10.1
10.27	Asset Purchase Agreement, dated August 1, 2018, by and among Boingo Wireless, Inc., Boingo MDU, LLC, Elauwit Networks, LLC, Daniel McDonough, Jr., Barry Rubens and Taylor Jones and, solely with respect to Article VII, Elauwit, LLC and DragonRider Enterprises, LLC.	8-K	08/02/2018	10.1
10.28	Form of Base Capped Call Confirmation.	8-K	10/05/2018	99.1
10.29	Form of Additional Capped Call Confirmation.	8-K	10/05/2018	99.2
10.30	Credit Agreement between the Registrant and Bank of America, N.A.#	10-K	03/01/2019	10.32
10.31	Letter agreement between the Registrant and Mike Finley, dated February 21, 2019.†	10-K	03/01/2019	10.33
14.1	Code of Ethics and Business Conduct.	8-K	11/02/2017	14.1
21.1	List of subsidiaries.			
23.1	Consent of PricewaterhouseCoopers LLP, Independent Registered Public Accounting Firm.			
24.1	Power of Attorney (included in Signature Page)			
31.1	Certification of Chief Executive Officer pursuant to Section 302 of the Sarbanes-Oxley Act.			
31.2	Certification of Chief Financial Officer pursuant to Section 302 of the Sarbanes-Oxley Act.			

Exhibit No.	Description	Incorporated by Reference		
		Form	Date	Number
32.1	Certification of Chief Executive Officer pursuant to Section 906 of the Sarbanes-Oxley Act.*			
32.2	Certification of Chief Financial Officer pursuant to Section 906 of the Sarbanes-Oxley Act.*			
101.INS	Inline XBRL Instance Document			
101.SCH	Inline XBRL Taxonomy Extension Schema Document			
101.CAL	Inline XBRL Taxonomy Extension Calculation Linkbase Document			
101.DEF	Inline XBRL Taxonomy Extension Definition Linkbase Document			
101.LAB	Inline XBRL Taxonomy Extension Label Linkbase Document			
101.PRE	Inline XBRL Taxonomy Extension Presentation Linkbase Document			
104	Cover Page Interactive Data File (formatted as Inline XBRL and contained in Exhibit 101)			

[redacted]

^ Portions of this exhibit (indicated by asterisks) have been omitted pursuant to an order granting confidential treatment. These portions have been submitted separately to the Securities and Exchange Commission.

Certain confidential portions of this exhibit were omitted by means of marking such portions with an asterisk because the identified confidential portions (i) are not material and (ii) would be competitively harmful if publicly disclosed.

† Indicates a management contract or compensatory plan.

Item 16. Form 10-K Summary

Not applicable.

[redacted]

INDEX TO CONSOLIDATED FINANCIAL STATEMENTS

All schedules are omitted because they are not applicable, or the required information is shown in the Company's consolidated financial statements or the related notes thereto.

REPORT OF INDEPENDENT REGISTERED PUBLIC ACCOUNTING FIRM

To the Board of Directors and Stockholders of Boingo Wireless, Inc.

Opinions on the Financial Statements and Internal Control over Financial Reporting

We have audited the accompanying consolidated balance sheets of Boingo Wireless, Inc. and its subsidiaries (the “Company”) as of December 31, 2019 and 2018, and the related consolidated statements of operations, of comprehensive income (loss), of stockholders’ equity and of cash flows for each of the three years in the period ended December 31, 2019, including the related notes (collectively referred to as the “consolidated financial statements”). We also have audited the Company’s internal control over financial reporting as of December 31, 2019, based on criteria established in *Internal Control—Integrated Framework (2013)* issued by the Committee of Sponsoring Organizations of the Treadway Commission (COSO).

In our opinion, the consolidated financial statements referred to above present fairly, in all material respects, the financial position of the Company as of 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 accounting principles generally accepted in the United States of America. Also in our opinion, the Company maintained, in all material respects, effective internal control over financial reporting as of December 31, 2019, based on criteria established in *Internal Control—Integrated Framework (2013)* issued by the COSO.

Changes in Accounting Principles

As discussed in Note 2 to the consolidated financial statements, the Company changed the manner in which it accounts for leases in 2019 and the manner in which it accounts for revenue from contracts with customers in 2018.

Basis for Opinions

The Company’s management is responsible for these consolidated financial statements, for maintaining effective internal control over financial reporting, and for its assessment of the effectiveness of internal control over financial reporting, included in Management’s Report on Internal Control over Financial Reporting appearing under Item 9A. Our responsibility is to express opinions on the Company’s consolidated financial statements and on the Company’s internal control over financial reporting based on our audits. We are a public accounting firm registered with the Public Company Accounting Oversight Board (United States) (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 audits to obtain reasonable assurance about whether the consolidated financial statements are free of material misstatement, whether due to error or fraud, and whether effective internal control over financial reporting was maintained in all material respects.

Our audits of the consolidated financial statements included performing procedures to assess the risks of material misstatement of the consolidated financial statements, whether due to error or fraud, and performing procedures that respond to those risks. Such procedures included examining, on a test basis, evidence regarding the amounts and disclosures in the consolidated financial statements. Our audits also included evaluating the accounting principles used and significant estimates made by management, as well as evaluating the overall presentation of the consolidated financial statements. Our audit of internal control over financial reporting included obtaining an understanding of internal control over financial reporting, assessing the risk that a material weakness exists, and testing and evaluating the design and operating effectiveness of internal control based on the assessed risk. Our audits also included performing such other procedures as we considered necessary in the circumstances. We believe that our audits provide a reasonable basis for our opinions.

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 (i) pertain to the maintenance of records that, in reasonable detail, accurately and fairly reflect the transactions and dispositions of the assets of the company; (ii) 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 (iii) provide reasonable assurance regarding prevention or timely detection of unauthorized acquisition, use, or disposition of the company's assets that could have a material effect on the financial statements.

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

Critical Audit Matters

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

Distributed Antenna Systems ("DAS") Revenue Material Right Evaluation

As described in Note 2 to the consolidated financial statements, revenue of the DAS segment for the year-ended December 31, 2019 was $97 million, the majority of which is subject to the material right evaluation. Management generally recognizes revenue related to the Company's single performance obligation for its DAS customer contracts monthly over the contract term once the customer has the ability to access the DAS network and the Company commences maintenance on the DAS network. The Company's contract fee structure generally includes a non-refundable upfront fee and management evaluates whether customer options to renew services give rise to a material right that should be accounted for as a separate performance obligation because of those non-refundable upfront fees. Management applied significant judgment in determining whether the customer options to renew services give rise to a material right that should be accounted for as a separate performance obligation.

The principal considerations for our determination that performing procedures relating to the DAS revenue material right evaluation is a critical audit matter are there was significant judgment by management in determining whether customer options to renew services give rise to a material right. This in turn led to a high degree of auditor judgment and subjectivity related to performing procedures to evaluate management's assessment as to whether a material right exists.

Addressing the matter involved performing procedures and evaluating audit evidence in connection with forming our overall opinion on the consolidated financial statements. These procedures included testing the effectiveness of controls relating to the revenue recognition process, including controls over the analysis performed by management to determine whether a material right exists within the DAS customer contracts. These procedures also included, among others, testing management's process for identifying, evaluating, and accounting for performance obligations, including determining whether customer options to renew services give rise to a material right, and testing the completeness and accuracy of management's identification and evaluation of the performance obligations by examining contracts on a test basis.

/s/ PricewaterhouseCoopers LLP
Los Angeles, California
March 2, 2020

We have served as the Company's auditor since 2002, which includes periods before the Company became subject to SEC reporting requirements.

Boingo Wireless, Inc.

Consolidated Balance Sheets

(In thousands, except per share amounts)

	December	
	2019	
Assets		
Current assets:		
Cash and cash equivalents	$	40,401
Marketable securities		40,214
Accounts receivable, net		33,350
Prepaid expenses and other current assets		8,235
Total current assets		122,200
Property and equipment, net		380,243
Operating lease right-of-use assets, net		15,196
Goodwill		58,579
Intangible assets, net		14,940
Other assets		9,309
Total assets	$	600,467
Liabilities and stockholders' equity		
Current liabilities:		
Accounts payable	$	24,298
Accrued expenses and other liabilities		65,152
Deferred revenue		61,229
Current portion of operating leases		2,695
Current portion of long-term debt		778
Current portion of finance leases		2,721
Current portion of notes payable		1,527
Total current liabilities		158,400
Deferred revenue, net of current portion		166,660
Long-term portion of operating leases		17,357
Long-term debt		162,708
Long-term portion of finance leases		572
Long-term portion of notes payable		95
Deferred tax liabilities		993
Other liabilities		201
Total liabilities		506,986
Commitments and contingencies (Note 18)		
Stockholders' equity:		
Preferred stock, $0.0001 par value; 5,000 shares authorized; no shares issued and outstanding		—
Common stock, $0.0001 par value; 100,000 shares authorized; 44,224 and 42,669 shares issued and outstanding for 2019 and 2018, respectively		4
Additional paid-in capital		234,638
Accumulated deficit		(140,973)
Accumulated other comprehensive loss		(1,426)
Total common stockholders' equity		92,243
Non-controlling interests		1,238
Total stockholders' equity		93,481
Total liabilities and stockholders' equity	$	600,467

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

Boingo Wireless, Inc.

Consolidated Statements of Operations

(In thousands, except per share amounts)

	Year Ended December 31	
	2019	2018
Revenue	$ 263,790	$ 250,821
Costs and operating expenses:		
Network access	119,613	113,572
Network operations	57,027	52,215
Development and technology	34,575	31,372
Selling and marketing	24,443	22,647
General and administrative	27,265	30,302
Amortization of intangible assets	4,571	3,710
Total costs and operating expenses	267,494	253,818
Loss from operations	(3,704)	(2,997)
Interest expense and amortization of debt discount	(8,618)	(2,400)
Interest income and other expense, net	2,017	513
Loss before income taxes	(10,305)	(4,884)
Income tax benefit	28	5,153
Net (loss) income	(10,277)	269
Net income attributable to non-controlling interests	19	1,489
Net loss attributable to common stockholders	$ (10,296)	$ (1,220)
Net loss per share attributable to common stockholders:		
Basic	$ (0.23)	$ (0.03)
Diluted	$ (0.23)	$ (0.03)
Weighted average shares used in computing net loss per share attributable to common stockholders:		
Basic	43,977	42,066
Diluted	43,977	42,066

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

Boingo Wireless, Inc.

Consolidated Statements of Comprehensive Income (Loss)

(In thousands)

	Year Ended December 31,	
	2019	2018
Net (loss) income	$ (10,277)	$ 269
Other comprehensive (loss) income, net of tax:		
Foreign currency translation adjustments	(141)	(342)
Unrealized gain on marketable securities	21	—
Comprehensive loss	(10,397)	(73)
Comprehensive income attributable to non-controlling interest	30	1,544
Comprehensive loss attributable to common stockholders	$ (10,427)	$ (1,617)

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

Table of Contents

Boingo Wireless, Inc.

Consolidated Statements of Stockholders' Equity

(In thousands)

	Common Stock Shares	Common Stock Amount	Additional Paid-in Capital	Accumulated Deficit	Accumulated Other Comprehensive Loss	Non-controlli Interest
Balance at December 31, 2016	38,562	$ 4	$ 211,275	$ (112,601)	$ (870)	$
Issuance of common stock under stock incentive plans	2,433	—	9,244	—	—	
Shares withheld for taxes	—	—	(4,872)	—	—	
Stock-based compensation expense	—	—	15,032	—	—	
Non-controlling interest distributions	—	—	—	—	—	
Net loss	—	—	—	(19,366)	—	
Other comprehensive income	—	—	—	—	(28)	
Balance at December 31, 2017	40,995	4	230,679	(131,967)	(898)	
Issuance of common stock under stock incentive plans	1,674	—	9,979	—	—	
Shares withheld for taxes	—	—	(10,536)	—	—	
Stock-based compensation expense	—	—	13,057	—	—	
Equity component of Convertible Notes, net of offering costs and tax	—	—	39,922	—	—	
Payment for capped call share options	—	—	(23,969)	—	—	
Non-controlling interest distributions	—	—	—	—	—	
Cumulative effect of a change in accounting principle	—	—	—	3,257	—	
Net income	—	—	—	(1,220)	—	
Other comprehensive loss	—	—	—	—	(397)	
Balance at December 31, 2018	42,669	4	$ 259,132	(129,930)	(1,295)	
Issuance of common stock under stock incentive plans	1,611	—	470	—	—	
Repurchases of common stock	(56)	—	—	(747)	—	
Shares withheld for taxes	—	—	(34,420)	—	—	
Stock-based compensation expense	—	—	9,456	—	—	
Non-controlling interest distributions	—	—	—	—	—	(
Net loss	—	—	—	(10,296)	—	
Other comprehensive loss	—	—	—	—	(131)	
Balance at December 31, 2019	44,224	$ 4	$ 234,638	$ (140,973)	$ (1,426)	$

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

Boingo Wireless, Inc.

Consolidated Statements of Cash Flows

(In thousands)

	Year Ended Decemb			
	2019		2018	
Cash flows from operating activities				
Net (loss) income	$	(10,277)	$	26
Adjustments to reconcile net (loss) income including non-controlling interests to net cash provided by operating activities:				
Depreciation and amortization of property and equipment		70,862		78,83
Amortization of intangible assets		4,571		3,71
Impairment loss and loss on disposal of fixed assets and intangible assets held for sale, net		440		23
Stock-based compensation		8,596		12,26
Amortization of deferred financing costs and debt discount, net of amounts capitalized		8,412		2,26
Non-cash operating lease cost		2,350		—
Gains and amortization of premiums/discounts for marketable securities		(609)		—
Change in fair value of contingent consideration		(961)		—
Bad debt expense		181		36
Change in deferred income taxes		(80)		(5,61
Changes in operating assets and liabilities, net of effect of acquisition:				
Accounts receivable		9,184		(13,70
Prepaid expenses and other assets		1,233		(80
Accounts payable		426		(24
Accrued expenses and other liabilities		7,054		6,47
Deferred revenue		10,301		9,26
Operating lease liabilities		(2,973)		—
Net cash provided by operating activities		108,710		93,32
Cash flows from investing activities				
Purchases of marketable securities		(81,177)		—
Proceeds from maturities of marketable securities		41,593		—
Purchases of property and equipment		(133,696)		(108,73
Payments for asset and business acquisitions		—		(24,62
Net cash used in investing activities		(173,280)		(133,35
Cash flows from financing activities				
Proceeds from Convertible Notes offering, net of issuance costs		—		195,71
Payment for capped call options		—		(23,96
Proceeds from credit facility		3,500		15,00
Principal payments on credit facility		(778)		(15,87
Payment of acquisition related consideration		(3,027)		—
Proceeds from exercise of stock options		470		9,97
Repurchase of common stock for retirement		(747)		—
Payments of finance leases and notes payable		(6,608)		(6,18
Payments of withholding tax on net issuance of restricted stock units		(34,420)		(10,53
Debt issuance costs		(1,815)		(69
Payments to non-controlling interest		(1,003)		(61
Net cash (used in) provided by financing activities		(44,428)		162,82
Effect of exchange rates on cash.		(13)		(
Net (decrease) increase in cash and cash equivalents		(109,011)		122,72
Cash and cash equivalents at beginning of year		149,412		26,68
Cash and cash equivalents at end of year	$	40,401	$	149,41
Supplemental disclosure of cash flow information				
Cash paid for interest, net of amounts capitalized	$	154	$	—
Cash paid for taxes, net of refunds	$	(20)	$	56
Supplemental disclosure of non-cash investing and financing activities				
Property and equipment costs included in accounts payable, accrued expenses and other liabilities	$	39,037	$	37,27
Purchase of equipment and prepaid maintenance services under capital financing arrangements	$	—	$	5,06
Capitalized stock-based compensation included in property and equipment costs	$	860	$	78
Financed sale of intangible assets held for sale	$	290	$	—
Purchase price for asset and business acquisitions included in accrued expenses and other liabilities	$	—	$	4,91
Debt issuance costs included in accrued expenses and other liabilities	$	—	$	16
Tax effect on equity component of Convertible Notes	$	—	$	5,68

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

Boingo Wireless, Inc.

Notes to the Consolidated Financial Statements

(In thousands, except shares and per share amounts)

1. The business

Boingo Wireless, Inc. and its subsidiaries (collectively "we, "us", "our" or "the Company") is a leading global provider of wireless connectivity solutions for smartphones, tablets, laptops, wearables and other wireless-enabled consumer devices. Boingo Wireless, Inc. was incorporated in April 16, 2001 in the State of Delaware. We have a diverse monetization model that enables us to generate revenues from wholesale partnerships, retail sales, and advertising across these wireless networks. Wholesale offerings include distributed antenna systems ("DAS") or small cells, which are cellular extension networks, multifamily, carrier offload, Wi-Fi roaming, value-added services, private label Wi-Fi, and location-based services. Retail products include Wi-Fi services for military personnel living in the barracks of U.S. Army, Air Force and Marines bases around the world, and Wi-Fi subscriptions and day passes that provide access to over 1.3 million commercial hotspots worldwide. Advertising revenue is driven by Wi-Fi sponsorships at airports, hotels, cafes and restaurants, and public spaces. Our customers include some of the world's largest carriers, telecommunications service providers, global consumer brands, and property owners, as well as troops stationed at military bases and Internet savvy consumers on the go.

2. Summary of significant accounting policies

Basis of presentation and consolidation

Our consolidated financial statements have been prepared in accordance with accounting principles generally accepted in the United States of America ("GAAP").

The accompanying consolidated financial statements include our accounts and the accounts of our majority owned subsidiaries. We consolidate our 70% ownership of Chicago Concourse Development Group, LLC and our 75% ownership of Boingo Holding Participacoes Ltda. in accordance with Financial Accounting Standards Board ("FASB") Accounting Standards Codification ("ASC") 810, *Consolidation*. Other parties' interests in consolidated entities are reported as non-controlling interests. All intercompany balances and transactions have been eliminated in consolidation.

In June 2018, the Financial Accounting Standards Board ("FASB") issued Accounting Standards Update ("ASU") 2018-07, *Improvements to Nonemployee Share-Based Payment Accounting*, which eliminates the separate accounting model for nonemployee share-based payment awards and generally requires companies to account for share-based payment transactions with nonemployees in the same way as share-based payment transactions with employees. The accounting remains different for attribution, which represents how the equity-based payment cost is recognized over the vesting period, and a contractual term election for valuing nonemployee equity share options. The standard is effective for interim and annual periods beginning after December 15, 2018. We adopted ASU 2018-07 on January 1, 2019 and the adoption of this standard did not have a material impact on our consolidated financial statements.

(In thousands, except shares and per share amounts)

2. Summary of significant accounting policies (Continued)

In February 2016, the FASB issued a new standard related to leases, which was codified into Accounting Standards Codification ("ASC") 842, *Leases*. ASC 842 requires lessees to recognize assets and liabilities for all leases with lease terms of more than 12 months on the balance sheet. Under ASC 842, the recognition, measurement, and presentation of expenses and cash flows arising from a lease by a lessee will depend on its classification as a finance or operating lease. On January 1, 2019, we adopted ASC 842 using the modified retrospective transition approach. ASC 842 permits two methods of adoption and we elected to apply the guidance to each lease that had commenced as of January 1, 2019 with a cumulative-effect adjustment to the opening balance of retained earnings as of that date. ASC 842 permits various optional transition practical expedients. The discount rate used to calculate the present value of the future payments was determined as of January 1, 2019 for existing lease contracts and was generally based on our incremental borrowing rate as of January 1, 2019 commensurate with the remaining lease term. We also elected the package of practical expedients which included the following: (i) an entity need not reassess whether any expired or existing contracts are or contain leases; (ii) an entity need not reassess the lease classification for any expired or existing leases; and (iii) an entity need not reassess initial direct costs for any existing leases. The standard had a material impact on our consolidated balance sheet but did not have an impact on our consolidated statement of operations and our consolidated statement of cash flows. The most significant impact was the recognition of right-of-use ("ROU") assets and liabilities related to our operating leases, while our accounting for finance leases remained substantially unchanged. Adoption of the new standard resulted in the recording of $16,916 of operating lease ROU assets and $22,338 of operating lease ROU liabilities as of January 1, 2019.

In May 2014, the FASB issued ASU 2014-09, *Revenue from Contracts with Customers*, which replaced the accounting standards for revenue recognition under FASB ASC 605, *Revenue Recognition*, with a single comprehensive five-step model, eliminating industry-specific accounting rules. The core principle is to recognize revenue upon the transfer of control of goods or services to a customer at an amount that reflects the consideration expected to be received. The FASB amended several aspects of the guidance after the issuance of ASU 2014-09, and the new revenue recognition accounting standard, as amended, was codified within ASC 606, *Revenue from Contracts with Customers*. On January 1, 2018, we adopted ASC 606 using the modified retrospective method applied to those contracts which were not completed as of January 1, 2018. Results for reporting periods beginning on January 1, 2018 are presented under ASC 606, while prior period amounts are not adjusted and continue to be reported in accordance with ASC 605.

Adoption of ASC 606 using the modified retrospective method required us to record a cumulative effect adjustment, net of tax, to accumulated deficit and non-controlling interests of $3,257 and $69, respectively, on January 1, 2018. In addition, adoption of the standard resulted in the following changes to the consolidated balance sheet as of January 1, 2018:

	January 1, 2018 (Per ASC 605)	Adjustment for Adoption	January 1, 2018 (Per ASC 606)
Accounts receivable, net	$ 26,148	$ (1,069)	$ 25,079
Prepaid expenses and other current assets	$ 6,369	$ 170	$ 6,539
Other assets	$ 10,082	$ (2,179)	$ 7,903
Deferred revenue, current	$ 61,708	$ 14,176	$ 75,884
Deferred revenue, net of current portion	$ 149,168	$ (20,580)	$ 128,588

The changes to the consolidated balance sheet as of January 1, 2018 were primarily due to the following factors: (i) reclassification of unbilled receivables (contract assets) to a contra-liability account under ASC 606; and (ii) recognition of revenue related to our single performance obligation for our DAS contracts monthly over the contract term once the customer has the ability to access the DAS network and we commence maintenance on the DAS network under ASC 606 as compared to recognition of build-out fees for our DAS contracts monthly over the term of the estimated customer relationship period once the build-out is complete and minimum monthly access fees for our DAS contracts monthly over the term of the telecom operator agreement under ASC 605. The changes to the consolidated balance sheet as of January 1, 2018 are reflected as non-cash changes within cash provided by operating activities in our consolidated statement of cash flows for the year ended December 31, 2018.

Boingo Wireless, Inc.

Notes to the Consolidated Financial Statements (Continued)

(In thousands, except shares and per share amounts)

2. Summary of significant accounting policies (Continued)

In May 2017, the FASB issued ASU 2017-09, *Compensation—Stock Compensation (Topic 718): Scope of Modification Accounting*, which provides guidance on the types of changes to the terms or conditions of share-based payment awards to which an entity applies modification accounting under ASC 718. According to the new standard, an entity would not apply modification accounting if the fair value, vesting conditions and classification of the modified award is the same as the original award immediately before the original award is modified. The standard will be applied prospectively to modifications that occur on or after the adoption date. We adopted ASU 2017-09 on January 1, 2018 and the adoption of this standard did not have a material impact on our consolidated financial statements.

In January 2017, the FASB issued Accounting Standards Update ("ASU") 2017-04, *Intangibles-Goodwill and Other (Topic 350)*, which simplifies how an entity is required to test goodwill for impairment. An entity will no longer perform a hypothetical purchase price allocation to measure goodwill impairment. Instead, impairment will be measured using the difference between the carrying amount and the fair value of the reporting unit. The standard is effective for interim and annual periods beginning after December 15, 2019 with early adoption permitted for goodwill impairment tests with measurement dates after January 1, 2017. We elected to early adopt ASU 2017-04 as of January 1, 2017 and the adoption of this standard did not have a material impact on our consolidated financial statements.

In November 2016, the FASB issued ASU 2016-18, *Statement of Cash Flows (Topic 230): Restricted Cash*, which requires that a statement of cash flows explain the change during the period in the total of cash, cash equivalents, and amounts generally described as restricted cash or restricted cash equivalents. Therefore, amounts generally described as restricted cash and restricted cash equivalents should be included with cash and cash equivalents when reconciling the beginning-of-period and end-of-period total amounts shown on the statement of cash flows. We adopted ASU 2016-18 on January 1, 2018 under the retrospective transition method for each period presented in our consolidated statements of cash flows.

In August 2016, the FASB issued ASU 2016-15, *Statement of Cash Flows (Topic 230)*, which adds or clarifies guidance to reduce diversity in how certain transactions are classified in the statement of cash flows. The standard is effective for interim and annual periods beginning after December 15, 2017 with early adoption permitted. The standard requires application using a retrospective transition method. We elected to early adopt ASU 2016-15 as of January 1, 2017 and the adoption of this standard did not have a material impact on our consolidated financial statements.

Use of estimates

The preparation of accompanying consolidated financial statements in conformity with GAAP requires us to make estimates and assumptions that affect the reported amounts of assets and liabilities and the disclosure of contingent assets and liabilities at the dates of the accompanying consolidated financial statements, and the reported amounts of revenue and expenses during the reporting period. Actual results could differ from those estimates. Assets and liabilities which are subject to significant judgment and the use of estimates include the allowance for doubtful accounts, recoverability of goodwill and long-lived assets, valuation allowances with respect to deferred tax assets, useful lives associated with property and equipment, valuation of ROU assets and ROU liabilities, valuation and useful lives of intangible assets, valuation of contingent consideration, contract assets and contract liabilities including estimates of variable consideration, and the valuation and assumptions underlying stock-based compensation and other equity instruments. On an ongoing basis, we evaluate our estimates compared to historical experience and trends, which form the basis for making judgments about the carrying value of assets and liabilities.

2. Summary of significant accounting policies (Continued)

Concentrations of credit risk

Financial instruments that potentially subject us to significant concentrations of credit risk consist primarily of cash and cash equivalents , marketable securities, and accounts receivable. We extend credit based upon the evaluation of the customer's financial condition and generally collateral is not required. We maintain an allowance for doubtful accounts based upon expected collectability of accounts receivable. We primarily estimate our allowance for doubtful accounts based on a specific review of significant outstanding accounts receivable. For the year ended December 31, 2019, three customers accounted for 34% of total revenue. For the year ended December 31, 2018, three customers accounted for 37% of total revenue. For the year ended December 31, 2017, four customers accounted for 44% of total revenue. At December 31, 2019, one customer accounted for 34% of the total accounts receivable. At December 31, 2018, four customers accounted for 20%, 19%, 17% and 13% of the total accounts receivable, respectively.

Cash and cash equivalents

Cash and cash equivalents include highly liquid investments that are readily convertible into known amounts of cash with original maturities of three months or less when acquired. At December 31, 2019 and 2018, cash equivalents consisted of money market funds.

Marketable securities

Our marketable securities consist of available-for-sale securities with original maturities exceeding three months. According to ASC 320, *Investments—Debt and Equity Securities*, we have classified securities, which have readily determinable fair values and are highly liquid, as short-term because such securities are expected to be realized within a one-year period. At December 31, 2019, we had $40,214 in marketable securities. We had no marketable securities at December 31, 2018.

Marketable securities are reported at fair value with the related unrealized gains and losses reported as other comprehensive income (loss) until realized or until a determination is made that an other-than-temporary decline in market value has occurred. No significant unrealized gains and losses have been reported during the years presented. Factors considered by us in assessing whether an other-than-temporary impairment has occurred include the nature of the investment, whether the decline in fair value is attributable to specific adverse conditions affecting the investment, the financial condition of the investee, the severity and the duration of the impairment and whether we have the ability to hold the investment to maturity. When it is determined that an other-than-temporary impairment has occurred, the investment is written down to its market value at the end of the period in which it is determined that an other-than-temporary decline has occurred. The cost of marketable securities sold is based upon the specific identification method. Any realized gains or losses on the sale of investments are reflected as a component of interest income and other expense, net.

For the year ended December 31, 2019, we had no significant realized or unrealized gains or losses from investments in marketable securities classified as available-for-sale. As of December 31, 2019, we had $21 of cumulative unrealized gains, net of tax, which was $0 as of December 31, 2019 due to the full valuation allowance established against our deferred tax assets, in accumulated other comprehensive loss.

Fair value of financial instruments

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

Boingo Wireless, Inc.

Notes to the Consolidated Financial Statements (Continued)

(In thousands, except shares and per share amounts)

2. Summary of significant accounting policies (Continued)

The accounting guidance for fair value measurement also requires an entity to maximize the use of observable inputs and minimize the use of unobservable inputs when measuring fair value. The standard establishes a fair value hierarchy based on the level of independent, objective evidence surrounding the inputs used to measure fair value. A financial instrument's categorization within the fair value hierarchy is based upon the lowest level of input that is significant to the fair value measurement. The fair value hierarchy is as follows:

- Level 1—Unadjusted quoted prices in active markets that are accessible at the measurement date for identical, unrestricted assets or liabilities.
- Level 2—Quoted prices for identical assets and liabilities in markets that are not active, quoted prices for similar assets and liabilities in active markets or financial instruments for which significant i either directly or indirectly.
- Level 3—Unobservable inputs that are supported by little or no market activity and that are significant to the fair value of the assets or liabilities.

The carrying amount reflected in the accompanying consolidated balance sheets for cash and cash equivalents, accounts receivable, prepaid expenses and other current assets, other assets, accounts payable, accrued expenses and other liabilities, and deferred revenue approximates fair value due to the short duration and nature of these financial instruments.

Property and equipment

Property and equipment are generally stated at historical cost, less accumulated depreciation and amortization. Our cost basis includes property and equipment acquired in business combinations that were initially recorded at fair value as of the date of acquisition. Maintenance and repairs are charged to expense as incurred and the cost of additions and betterments that increase the useful lives of the assets are capitalized. Depreciation and amortization are computed over the estimated useful lives of the related asset type using the straight-line method.

The estimated useful lives for property and equipment are as follows:

Software	2 to 5 years
Computer equipment	3 to 5 years
Furniture, fixtures and office equipment	3 to 5 years
Leasehold improvements	The shorter of the estimated useful life or the remaining term of the agreements, generally ranging from 2 to 20 years

Leasehold improvements are principally comprised of network equipment located at various managed and operated locations, primarily airports, under exclusive, long-term, non-cancelable contracts to provide wireless communication network access. We capitalize certain costs for our network equipment during the pre-construction period, which is the period during which costs are incurred to evaluate the site and continue to capitalize costs until the network equipment is substantially completed and ready for use. Cost for network equipment includes capitalized interest.

Lease

We determine if an arrangement is a lease at inception. Operating leases are included in operating lease right-of-use assets, current portion of operating leases, and long-term portion of operating leases in our consolidated balance sheets. Finance leases are included in property and equipment, net, current portion of finance leases, and long-term portion of finance leases in our consolidated balance sheets.

2. Summary of significant accounting policies (Continued)

Operating and finance lease ROU assets and ROU liabilities are recognized based on the present value of the future minimum lease payments over the lease term at the commencement date. As most of our leases do not provide an implicit rate, we use our incremental borrowing rate based on the information available at the commencement date in determining the present value of future payments. The ROU asset also includes any lease payments made and excludes lease incentives and initial direct costs incurred. Our lease terms may include options to extend or terminate the lease when it is reasonably certain that we will exercise that option. Lease expense for minimum lease payments is recognized on a straight-line basis over the lease term. We have lease agreements with lease and non-lease components, which are accounted for separately for the asset classes maintained. We exclude short-term leases with a lease term of 12 months or less at the commencement date from our consolidated balance sheets.

Software development costs

We capitalize costs associated with software developed or obtained for internal use when the preliminary project stage is completed, and it is determined that the software will provide significantly enhanced capabilities and modifications. These capitalized costs are included in property and equipment and include external direct cost of services procured in developing or obtaining internal-use software and personnel and related expenses for employees who are directly associated with, and who devote time to internal-use software projects. Capitalization of these costs ceases once the project is substantially complete and the software is ready for its intended use. Once the software is ready for its intended use, the costs are amortized over the useful life of the software. Post-configuration training and maintenance costs are expensed as incurred.

Long-lived assets

Intangible assets consist primarily of acquired venue and customer contracts, technology, customer and partner relationships, non-compete agreements and patents and trademarks. We record intangible assets at fair value as of the date of acquisition and amortize these finite-lived assets over the shorter of the contractual life or the estimated useful life on a straight-line basis. We estimate the useful lives of acquired intangible assets based on factors that include the planned use of each acquired intangible asset, the expected pattern of future cash flows to be derived from each acquired intangible asset and contractual periods specified in the related agreements. We include amortization of acquired intangibles in amortization of intangible assets in the accompanying consolidated statements of operations.

We perform an impairment review of long-lived assets held and used whenever events or changes in circumstances indicate that the carrying value may not be recoverable. Factors we consider important that could trigger an impairment review include but are not limited to: significant under-performance relative to projected future operating results, significant changes in the manner of our use of the acquired assets or our overall business and product strategies and significant industry or economic trends. When we determine that the carrying value of a long-lived asset may not be recoverable based upon the existence of one or more of these indicators, we determine the recoverability by comparing the carrying amount of the asset to net future undiscounted cash flows that the asset is expected to generate or other indices of fair value. We would then recognize an impairment charge equal to the amount by which the carrying amount exceeds the fair market value of the asset.

Goodwill

Goodwill represents the excess of the purchase price over the fair value of net assets acquired in connection with the acquisition of Concourse Communication Group, LLC in June 2006, Cloud 9 Wireless, Inc. in August 2012, Endeka Group, Inc. in February 2013, Electronic Media Systems, Inc. and Advanced Wireless Group, LLC in October 2013, and Elauwit Networks, LLC in August 2018.

2. Summary of significant accounting policies (Continued)

We test goodwill for impairment in accordance with guidance provided by FASB ASC 350, *Intangibles—Goodwill and Other*. Goodwill is tested for impairment at least annually at the reporting unit level or whenever events or changes in circumstances indicate that goodwill might be impaired. Events or changes in circumstances which could trigger an impairment review include a significant adverse change in legal factors or in the business climate, an adverse action or assessment by a regulator, unanticipated competition, a loss of key personnel, significant changes in the manner of our use of the acquired assets or the strategy for our overall business, significant negative industry or economic trends, or significant underperformance relative to expected historical or projected future results of operations. We perform our impairment test annually as of December 31st.

Entities have the option to first assess qualitative factors to determine whether it is more likely than not that the fair value of a reporting unit is less than its carrying amount as a basis for determining whether it is necessary to perform the goodwill impairment test described in FASB ASC 350. If, after assessing qualitative factors, an entity determines it is not more likely than not that the fair value of a reporting unit is less than its carrying amount, then performing the impairment test is unnecessary. The impairment loss, if any, is measured by comparing the implied fair value of the reporting unit goodwill with the carrying amount of goodwill.

Currently, we have one reporting unit, one operating segment and one reportable segment. At December 31, 2019 and 2018, all of the goodwill was attributed to our reporting unit. We tested our goodwill for impairment using a market-based approach and no impairment was identified as the fair value of our reporting unit was substantially in excess of its carrying amount. To date, we have not recorded any goodwill impairment charges.

Convertible debt transactions

We separately account for the liability and equity components of convertible debt instruments that can be settled in cash by allocating the proceeds from issuance between the liability component and the embedded conversion option in accordance with accounting for convertible debt instruments that may be settled in cash (including partial cash settlement) upon conversion. The value of the equity component is calculated by first measuring the fair value of the liability component, using the interest rate of a similar liability that does not have a conversion feature, as of the issuance date. The difference between the proceeds from the convertible debt issuance and the amount measured as the liability component is recorded as the equity component with a corresponding discount recorded on the debt. We recognize amortization of the resulting discount using the effective interest method as interest expense on our consolidated statements of operations. The equity component is not remeasured as long as it continues to meet the conditions for equity classification. We have allocated issuance costs incurred to the liability and equity components. Issuance costs attributable to the liability component are being amortized to expense over the respective term of the Convertible Notes, and issuance costs attributable to the equity components were netted with the respective equity component in additional paid-in capital. Simultaneously, we bought capped call options from a financial institution to minimize the impact of potential dilution of our common stock upon conversion. The premium for the capped call options was recorded as additional paid-in capital on our consolidated balance sheets as the options are settleable in our common stock.

Revenue recognition

We generate revenue from several sources including: (i) DAS customers that are telecom operators under long-term contracts for access to our DAS at our managed and operated locations, (ii) military and retail customers under subscription plans for month-to-month network access that automatically renew, and military and retail single-use access from sales of hourly, daily or other single-use access plans, (iii) arrangements with property owners for multifamily properties that provide for network installation and monthly Wi-Fi services and support to the residents and employees, (iv) arrangements with wholesale Wi-Fi customers that provide software licensing, network access, and/or professional services fees, and (v) display advertisements and sponsorships on our walled garden sign-in pages. Software licensed by our wholesale platform services customers can only be used during the term of the service arrangements and has no utility to them upon termination of the service arrangement.

2. Summary of significant accounting policies (Continued)

Post-ASC 606 adoption

Revenues are recognized when a contract with a customer exists and control of the promised goods or services is transferred to our customers, in an amount that reflects the consideration we expect to be entitled to in exchange for those goods or services and the identified performance obligation has been satisfied. Contracts entered into at or near the same time with the same customer are combined and accounted for as a single contract if the contracts have a single commercial objective, the amount of consideration is dependent on the price or performance of the other contract, or the services promised in the contracts are a single performance obligation. Contract amendments are routine in the performance of our DAS, wholesale Wi-Fi, and advertising contracts. Contracts are often amended to account for changes in contract specifications or requirements to expand network access services. In most instances, our DAS and wholesale Wi-Fi contract amendments are for additional goods or services that are distinct, and the contract price increases by an amount that reflects the standalone selling price of the additional goods or services; therefore, such contract amendments are accounted for as separate contracts. Contract amendments for our advertising contracts are also generally for additional goods or services that are distinct; however, the contract price does not increase by an amount that reflects the standalone selling price of the additional goods or services. Advertising contract amendments are therefore generally accounted for as contract modifications under the prospective method. Contract amendments to transaction prices with no change in remaining services are accounted for as contract modifications under the cumulative catch-up method.

A performance obligation is a promise in a contract to transfer a distinct good or service to the customer and is the unit of account in ASC 606. A contract’s transaction price is allocated to each distinct performance obligation and is recognized as revenue when, or as, the performance obligation is satisfied, which typically occurs when the services are rendered. Determining whether products and services are considered distinct performance obligations that should be accounted for separately versus together may require significant judgment. Our contracts with customers may include multiple performance obligations. For such arrangements, we allocate revenue to each performance obligation based on its relative standalone selling price. We generally determine standalone selling prices based on the prices charged to customers. Judgment may be used to determine the standalone selling prices for items that are not sold separately, including services provided at no additional charge. Most of our performance obligations are satisfied over time as services are provided. We generally recognize revenue on a gross basis as we are primarily responsible for fulfilling the promises to provide the specified goods or services, we are responsible for paying all costs related to the goods or services before they have been transferred to the customer, and we have discretion in establishing prices for the specified goods or services. Revenue is presented net of any sales and value added taxes.

Payment terms vary on a contract-by-contract basis, although terms generally require payment within 30 to 60 days for non-recurring payments, the first day of the monthly or quarterly billing cycle for recurring payments for DAS and wholesale Wi-Fi contracts, and the first day of the month prior to the month that services are provided for multifamily contracts. We apply a practical expedient for purposes of determining whether a significant financing component may exist for our contracts if, at contract inception, we expect that the period between when we transfer the promised good or service to the customer and when the customer pays for that good or service will be one year or less. In instances where the customer pays for a good or service one year or more in advance of the period when we transfer the promised good or service to the customer, we have determined our contracts generally do not include a significant financing component. The primary purpose of our invoicing terms is not to receive financing from our customers or to provide customers with financing but rather to maximize our profitability on the customer contract. Specifically, inclusion of non-refundable upfront fees in our long-term customer contracts increases the likelihood that the customer will be committed through the end of the contractual term and ensures recoverability of the capital outlay that we incur in expectation of the customer fulfilling its contractual obligations. We may also provide service credits to our customers if we fail to meet contractual monthly system uptime requirements and we account for the variable consideration related to these service credits using the most likely amount method.

2. Summary of significant accounting policies (Continued)

For contracts that include variable consideration, we estimate the amount of consideration at contract inception under the expected value method or the most likely amount method and include the amount of variable consideration that is not considered to be constrained. Significant judgment is used in constraining estimates of variable consideration. We update our estimates at the end of each reporting period as additional information becomes available.

Timing of revenue recognition may differ from the timing of invoicing to customers. We record unbilled receivables (contract assets) when revenue is recognized prior to invoicing, deferred revenue (contract liabilities) when revenue is recognized after invoicing, and receivables when we have an unconditional right to consideration to invoice and receive payment in the future. We present our DAS, multifamily, and wholesale Wi-Fi contracts in our consolidated balance sheet as either a contract asset or a contract liability with any unconditional rights to consideration presented separately as a receivable. Our other customer contracts generally do not have any significant contract asset or contract liability balances. Generally, a significant portion of the billing for our DAS contracts occurs prior to revenue recognition, resulting in our DAS contracts being presented as contract liabilities. In contrast, our wholesale Wi-Fi contracts that contain recurring fees with annual escalations are generally presented as contract assets as revenue is recognized prior to invoicing. Our multifamily contracts can be presented as either contract liabilities or contract assets primarily as a result of timing of invoicing for the network installations.

We recognize an asset for the incremental costs of obtaining a contract with a customer if we expect the benefit of those costs to be longer than one year. We have determined that certain sales incentive programs meet the requirements to be capitalized. Total capitalized costs to obtain a contract were immaterial during the year ended December 31, 2019 and are included in prepaid expenses and other current assets and non-current other assets on our consolidated balance sheets. We apply a practical expedient to expense costs as incurred for costs to obtain a contract with a customer when the amortization period would have been one year or less, the most significant of which relates to sales commissions related to obtaining our advertising customer contracts. Contract costs are evaluated for impairment in accordance with ASC 310, *Receivables*.

Boingo Wireless, Inc.

Notes to the Consolidated Financial Statements (Continued)

(In thousands, except shares and per share amounts)

2. Summary of significant accounting policies (Continued)

DAS

We enter into long-term contracts with telecom operators at our managed and operated locations. The initial term of our contracts with telecom operators generally range from five to twenty years and the agreements generally contain renewal options. Some of our contracts provide termination for convenience clauses that may or may not include substantive termination penalties. We apply judgment in determining the contract term, the period during which we have present and enforceable rights and obligations. Our DAS customer contracts generally contain a single performance obligation-provide non-exclusive access to our DAS or small cell networks to provide telecom operators' customers with access to the licensed wireless spectrum, together with providing telecom operators with construction, installation, optimization/engineering, maintenance services and agreed-upon storage space for the telecom operators' transmission equipment, each related to providing such licensed wireless spectrum to the telecom operators. The performance obligation is considered a series of distinct services as the performance obligation is satisfied over time and the same time-based input method would be used to measure our progress toward complete satisfaction of the performance obligation to transfer each distinct service in the series to the customer. Our contract fee structure generally includes a non-refundable upfront fee and we evaluated whether customer options to renew services give rise to a material right that should be accounted for as a separate performance obligation because of those non-refundable upfront fees. We apply significant judgment in determining whether the customer options to renew services give rise to a material right that should be accounted for as a separate performance obligation. We believe that a material right generally does not exist for our DAS customer contracts that contain renewal options because the telecom operators' decision to renew is highly dependent upon our ability to maintain our exclusivity as the DAS service provider at the venue location and our limited operating history with venue and customer renewals. The telecom operators will make the decision to incur the capital improvement costs at the venue location irrespective of our remaining exclusivity period with the venue as the telecom operators expect that the assets will continue to be serviced regardless of whether we will remain such exclusive DAS service provider. Our contracts also provide our DAS customers with the option to purchase additional future services such as upgrades or enhancements. This option is not considered to provide the customer with a material right that should be accounted for as a separate performance obligation since the cost of the additional future services depends entirely on the market rate of such services at the time such services are requested and we are not automatically obligated to stand ready to deliver these additional goods or services as the customer may reject our proposal. Periodically, we install and sell DAS networks to customers where we do not have service contracts or remaining obligations beyond the installation of those networks and we recognize build-out fees for such projects as revenue when the installation work is completed, and the network has been accepted by the customer.

Boingo Wireless, Inc.

Notes to the Consolidated Financial Statements (Continued)

(In thousands, except shares and per share amounts)

2. Summary of significant accounting policies (Continued)

Our contract fee structure may include varying components of an upfront build-out fee and recurring access, maintenance, and other fees. The upfront build-out fee is generally structured as a firm-fixed price or cost-plus arrangement and becomes payable as certain contract and/or construction milestones are achieved. Our DAS and small cell networks are generally neutral-host networks that can accommodate multiple telecom operators. Some of our DAS customer contracts provide for credits that may be issued to existing telecom operators for additional telecom operators subsequently joining the DAS network. The credits are generally based upon a fixed dollar amount per additional telecom operator, a fixed percentage amount of the original build-out fee paid by the telecom operator per additional telecom operator, or a proportionate share based upon the split among the relevant number of telecom operators for the actual costs incurred by all telecom operators to construct the DAS network. In most cases, there is significant uncertainty on whether additional telecom operator contracts will be executed at inception of the contract with the existing telecom operator. We believe that the upfront build-out fee is fixed consideration once the build-out is complete and any subsequent credits that may be issued would be accounted for in a manner similar to a contract modification under the prospective method because (i) the execution of customer contracts with additional telecom carriers is at our sole election and (ii) we would not execute agreements with additional telecom carriers if it would not increase our revenues and gross profits at the venue level. Further, the credits issued to the existing telecom operator changes the transaction price on a go-forward basis, which corresponds with the decline in service levels for the existing telecom operator once the neutral-host DAS network can be accessed by the additional telecom operator. The recurring access, maintenance, and other fees generally escalate on an annual basis. The recurring fees are variable consideration until the contract term and annual escalation dates are fixed. We estimate the variable consideration for our recurring fees using the most likely amount method based on the expected commencement date for the services. We evaluate our estimates of variable consideration each period and record a cumulative catch-up adjustment in the period in which changes occur for the amount allocated to satisfied performance obligations.

We generally recognize revenue related to our single performance obligation for our DAS customer contracts monthly over the contract term once the customer has the ability to access the DAS network and we commence maintenance on the DAS network.

Military and retail

Military and retail customers must review and agree to abide by our standard “Customer Agreement (With Acceptable Use Policy) and End User License Agreement” before they are able to sign up for our subscription or single-use Wi-Fi network access services. Our military and retail customer contracts generally contain a single performance obligation-provide non-exclusive access to Wi-Fi services, together with performance of standard maintenance, customer support, and the Wi-Finder app to facilitate seamless connection to the Company’s Wi-Fi network. The performance obligation is considered a series of distinct services as the performance obligation is satisfied over time and the same time-based input method would be used to measure our progress toward complete satisfaction of the performance obligation to transfer each distinct service in the series to the customer. Our contracts also provide our military and retail subscription customers with the option to renew the agreement when the subscription term is over. We do not consider this option to provide the customer with a material right that should be accounted for as a separate performance obligation because the customer would not receive a discount if it decided to renew and the option to renew is cancellable within 5 days’ notice prior to the end of the then current term by either party.

The contract transaction price is determined based on the subscription or single-use plan selected by the customer. Our military and retail service plans are for fixed price services as described on our website. From time to time, we offer promotional discounts that result in an immediate reduction in the price paid by the customer. Subscription fees from military and retail customers are paid monthly in advance. We provide refunds for our military and retail services on a case-by-case basis. Refunds and credit card chargeback amounts are not significant and are recorded as contra-revenue in the period the refunds are made, or chargebacks are received.

Boingo Wireless, Inc.

Notes to the Consolidated Financial Statements (Continued)

(In thousands, except shares and per share amounts)

2. Summary of significant accounting policies (Continued)

Subscription fee revenue is recognized ratably over the subscription period. Revenue generated from military and retail single-use access is recognized when access is provided, and the performance obligation is satisfied.

Multifamily

We enter into long-term contracts with property owners. The initial term of our contracts with property owners generally range from three to five years and the contracts may contain renewal options. Some of our contracts provide termination for convenience clauses that may or may not include substantive termination penalties. We apply judgment in determining the contract term, which is the period during which we have present and enforceable rights and obligations. Our customer contracts generally contain two performance obligations: (i) install the network required to provide Wi-Fi services; and (ii) provide Wi-Fi services and technical support to the residents and employees. Our contracts may also provide our property owners with the option to renew the agreement. We do not consider this option to provide the property owner with a material right that should be accounted for as a separate performance obligation because the property owner would not receive a discount if it decided to renew and the option to renew is generally cancellable by either party subject to the notice of non-renewal requirements specified in the contract. Our contracts may also provide our customers with the option to purchase additional future services. We do not consider this option to provide the customer with a material right that should be accounted for as a separate performance obligation since the cost of the additional future services are generally at market rates for such services and we are not automatically obligated to stand ready to deliver these additional goods or services because the customer may reject our proposal.

Our contract fee structure generally includes a network installation fee and recurring Wi-Fi service and support fees. The network installation fee is generally structured as a firm-fixed price arrangement and becomes payable as certain contract and/or installation milestones are achieved. We generally estimate variable consideration for unpriced change orders using the most likely amount method based on the expected price for those services. If network installations are not completed by specified dates, we may be subject to network installation penalties. We estimate the variable consideration for our network installation fees using the most likely amount method based on the amount of network installation penalties we expect to incur. Title to the network generally transfers to the property owner once installation is completed and the network has been accepted. We generally recognize revenue related to our network installation performance obligation using a cost-to-cost method over the network installation period. We may provide latent defect warranties for materials and installation labor services related to our network installation services. Our warranty obligations are generally not accounted for as separate performance obligations as warranties cannot be separately purchased and warranties do not provide a service in addition to the assurance that the network will function as expected.

The recurring fees commence once the network is launched with recurring fees generally based upon a fixed or variable occupancy rate. The recurring Wi-Fi service fees may be adjusted prospectively for changes in circuit and/or video content costs, and Wi-Fi support fees may escalate on an annual basis. We estimate the variable consideration for our recurring fees using the expected value method except for the variable consideration related to actual occupancy rates, which we record when we have the contractual right to bill. We evaluate our estimates of variable consideration each period and record a cumulative catch-up adjustment in the period in which changes occur for the amount allocated to satisfied performance obligations. We recognize revenue related to the recurring fees on a monthly basis over the contract term as the Wi-Fi services and support is rendered, and the performance obligation is satisfied.

2. Summary of significant accounting policies (Continued)

Wholesale Wi-Fi

We enter into long-term contracts with enterprise customers such as telecom operators, cable companies, technology companies, and enterprise software/services companies, that pay us usage-based Wi-Fi network access and software licensing fees to allow their customers' access to our footprint worldwide. We also enter into long-term contracts with financial institutions and other enterprise customers who provide access to our Wi-Fi footprint as a value-added service for their customers. The initial term of our contracts with wholesale Wi-Fi customers generally range from one to three years and the agreements generally contain renewal options. Some of our contracts provide termination for convenience clauses that may or may not include substantive termination penalties. We apply judgment in determining the contract term, the period during which we have present and enforceable rights and obligations. Our wholesale Wi-Fi customer contracts generally contain a single performance obligation-provide non-exclusive rights to access our Wi-Fi networks to provide wholesale Wi-Fi customers' end customers with access to the high-speed broadband network that may be bundled together with integration services, support services, and/or performance of standard maintenance. The performance obligation is considered a series of distinct services as the performance obligation is satisfied over time and the same time-based input method or usage-based output method would be used to measure our progress toward complete satisfaction of the performance obligation to transfer each distinct service in the series to the customer. Our contracts may also provide our enterprise customers with the option to renew the agreement. This option is not considered to provide the customer with a material right that should be accounted for as a separate performance obligation because the customer would not receive a discount if it decided to renew and the option to renew is generally cancellable by either party subject to the notice of non-renewal requirements specified in the contract. Our contracts may also provide our wholesale Wi-Fi customers with the option to purchase additional future services. We do not consider this option to provide the customer with a material right that should be accounted for as a separate performance obligation since the cost of the additional future services are generally at market rates for such services and we are not automatically obligated to stand ready to deliver these additional goods or services because the customer may reject our proposal. Periodically, we install and sell Wi-Fi networks to customers where we do not have service contracts or remaining obligations beyond the installation of those networks and we recognize build-out fees for such projects as revenue when the installation work is completed, and the network has been accepted by the customer.

Our contract fee structure may include varying components of a minimum fee and usage-based fees. Minimum fees represent fixed price consideration while usage-based fees represent variable consideration. With respect to variable consideration, our commitment to our wholesale Wi-Fi customers consists of providing continuous access to the network. It is therefore a single performance obligation to stand ready to perform and we allocate the variable fees charged for usage when we have the contractual right to bill. The variable component of revenue is recognized based on the actual usage during the period.

Wholesale Wi-Fi revenue is recognized as it is earned over the relevant contract term with variable consideration recognized when we have the contractual right to bill.

2. Summary of significant accounting policies (Continued)

Advertising

We generally enter into short-term cancellable insertion orders with our advertising customers for advertising campaigns that are served at our managed and operated locations and other locations where we solely provide authorized access to a partner's Wi-Fi network through sponsored and promotional programs. Our sponsorship advertising arrangements are generally priced under a cost per engagement structure, which is a set price per click or engagement, or a cost per install structure for third party application downloads. Our display advertising arrangements are priced based on cost per thousand impressions. Insertion orders may also include bonus items. Our advertising customer contracts may contain multiple performance obligations with each distinct service. These distinct services may include an advertisement video or banner impressions in the contract bundled with the requirement to provide network, space on the website, and integration of customer advertisement onto the website, and each is generally considered to be its own performance obligation. The performance obligations are considered a series of distinct services as the performance obligations are satisfied over time and the same action-based output method would be used to measure our progress toward complete satisfaction of the performance obligation to transfer each distinct service in the series to the customer.

The contract transaction price is comprised of variable consideration based on the stated rates applied against the number of units delivered inclusive of the bonus units subject to the maximums provided for in the insertion order. It is customary for us to provide additional units over and above the amounts contractually required; however, there are a number of factors that can also negatively impact our ability to deliver the units required by the customer such as service outages at the venue resulting from power or circuit failures and customer cancellation of the remaining undelivered units under the insertion order due to campaign performance or budgetary constraints. Typically, the advertising campaign periods are short in duration. We therefore use the contractual rates per the insertion orders and actual units delivered to determine the transaction price each period end. The transaction price is allocated to each performance obligation based on the standalone selling price of each performance obligation.

Advertising revenue is recognized ratably over the service period based on actual units delivered subject to the maximums provided for in the insertion order.

Pre-ASC 606 adoption

We recognize revenue when an arrangement exists, services have been rendered, fees are fixed or determinable, no significant obligations remain related to the earned fees and collection of the related receivable is reasonably assured. Revenue is presented net of any sales and value added taxes.

Revenue generated from access to our DAS networks consists of build-out fees and recurring access fees under certain long-term contracts with telecom operators. Build-out fees paid upfront are generally deferred and recognized ratably over the term of the estimated customer relationship period, once the build-out is complete. Periodically, we install and sell Wi-Fi and DAS networks to customers where we do not have service contracts or remaining obligations beyond the installation of those networks and we recognize build-out fees for such projects as revenue when the installation work is completed, and the network has been accepted by the customer. Minimum monthly access fees for usage of the DAS networks are non-cancellable and generally escalate on an annual basis. These minimum monthly access fees are recognized ratably over the term of the telecom operator agreement. The initial term of our contracts with telecom operators generally range from five to twenty years and the agreements generally contain renewal clauses. Revenue from DAS network access fees in excess of the monthly minimums is recognized when earned.

Boingo Wireless, Inc.

Notes to the Consolidated Financial Statements (Continued)

(In thousands, except shares and per share amounts)

2. Summary of significant accounting policies (Continued)

Subscription fees from military and retail customers are paid monthly in advance and revenue is deferred for the portions of monthly recurring subscription fees collected in advance. We provide refunds for our military and retail services on a case-by-case basis. These amounts are not significant and are recorded as contra-revenue in the period the refunds are made. Subscription fee revenue is recognized ratably over the subscription period. Revenue generated from military and retail single-use access is recognized when access is provided.

Services provided to wholesale Wi-Fi partners generally contain several elements including: (i) a term license to use our software to access our Wi-Fi network, (ii) access fees for Wi-Fi network usage, and/or (iii) professional services for software integration and customization and to maintain the Wi-Fi service. The term license, monthly minimum network access fees and professional services are billed monthly based upon predetermined fixed rates. Once the term license for integration and customization are delivered, the fees from the arrangement are recognized ratably over the remaining term of the service arrangement. The initial term of the license agreements is generally between one to three years and the agreements generally contain renewal clauses. Revenue for Wi-Fi network access fees in excess of the monthly minimum amounts is recognized when earned. All elements within existing service arrangements are generally delivered and earned concurrently throughout the term of the respective service arrangement.

In instances where the minimum monthly Wi-Fi and DAS network access fees escalate over the term of the wholesale service arrangement, an unbilled receivable is recognized when performance is within our control and when we have reasonable assurance that the unbilled receivable balance will be collected.

We adopted the provisions of ASU 2009-13, *Revenue Recognition (Topic 605)—Multiple-Deliverable Revenue Arrangements*, on a prospective basis on January 1, 2011. For multiple-deliverable arrangements entered into prior to January 1, 2011 that are accounted for under ASC 605-25, *Revenue Recognition—Multiple-Deliverable Revenue Arrangements*, we defer recognition of revenue for the full arrangement and recognize all revenue ratably over the term of the estimated customer relationship period for DAS arrangements and the wholesale service period for Wi-Fi platform service arrangements, as we do not have evidence of fair value for the undelivered elements in the arrangement. For multiple-deliverable arrangements entered into or materially modified after January 1, 2011 that are accounted for under ASC 605-25, we evaluate whether separate units of accounting exist and then allocate the arrangement consideration to all units of accounting based on the relative selling price method using estimated selling prices if vendor specific objective evidence and third-party evidence is not available. We recognize the revenue associated with the separate units of accounting upon completion of such services or ratably over the term of the estimated customer relationship period for DAS arrangements and the wholesale service period for Wi-Fi platform service arrangements.

Advertising revenue is generated from advertisements on our managed and operated or partner networks. In determining whether an arrangement exists, we ensure that a binding arrangement is in place, such as a standard insertion order or a fully executed customer-specific agreement. Obligations pursuant to our advertising revenue arrangements typically include a minimum number of units or the satisfaction of certain performance criteria. Advertising and other revenue is recognized when the services are performed.

Foreign currency translation

Our Brazilian subsidiary uses the Brazilian Real as its functional currency. Assets and liabilities of our Brazilian subsidiary are translated to U.S. dollars at period-end rates of exchange, and revenues and expenses are translated at average exchange rates prevailing for each month. The resulting translation adjustments are made directly to a separate component of other comprehensive loss, which is reflected in stockholders' equity in our consolidated balance sheets. As of December 31, 2019 and December 31, 2018, the Company had $(1,447) and $(1,295), respectively, of cumulative foreign currency translation adjustments, net of tax, which was $0 as of December 31, 2019 and December 31, 2018 due to the full valuation allowance established against our deferred tax assets, in accumulated other comprehensive loss.

2. Summary of significant accounting policies (Continued)

The functional currency for all of our other foreign subsidiaries is the U.S. dollar. Gains and losses from the revaluation of foreign currency transactions and monetary assets and liabilities are included in the consolidated statements of operations.

Network access

Network access costs consist primarily of revenue share payments to venue owners where our managed and operated hotspots are located, usage-based fees to our roaming network partners for access to their networks, depreciation of equipment related to network build-out projects in our managed and operated locations, and bandwidth and other Internet connectivity expenses in our managed and operated locations.

Advertising, marketing and promotion costs

Advertising production costs are expensed the first time the advertisement is run. No advertising production costs were capitalized for the years ended December 31, 2019, 2018 and 2017. All other costs of advertising, marketing and promotion are expensed as incurred. Advertising expenses charged to operations totaled $2,205, $2,213 and $2,245 for the years ended December 31, 2019, 2018 and 2017, respectively.

Stock-based compensation

Our stock-based compensation consists of stock options, and restricted stock units (“RSU”) granted to employees and non-employees. We have shifted our stock-based compensation from stock options to RSUs and no stock options have been granted since 2014.

We recognize stock-based compensation expense in accordance with guidance provided by FASB ASC 718, *Compensation—Stock Compensation*. We measure employee stock-based compensation cost at grant date, based on the estimated fair value of the award and recognize the cost on a straight-line basis over the employee requisite service period. We recognize stock-based compensation expense for performance-based RSUs when we believe that it is probable that the performance objectives will be met. Forfeitures are accounted for when they occur.

Income taxes

We account for income taxes in accordance with FASB ASC 740, *Accounting for Income Taxes*, which requires the recognition of deferred tax assets and liabilities for the future consequences of events that have been recognized in our accompanying consolidated financial statements or tax returns. The measurement of the deferred items is based on enacted tax laws. In the event the future consequences of differences between financial reporting bases and the tax bases of our assets and liabilities result in a deferred tax asset, ASC 740 requires an evaluation of the probability of being able to realize the future benefits indicated by such asset. A valuation allowance related to a deferred tax asset is recorded when it is more likely than not that some portion or the entire deferred tax asset will not be realized. As part of the process of preparing our accompanying consolidated financial statements, we are required to estimate our income taxes in each of the jurisdictions in which we operate. We also assess temporary differences resulting from differing treatment of items, such as deferred revenue, for tax and accounting differences. We record a valuation allowance to reduce the deferred tax assets to the amount of future tax benefit that is more likely than not to be realized.

ASC 740 prescribes a recognition threshold and measurement methodology to recognize and measure an income tax position taken, or expected to be taken, in a tax return. The evaluation of a tax position is based on a two-step approach. The first step requires an entity to evaluate whether the tax position would “more likely than not” be sustained upon examination by the appropriate taxing authority. The second step requires the tax position be measured at the largest amount of tax benefit that is greater than 50% likely of being realized upon ultimate settlement. In addition, previously recognized benefits from tax positions that no longer meet the new criteria would no longer be recognized. Changes in recognition or measurement are reflected in the period in which the change occurs.

(In thousands, except shares and per share amounts)

2. Summary of significant accounting policies (Continued)

Non-controlling interests

Non-controlling interests are comprised of minority holdings in Chicago Concourse Development Group, LLC (“CCDG”) and Boingo Holding Participacoes Ltda (“BHPL”).

Under the terms of the LLC agreement for CCDG, we are generally required to distribute annually to the CCDG non-controlling interest holders 30% of allocated net profits less capital expenditures of the preceding year. For the years ended December 31, 2019, 2018 and 2017, we made distributions of $1,003, $614 and $125, respectively, to non-controlling interest holders of CCDG.

Under the terms of the LLC agreement for BHPL, we attributed profits and losses to the non-controlling interest in BHPL in proportion to their holdings. For the years ended December 31, 2019, 2018 and 2017, we made no distributions to the non-controlling interest holder of BHPL.

Net loss per share attributable to common stockholders

Basic net loss per share attributable to common stockholders is calculated by dividing loss attributable to common stockholders by the weighted average number of shares of common stock outstanding during the period. Diluted net loss per share attributable to common stockholders adjusts the basic weighted average number of shares of common stock outstanding for the potential dilution that could occur if stock options and RSUs were exercised or converted into common stock. Our common stockholders are not entitled to receive any dividends.

Segment and geographic information

We operate as one reportable segment; a service provider of wireless connectivity solutions across our managed and operated network and aggregated network for mobile devices such as laptops, smartphones, tablets and other wireless-enabled consumer devices. This single segment is consistent with the internal organization structure and the manner in which operations are reviewed and managed by our Chief Executive Officer, the chief operating decision maker.

All significant long-lived tangible assets are held in the United States of America. We do not disclose sales by geographic area because to do so would be impracticable.

The following is a summary of our revenue disaggregated by product offerings:

	Year Ended December 31,		
	2019	2018	2017 (1)
Revenue:			
Military/multifamily	$ 97,899	$ 77,721	$ 55,129
DAS	97,447	95,216	80,552
Wholesale-Wi-Fi	44,052	47,481	31,529
Retail	14,728	17,630	24,926
Advertising and other	9,664	12,773	12,233
Total revenue	$ 263,790	$ 250,821	$ 204,369

[redacted] have not been adjusted upon adoption of ASC 606 under the modified retrospective method.

[redacted]

2. Summary of significant accounting policies (Continued)

Recent accounting pronouncements

In December 2019, the FASB issued ASU 2019-12, *Income Taxes (Topic 740): Simplifying the Accounting for Income Taxes*, which simplifies the accounting for income taxes. The standard removes certain ASC 740 exceptions to reduce the cost and complexity of its application including: i) the exception to the "with-and-without" approach for intraperiod tax allocation when there was a loss from continuing operations and income or a gain from other items such as discontinued operations or other comprehensive income; ii) two exceptions with respect to accounting for outside basis differences of equity method investments and foreign subsidiaries; and iii) the exception to limit the income tax benefit recognized in the interim period in cases where the year-to-date loss exceeded the anticipated loss for the year. The standard also clarified and amended existing guidance including, but not limited to: i) when a step-up in the tax basis of goodwill should be considered part of the business combination in which the book goodwill was originally recognized and when it should be considered a separate transaction; ii) accounting for tax effects, both deferred and current, in the interim period that includes the enactment date. The standard is effective for annual periods beginning after December 15, 2020, and interim periods within those reporting periods. Early adoption is permitted with any adjustments reflected as of the beginning of the fiscal year of adoption.

In August 2018, the FASB issued ASU 2018-15, *Intangibles—Goodwill and Other—Internal-Use Software (Subtopic 350-40): Customer's Accounting for Implementation Costs Incurred in a Cloud Computing Arrangement That Is a Service Contract*, which requires customers to apply the same criteria for capitalizing implementation costs incurred in a cloud computing arrangement that is hosted by the vendor as they would for an arrangement that has a software license. The standard is effective for interim and annual periods beginning after December 15, 2019 and early adoption is permitted. The standard can be adopted prospectively or retrospectively.

We have selected January 1, 2020 as our effective date and will be adopting the standard prospectively for any new implementation costs incurred in a cloud computing arrangement that is hosted by the vendor.

In June 2016, the FASB issued ASU 2016-13, *Financial Instruments-Credit Losses (Topic 326)*, which replaces the incurred loss methodology with an expected loss methodology that is referred to as the current expected credit loss ("CECL") methodology. The measurement of expected credit losses under the CECL methodology is applicable to financial assets measured at amortized cost, including loan receivables and held-to-maturity debt securities. It also applies to off-balance sheet credit exposures not accounted for as insurance (loan commitments, standby letters of credit, financial guarantees, and other similar investments) and net investments in leases recognized by the lessor in accordance with ASC 842 on leases. In addition, the standard made changes to the accounting for available-for-sale debt securities. One such change is to require credit losses to be presented as an allowance rather than as a write-down on available-for-sale debt securities. Available-for-sale accounting recognizes that value may be realized either through collection of contractual cash flows or through sale of the security. Therefore, the amendments limit the amount of the allowance for credit losses to the amount by which fair value is below amortized cost because the classification as available-for-sale is premised on an investment strategy that recognizes that the investment could be sold at fair value, if cash collection would result in the realization of an amount less than fair value. The standard is effective for interim and annual periods beginning after December 15, 2019 and early adoption is permitted. The standard will be adopted under the modified-retrospective approach with the prospective transition approach required for debt securities for which an other-than-temporary impairment had been recognized before the effective date. We have selected January 1, 2020 as our effective date and we currently do not expect that this standard will have a material impact on our consolidated financial statements.

3. Acquisitions

Elauwit Networks, LLC

On August 1, 2018, we acquired the assets of Elauwit Networks, LLC ("Elauwit") for $28,000 plus other contingent consideration. Elauwit provided data and video services to multi-unit dwelling properties including student housing, condominiums, apartments, senior living, and hospitality industries throughout the U.S. In addition, Elauwit built and maintained the network that supported these services for property owners and managers and provided support for residents and employees.

The acquisition has been accounted for under the acquisition method of accounting in accordance with FASB ASC 805, *Business Combinations*. As such, the assets acquired and liabilities assumed are recorded at their acquisition-date fair values. The total purchase price was $28,612, which includes contingent consideration fair valued at $961. At the closing date, we paid cash of $15,576. $13,000 of the purchase price was held back for the following: (i) $11,000 held back for third-party consents not obtained at closing for certain customer agreements, which are released as Elauwit delivers third-party consents with respect to such customer agreements; and (ii) a $2,000 indemnification holdback that is being retained for a period of 12 months following the closing of the acquisition. In 2018, we paid $9,048 of the amounts held back for third-party consents. In 2019, we paid the remaining $1,952 for amounts held back for third-party consents and $1,075 of the indemnification holdback consideration with the remaining $925 retained by the Company for settlement of working capital deficit and other indemnification matters discussed further below. Of the $925 retained by the Company, $566 related to undisclosed liabilities associated with acquired contracts that were initially recorded as network costs in the consolidated statement of operations in the period in which the costs were incurred instead of recognizing a reduction in the indemnification liability and establishing an unfavorable contract liability. Accordingly, in 2019, an out-of-period adjustment was recognized that reduced cost of sales by $566 to correct for costs associated with these unfavorable contracts that were recorded in the prior periods.

The contingent consideration could require payments in the aggregate amount of up to $15,000 that would be due and payable subject to certain conditions and the successful achievement of annual revenue targets for the acquired business during the 2020 fiscal year. Refer to Note 15 for further discussion. We do not expect to make any payments related to the 2019 annual revenue targets as the targets were not met as of December 31, 2019. The contingent consideration is subject to acceleration under certain corporate events.

The fair value of the contingent consideration is based on Level 3 inputs. Further changes in the fair value of the contingent consideration will be recorded through operating income (loss). The contingent consideration was valued at the date of acquisition using the Monte Carlo method reflecting the average expected monthly revenue, an annual risk-free rate of 2.78%, and an annual revenue volatility rate of 40%.

The identifiable intangible assets were primarily valued using the excess earnings, relief from royalty, and loss-of-revenue methods using discount rates ranging from 8.0% to 21.0% and a 1.0% royalty rate, where applicable, except for certain backlog intangible assets held for sale that were valued at fair value less costs to sell using a discount rate of 8%. The amortizable intangible assets held for use are being amortized on a straight-line basis over their estimated useful lives. Intangible assets held for sale are not amortized. We allocated the excess of the purchase price over the fair value of assets acquired and liabilities assumed to goodwill, which is deductible for tax purposes. The goodwill arising from the Elauwit acquisition is attributable primarily to expected synergies and other benefits, including the acquired workforce, from combining Elauwit with us.

ASC 805 provides for a measurement period not to exceed one year from the acquisition date to adjust the provisional amounts recognized at the acquisition date to reflect new information obtained about facts and circumstances that existed as of the acquisition date that, if known, would have affected the measurement of the amounts recognized as of that date.

Boingo Wireless, Inc.

Notes to the Consolidated Financial Statements (Continued)

(In thousands, except shares and per share amounts)

3. Acquisitions (Continued)

In 2019, we recorded measurement period adjustments to: (i) increase the value of backlog intangible assets held for sale by $750 as a result of the identification of additional assets that were acquired; (ii) decrease the value of backlog intangible assets by $48 as a result of an adjustment made to the fair value of an acquired customer contract; and (iii) increase the value of accrued expenses and other liabilities and reduce the indemnification liability by $566 as a result of the identification of previously undisclosed liabilities of the sellers. The measurement period adjustments resulted in a net decrease to goodwill of $1,061. The following summarizes the final purchase price allocation:

	Fair Value	Weighted Average Estimated Useful Life (years)
Consideration:		
Cash paid	$ 15,576	
Holdback consideration	12,075	
Contingent consideration	961	
Total consideration	$ 28,612	
Recognized amounts of identifiable assets acquired and liabilities assumed:		
Accounts receivable	$ 4,494	
Prepaid expenses and other current assets	1,687	
Property and equipment	195	
Other non-current assets	177	
Accounts payable	(2,049)	
Accrued expenses and other liabilities	(1,249)	
Deferred revenue	(3,854)	
Other non-current liabilities	(307)	
Net tangible liabilities acquired	(906)	
Backlog	6,982	5.0
Backlog-held for sale	750	—
Customer relationships	2,490	10.0
Partner relationships	1,200	10.0
Transition services agreement	540	2.0
Non-compete agreement	1,380	3.0
Goodwill	16,176	
Total purchase price	$ 28,612	

The following table presents the results of Elauwit included in the Company’s revenue and net loss:

	Year Ended December 31, 2018
Revenue	$ 11,228
Net loss	(2,349)

(In thousands, except shares and per share amounts)

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3. Acquisitions (Continued)

Pro forma results (Unaudited)

The following table presents the unaudited pro forma results of the Company for the years ended December 31, 2018 and 2017 as if the acquisition of Elauwit had occurred on January 1, 2017 and therefore includes Elauwit's revenue and net income (loss), as adjusted, for those periods. These results are not intended to reflect the actual operations of the Company had the acquisition occurred on January 1, 2017. Income taxes were calculated based on the effective tax rates for 2018 and 2017, excluding the tax effects on the equity component of Convertible Notes recorded in 2018. Acquisition transaction costs have been excluded from the pro forma net loss.

	Year Ended December 31,	
	2018	2017(1)
Revenue	$ 268,693	$ 229,503
Net loss	(739)	(20,827)
Net loss attributable to common stockholders	(2,224)	(21,417)
Net loss per share attributable to common stockholders		
Basic	$ (0.05)	$ (0.54)
Diluted	$ (0.05)	$ (0.54)

[redacted] have not been adjusted upon adoption of ASC 606 under the modified retrospective method.

4. Restructuring

In December 2019, the Company approved and adopted a plan to restructure the Company's business operations to drive long term sustainable revenue growth, better align resources, improve operational efficiencies and to increase profitability. Under this plan, the Company's management and employees will be focused primarily on managing its key business of i) providing services to the wireless carriers, ii) generating business on military bases, and iii) growing the Company's multifamily business, in addition to managing the profitability of the Company's legacy business such as retail and advertising. As part of the business realignment plan, the Company will eliminate approximately 80 positions. We expect these actions to be substantially completed in the first half of 2020 and the Company expects to modify its reportable segments in the period that such actions are completed.

Restructuring charges, which were comprised of employee severance and benefits expense, recorded in the consolidated statement of operations for the year ended December 31, 2019 were as follows:

	Restructuring Charges
Network operations	$ 931
Development and technology	910
Selling and marketing	263
General and administrative	194
Total restructuring charges	$ 2,298

[redacted]

(In thousands, except shares and per share amounts)

4. Restructuring (Continued)

Restructuring activity for the year ended December 31, 2019 was as follows:

		Accrued Employee Severance and Benefits
Balance, January 1, 2019	$	—
Additional accruals		2,298
Adjustments		(49)
Cash payments		—
Non-cash settlements		—
Balance, December 31, 2019	$	2,249

Substantially all of the accrued restructuring balance as of December 31, 2019 is expected to be paid within the next 12 months and was recorded within accrued expenses and other liabilities on the consolidated balance sheets.

5. Cash and cash equivalents and marketable securities

Cash and cash equivalents and marketable securities consisted of the following:

	December 31,			
	2019		2018	
Cash and cash equivalents:				
Cash	$	6,061	$	11,689
Money market accounts		34,340		137,723
Total cash and cash equivalents	$	40,401	$	149,412
Short-term marketable securities-available-for-sale:				
Marketable securities	$	40,214	$	—
Total short-term marketable securities	$	40,214	$	—

All contractual maturities of marketable securities were less than one year at December 31, 2019. Marketable securities consist primarily of debt securities which include commercial paper and debt instruments including notes issued by foreign or domestic industrial and financial corporations and governments which pay in U.S. dollars and carry a rating of A or better. For the years ended December 31, 2019, 2018 and 2017, interest income was $2,012, $742 and $17, respectively, which is included in interest income and other expense, net in the accompanying consolidated statements of operations.

(In thousands, except shares and per share amounts)

6. Accounts receivables, net

Included in accounts receivables, net for the periods indicated was the allowance for doubtful accounts, which consisted of the following:

	Allowance for Doubtful Accounts
Balance, December 31, 2016	$ 442
Additions charged to operations	773
Deductions from reserves, net	(352)
Balance, December 31, 2017	863
Additions charged to operations	363
Deductions from reserves, net	(43)
Balance, December 31, 2018	1,183
Additions charged to operations	181
Deductions from reserves, net	(278)
Balance, December 31, 2019	$ 1,086

7. Contract assets and contract liabilities

The opening and closing balances of our contract asset, net, contract liability, net balances from contracts with customers for the years ended December 31, 2019 and 2018 are as follows:

	Contract Assets, Net	Contract Liabilities, Net
Balance at December 31, 2018	$ 468	$ 217,733
Balance at December 31, 2019	967	227,889
Change	$ 499	$ 10,156
Balance at January 1, 2018	$ 798	$ 204,472
Balance at December 31, 2018	468	217,733
Change	$ (330)	$ 13,261

The current and non-current portions of our contract assets, net is included within prepaid expenses and other current assets and other assets, respectively, and current and non-current portions of our contract liabilities, net are included within deferred revenue and deferred revenue, net of current portion, respectively, in our consolidated balance sheets. Contract assets, net is generated from our multifamily and wholesale Wi-Fi contracts and the change in the contract assets, net balance includes activity related to amounts acquired from the Elauwit acquisition in 2018 and amounts invoiced offset by revenue recognized from performance obligations satisfied in the current reporting period.

Contract liabilities are recorded when fees are collected, or we have an unconditional right to consideration (a receivable) in advance of delivery of goods or services. The change in contract liabilities, net balance is related to amounts acquired from the Elauwit acquisition in 2018 and customer activity associated with each of our product offerings including the receipt of cash payments and the satisfaction of our performance obligations. Revenues for the year ended December 31, 2019 and 2018 include the following:

	Year Ended December 31,	
	2019	2018
Amounts included in the beginning of period contract liability balance	$ 88,890	$ 85,592
Amounts associated with performance obligations satisfied in previous periods	447	378

(In thousands, except shares and per share amounts)

7. Contract assets and contract liabilities (Continued)

As of December 31, 2019, the aggregate amount of the transaction price allocated to remaining service performance obligations for our DAS contracts was $212,361.We expect to recognize this revenue as service is provided over the remaining contract term. As of December 31, 2019, our DAS contracts have a remaining duration of less than one year to approximately fifteen years.

Certain of our wholesale Wi-Fi contracts include variable consideration based on usage. This variable consideration has been excluded from the disclosure of remaining performance obligations. As of December 31, 2019, the aggregate amount of the transaction price allocated to remaining service performance obligations for certain of our wholesale Wi-Fi contracts with guaranteed minimum consideration was $10,236. We expect to recognize this revenue as service is provided over the remaining contract term. As of December 31, 2019, our wholesale Wi-Fi contracts have a remaining duration of less than one year to approximately fifteen years.

Information about remaining performance obligations that are part of a contract that has an original expected duration of one year or less have been excluded from the above, which primarily consists of network installations for our multifamily customers and monthly service contracts.

8. Property and equipment

The following is a summary of property and equipment, at cost less accumulated depreciation and amortization:

	December 31,	
	2019	2018
Leasehold improvements	$ 550,427	$ 474,808
Construction in progress	78,343	40,369
Software	60,814	51,534
Computer equipment	16,707	14,215
Furniture, fixtures and office equipment	2,140	2,141
Total property and equipment	708,431	583,067
Less: accumulated depreciation and amortization	(328,188)	(268,888)
Total property and equipment, net	$ 380,243	$ 314,179

Depreciation and amortization expense, which includes depreciation and amortization for property and equipment under finance leases, is allocated on a specific identification basis as follows on the accompanying consolidated statements of operations:

	Year Ended December 31,		
	2019	2018	2017
Network access	$ 41,101	$ 49,766	$ 42,435
Network operations	17,325	17,590	16,382
Development and technology	11,142	10,443	9,247
General and administrative	1,294	1,038	1,033
Total depreciation and amortization of property and equipment	$ 70,862	$ 78,837	$ 69,097

During the years ended December 31, 2019, 2018, and 2017 we recognized $370, $148, and $882, respectively, of impairment losses primarily related to construction in progress projects that were abandoned. During the years ended December 31, 2018 and 2017, we also recognized $90 and $276, respectively, of losses on disposals of property and equipment.

Boingo Wireless, Inc.

Notes to the Consolidated Financial Statements (Continued)

(In thousands, except shares and per share amounts)

9. Goodwill and intangible assets

Goodwill

The following table sets forth the changes in our goodwill balance, for all periods presented:

	Goodwill
Balance, December 31, 2017	$ 42,403
Acquisition of Elauwit	17,237
Balance, December 31, 2018	59,640
Measurement period adjustments for acquisition of Elauwit	(1,061)
Balance, December 31, 2019	$ 58,579

Intangible assets

The following table sets forth the changes in our intangible assets balance, for all periods presented:

	Intangible Assets
Balance, December 31, 2017	$ 10,263
Additions	12,640
Amortization expense	(3,751)
Balance, December 31, 2018	19,152
Measurement period adjustments for acquisition of Elauwit	(48)
Reclassification of assets held for sale, net	407
Amortization expense	(4,571)
Balance, December 31, 2019	$ 14,940

Intangible assets at December 31, 2019 consist of the following:

	Historical Cost	Accumulated Amortization	Net
Venue contracts	$ 20,431	$ (15,247)	$ 5,184
Backlog	7,388	(2,104)	5,284
Customer and partner relationships	3,780	(584)	3,196
Non-compete agreements, technology and other	4,814	(3,538)	1,276
	$ 36,413	$ (21,473)	$ 14,940

Intangible assets at December 31, 2018 consist of the following:

	Historical Cost	Accumulated Amortization	Net
Venue contracts	$ 20,530	$ (13,829)	$ 6,701
Backlog	7,030	(586)	6,444
Customer and partner relationships	3,780	(206)	3,574
Non-compete agreements, technology and other	5,084	(2,651)	2,433
	$ 36,424	$ (17,272)	$ 19,152

Boingo Wireless, Inc.

Notes to the Consolidated Financial Statements (Continued)

(In thousands, except shares and per share amounts)

9. Goodwill and intangible assets (Continued)

The decrease in our intangible assets cost and accumulated amortization balances from 2018 to 2019 is primarily related to the write-off of intangible assets that have expired.

Amortization expense for fiscal years 2020 through 2024 and thereafter is as follows:

Year	Amortization Expense
2020	$ 4,285
2021	3,558
2022	3,097
2023	1,903
2024	683
Thereafter	1,414
	$ 14,940

10. Accrued expenses and other liabilities

Accrued expenses and other liabilities consisted of the following:

	December 31,	
	2019	2018
Accrued customer liabilities	$ 19,403	$ 15,219
Accrued construction in progress	18,197	20,930
Revenue share	9,844	5,514
Salaries and wages	6,023	4,425
Accrued taxes	3,642	2,745
Accrued professional fees	1,196	1,434
Accrued partner network	687	1,228
Holdback consideration	—	2,000
Acquisition purchase consideration	—	1,952
Other	6,160	7,206
Total accrued expenses and other liabilities	$ 65,152	$ 62,653

11. Convertible Notes

In October 2018, the Company sold, through the initial purchasers, convertible senior notes (“Convertible Notes”) to qualified institutional buyers pursuant to Rule 144A of the Securities Act of 1933, as amended, for gross proceeds of $201,250. The Convertible Notes are senior, unsecured obligations with interest payable semi-annually in cash at a rate of 1.00% per annum on April 1st and October 1st of each year, beginning on April 1, 2019. The Convertible Notes will mature on October 1, 2023 unless they are redeemed, repurchased or converted prior to such date. Prior to April 1, 2023, the Convertible Notes are convertible at the option of holders only during certain periods and upon satisfaction of certain conditions. Thereafter, the Convertible Notes will be convertible at any time until the close of business on the second scheduled trading day immediately preceding the maturity date. Upon conversion, the Convertible Notes may be settled in shares of the Company’s common stock, cash or a combination of cash and shares of the Company’s common stock, at the Company’s election. It is our current intent to settle the principal and interest amounts of the Convertible Notes with cash.

The Convertible Notes have an initial conversion rate of 23.6323 shares of common stock per $1,000 principal amount of the Convertible Notes, which will be subject to customary anti-dilution adjustments in certain circumstances. This represents an initial effective conversion price of approximately $42.31 per share, which represents a premium of approximately 30% to the $32.55 per share closing price of the Company’s common stock on October 2, 2018, the date the Company priced the offering.

(In thousands, except shares and per share amounts)

11. Convertible Notes (Continued)

The Company may redeem all or any portion of the Convertible Notes, at its option, on or after October 5, 2021, at a redemption price equal to 100% of the principal amount of the Convertible Notes to be redeemed, plus accrued and unpaid interest to, but excluding, the redemption date, if the last reported sale price of the Company's stock has been at least 130% of the conversion price then in effect for at least 20 trading days (whether or not consecutive) during any 30 consecutive trading day period (including the last trading day of such period) ending on, and including, the trading day immediately preceding the date on which the Company provides written notice of redemption.

Holders of Convertible Notes may require the Company to repurchase their Convertible Notes upon the occurrence of certain events that constitute a fundamental change under the indenture governing the Convertible Notes at a fundamental change repurchase price equal to 100% of the principal amount thereof, plus accrued and unpaid interest to, but excluding, the date of repurchase. In connection with certain corporate events or if the Company issues a notice of redemption prior to the maturity date, it will, under certain circumstances, increase the conversion rate for holders who elect to convert their Convertible Notes in connection with such corporate event or notice of redemption.

In connection with the pricing of the Convertible Notes, the Company entered into privately negotiated capped call transactions with a financial institution. The capped call transactions initially cover, subject to customary anti-dilution adjustments, the number of shares of the Company's common stock that initially underlie the Convertible Notes. The cap price of the capped call transactions is initially $65.10 per share of the Company's common stock, representing a premium of 100% above the closing price of $32.55 per share of the Company's common stock on October 2, 2018, and is subject to certain adjustments under the terms of the capped call transactions. The capped call transactions are expected generally to reduce potential dilution to the Company's common stock upon conversion of the Convertible Notes and/or offset the potential cash payments that the Company could be required to make in excess of the principal amount of any converted Convertible Notes upon conversion thereof, with such reduction and/or offset subject to a cap based on the cap price. The Company paid $23,969 for the capped call transactions, which was recorded as additional paid-in capital, using a portion of the gross proceeds from the sale of the Convertible Notes. The capped call is expected to be tax deductible as the Company elected to integrate the capped call into the Convertible Notes for tax purposes. The tax effect on the equity component of the Convertible Notes of $5,686 was recorded as additional paid-in capital.

The following table summarizes the Convertible Notes:

	December 31,	
	2019	2018
Par value of the Convertible Notes	$ 201,250	$ 201,250
Unamortized debt discounts	(36,813)	(45,058)
Unamortized debt issuance costs	(3,673)	(4,522)
Net carrying value of Convertible Notes	$ 160,764	$ 151,670

The fair value of our Convertible Notes was $178,952 as of December 31, 2019. The estimated fair value of Convertible Notes is based on market rates and the closing trading price of the Convertible Notes as of December 17, 2019 and is classified as Level 2 in the fair value hierarchy. As of December 31, 2019, the if-converted value of the Convertible Notes did not exceed the principal amount.

Boingo Wireless, Inc.

Notes to the Consolidated Financial Statements (Continued)

(In thousands, except shares and per share amounts)

11. Convertible Notes (Continued)

The Company incurred debt issuance costs of $6,169 in October 2018. In accordance with FASB ASC 470, *Debt*, these costs were allocated to debt and equity components in proportion to the allocation of proceeds. $1,442 of issuance costs were recorded as additional paid-in capital and such amounts are not subject to amortization. The remaining issuance costs of $4,727 are recorded as debt issuance costs in the net carrying value of Convertible Notes. The debt issuance costs are amortized on an effective interest basis over the term of the Convertible Notes and is included in interest expense and amortization of debt discount in the accompanying consolidated statements of operations. The following table sets forth interest expense related to the Convertible Notes for the years ended December 31, 2019 and 2018:

	Year Ended December 31,	
	2019	2018
Contractual interest expense	$ 2,012	$ 481
Amortization of debt issuance costs	849	205
Amortization of debt discount	8,245	1,992
Total	$ 11,106	$ 2,678
Effective interest rate of the liability component	7.1 %	7.1 %

During the years ended December 31, 2019 and 2018, we capitalized $3,042 and $508, respectively,of amortization and interest expense related to the Convertible Notes included in the table above.

Amortization expense for our debt discount and debt issuance costs for fiscal years 2020 through 2023 is as follows:

Year	Debt Discounts	Debt Issuance Costs
2020	$ 8,864	$ 901
2021	9,528	955
2022	10,241	1,015
2023	8,180	802
	$ 36,813	$ 3,673

12. Credit Facility

In February 2019, we entered into a Credit Agreement (the “Credit Agreement”) and related agreements with Bank of America, N.A. acting as agent for lenders named therein, including Bank of America, N.A., Silicon Valley Bank, Bank of the West, Zions Bancorporation, N.A. dba California Bank & Trust, and Barclays Bank PLC (the “Lenders”), for a secured credit facility in the form of a revolving line of credit of up to $150,000 (the “Revolving Line of Credit”) and a term loan of $3,500 (the “Term Loan” and together with the Revolving Line of Credit, the “Credit Facility”). The Credit Facility replaced the November 2014 Credit Facility with Bank of America, N.A. acting as agents for the lenders therein, which expired on November 21, 2018. We may use borrowings under the Credit Facility for general working capital and corporate purposes. In general, amounts borrowed under the Credit Facility are secured by a lien against all of our assets, with certain exclusions.

Boingo Wireless, Inc.

Notes to the Consolidated Financial Statements (Continued)

(In thousands, except shares and per share amounts)

12. Credit Facility (Continued)

As of December 31, 2019, we had no amounts outstanding under the Revolving Line of Credit and $2,722 outstanding under the Term Loan. Amounts borrowed under the Revolving Line of Credit and Term Loan will bear variable interest at the greater of LIBOR plus 1.75% - 2.75% or Lender's Prime Rate plus 0.75% - 1.75% per year and we will pay a fee of 0.25% - 0.5% per year on any unused portion of the Revolving Line of Credit. The Term Loan requires quarterly payments of interest and principal until it is repaid in full on the maturity date but may be prepaid in whole or part at any time. Our Credit Facility will mature on April 3, 2023. Repayment of amounts borrowed under the Credit Facility may be accelerated in the event that we are in violation of the representations, warranties and covenants made in the Credit Agreement, including certain financial covenants set forth therein, and under other specified default events including, but not limited to, non-payment or inability to pay debt, breach of cross default provisions, insolvency provisions, and change of control.

The Company is subject to customary financial and non-financial covenants under the Credit Facility, including a minimum quarterly consolidated senior secured leverage ratio, a minimum quarterly consolidated total leverage ratio, a maximum quarterly consolidated fixed charge coverage ratio, and cash on hand minimums.

Principal payments due under our Term Loan through 2023 are as follows:

Year	Principal Payments
2020	$ 778
2021	778
2022	778
2023	388
	$ 2,722

Debt issuance costs are amortized on a straight-line basis over the term of the Credit Facility. Amortization expense related to debt issuance costs, net of amounts capitalized, for the Credit Facility and the November 2014 Credit Facility are included in interest expense and amortization of debt discount in the accompanying consolidated statements of operations for the years ended December 31, 2019, 2018, and 2017. Amortization and interest expense for the Credit Facility and November 2014 Credit Facility capitalized amounted to $98, $288, and $773 for the years ended December 31, 2019, 2018, and 2017, respectively. Amortization and interest expense for the Credit Facility and November 2014 Credit Facility recorded amounted to $399, $106, and $187 for the years ended December 31, 2019, 2018, and 2017, respectively. Interest rates for the Credit Facility for the year ended December 31, 2019 ranged from 3.9% to 4.4%.

Amortization expense for our debt issuance costs through 2023 are as follows:

Year	Amortization Expense
2020	$ 457
2021	457
2022	457
2023	120
	$ 1,491

Boingo Wireless, Inc.

Notes to the Consolidated Financial Statements (Continued)

(In thousands, except shares and per share amounts)

13. Leases

We have operating and finance leases for corporate offices, datacenters, data communication equipment and database software. Our operating leases have remaining lease terms of less than one year to nine years and our finance leases have remaining lease terms of two months to eighteen months. Some of our operating leases may include one or more options to renew and can extend the lease term from one year to ten years. The exercise of operating lease renewal options is at our sole discretion. Certain leases also include options to purchase the leased property. The depreciable life of assets and leasehold improvements are limited by the expected lease term, unless there is a transfer of title or purchase option reasonably certain of exercise. Some of our operating lease agreements include options to terminate the leases upon written notice and may include early termination penalties. Our lease agreements do not contain any material residual value guarantees or material restrictive covenants. As of December 31, 2019, assets recorded under finance leases were $12,280 and accumulated depreciation and amortization associated with finance leases was $5,387. As of December 31, 2018, assets recorded under capital leases were $16,284 and accumulated depreciation and amortization associated with capital leases was $6,245.

The components of lease expense were as follows:

	Year Ended December 31, 2019	
Operating lease expense	$	3,628
Finance lease expense:		
Depreciation and amortization of assets included in property and equipment, net	$	2,103
Interest on lease liabilities		56
Total finance lease expense	$	2,159

Interest on lease liabilities capitalized during the year ended December 31, 2019, which is excluded from the above table, amounted to $116.

Supplemental cash flow information related to leases was as follows:

	Year Ended December 31, 2019	
Cash paid for amounts included in the measurement of lease liabilities:		
Operating cash flows from operating leases	$	(3,949)
Operating cash flows from finance leases		(172)
Financing cash flows from finance leases		(4,201)
Right-of-use assets obtained in exchange for lease obligations, net of terminations:		
Operating leases		17,595

Operating lease ROU assets obtained in exchange for lease obligations include the effects of the adoption of ASC 842 effective January 1, 2019. Other information related to leases was as follows:

	December 31, 2019
Weighted average remaining lease term:	
Operating leases	6.1 years
Financing leases	1.2 years
Weighted average discount rate:	
Operating leases	5.3 %
Finance leases	3.2 %

Boingo Wireless, Inc.

Notes to the Consolidated Financial Statements (Continued)

(In thousands, except shares and per share amounts)

13. Leases (Continued)

Future minimum lease payments under non-cancellable leases as of December 31, 2019 as presented in accordance with ASC 842 were as follows:

Years ended December 31,	Operating Leases	Finance Leases
2020	$ 3,595	$ 2,783
2021	3,702	574
2022	3,692	—
2023	3,645	—
2024	3,655	—
Thereafter	5,235	—
Total future minimum lease payments	23,524	3,357
Less: Imputed interest	(3,472)	(64)
Total	20,052	3,293
Current portion of operating and finance leases	2,695	2,721
Long-term portion of operating and finance leases	$ 17,357	$ 572

Rent expense for our leases of office and other facilities, which was recorded on a straight-line basis over the term of the lease in accordance with ASC 840, *Leases*, for the years ended December 31, 2018 and 2017 was $3,323 and $2,936, respectively. Future minimum lease payments under non-cancellable leases as of December 31, 2018 as presented in accordance with ASC 840 were as follows:

Years ended December 31,	Operating Leases	Capital Leases
2019	$ 3,573	$ 4,373
2020	3,456	2,783
2021	3,385	574
2022	3,414	—
2023	3,495	—
Thereafter	8,835	—
Minimum lease payments	$ 26,158	7,730
Less: Amount representing interest ranging from 1.3% to 7.7%		(236)
Minimum lease payments		7,494
Current portion of capital leases		4,201
Long-term portion of capital leases		$ 3,293

14. Notes payable

We enter into financed maintenance arrangements for some of our leased data communication equipment. Future minimum payments under financed maintenance arrangements as of December 31, 2019 were as follows:

Years ended December 31,	Notes Payable
2020	$ 1,545
2021	95
Total future minimum payments	1,640
Less: Imputed interest	(18)
Total	1,622
Current portion of note payable	1,527
Long-term portion of notes payable	$ 95

(In thousands, except shares and per share amounts)

15. Fair value measurement

The following table sets forth our financial assets and liabilities that are measured at fair value on a recurring basis:

At December 31, 2019	Level 1	Level 2	Level 3	Total
Assets:				
Money market accounts	$ 32,843	$ 1,497	$ —	$ 34,340
Marketable securities	6,262	33,952	—	40,214
Total assets	$ 39,105	$ 35,449	$ —	$ 74,554

At December 31, 2018	Level 1	Level 2	Level 3	Total
Assets:				
Money market accounts	$ 137,723	$ —	$ —	$ 137,723
Total assets	$ 137,723	$ —	$ —	$ 137,723
Liabilities:				
Contingent consideration	$ —	$ —	$ 961	$ 961
Total liabilities	$ —	$ —	$ 961	$ 961

Our marketable securities utilize Level 1 and Level 2 inputs and consist primarily of corporate debt securities, which primarily include commercial paper and debt instruments including notes issued by foreign or domestic industrial and financial corporations and governments which pay in U.S. dollars and carry a rating of A or better. We have evaluated the various types of securities in our investment portfolio to determine an appropriate fair value hierarchy level based upon trading activity and the observability of market inputs. Due to variations in trading volumes and the lack of quoted market prices in active markets, our fixed maturity securities are classified as Level 2 securities. Our marketable securities are valued at amortized cost, which approximates fair value. The fair value of our fixed maturity marketable securities is derived through the use of a third-party pricing source using recent reported trades for identical or similar securities, making adjustments through the reporting date based upon available market observable data.

The Company’s contingent consideration obligation was initially recorded at fair value using probability-weighted discounted cash flow approaches that are based on significant unobservable inputs related to achievement of estimated annual sales and are reviewed quarterly. Significant changes to estimated annual sales and discount rates would result in corresponding changes in the fair value of this obligation. The following table presents a reconciliation of the beginning and ending amounts related to the fair value of contingent consideration categorized as Level 3:

Beginning balance, January 1, 2018	$ —
Additions	961
Balance , December 31, 2018	$ 961
Change in fair value	(961)
Balance, December 31, 2019	$ —

We do not expect to make any payments for the contingent consideration related to the Elauwit acquisition. The change in fair value of contingent consideration was recorded in general and administrative expenses in the consolidated statements of operations.

Boingo Wireless, Inc.

Notes to the Consolidated Financial Statements (Continued)

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16. Stockholders' equity

At December 31, 2019 and 2018, we are authorized to issue up to 100,000,000 shares of common stock. We are required to reserve and keep available out of our authorized but unissued shares of common stock such number of shares sufficient to effect the exercise of all outstanding common stock warrants, plus shares granted and available for grant under our Amended and Restated 2001 Stock Incentive Plan (the "2001 Plan") and 2011 Equity Incentive Plan (the "2011 Plan"), as amended. Refer to Note 20 for a discussion of the 2011 Plan amendments.

The amount of such shares of common stock reserved for these purposes is as follows:

	December 31,	
	2019	2018
	(in thousands)	
Outstanding stock options under the 2001 Plan	7	14
Outstanding stock options under the 2011 Plan	228	290
Outstanding RSUs under the 2011 Plan	633	3,119
Shares available for grant under the 2011 Plan	2,478	2,979
Total	3,346	6,402

The Convertible Notes have an initial conversion rate of 23.6323 shares of common stock per $1,000 principal amount of the Convertible Notes, which will be subject to customary anti-dilution adjustments in certain circumstances. The amount of shares that would be issuable assuming conversion of all of the Convertible Notes is approximately 4,756,000.

17. Income taxes

The income tax (expense) benefit by jurisdiction recorded as part of continuing operations consists of the following for the years ended December 31:

	2019	2018
U.S. federal:		
Current	$ (20)	$ (18)
Deferred	115	4,569
Total U.S. federal	$ 95	$ 4,551
U.S. state and local:		
Current	$ (32)	$ (285)
Deferred	(35)	1,048
Total U.S. state and local	$ (67)	$ 763
Foreign:		
Current	$ —	$ (161)
Total foreign	$ —	$ (161)

In 2018, federal, state and local deferred tax expense of $5,686 related to the equity component of the Convertible Notes was recorded as additional paid-in capital.

(In thousands, except shares and per share amounts)

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17. Income taxes (Continued)

Income taxes differ from the amounts computed by applying the U.S. federal income tax rate to pretax income before income taxes as a result of the following for the years ended December 31:

	2019	2018
Federal statutory rate	21.0 %	21.0 %
State and local	11.2	19.7
Foreign rate differential	0.2	(0.5)
Stock options	(52.2)	(47.2)
Excess tax benefits from stock-based compensation	95.5	106.4
Non-controlling interests	0.2	5.5
Valuation allowance	(74.7)	(90.7)
Uncertain tax positions	—	2.3
Effect of U.S. tax reform law changes	—	—
Convertible Notes	—	94.9
Other	(0.9)	(5.9)
Income taxes	0.3 %	105.5 %

We have a foreign subsidiary in the United Kingdom, which has generated losses since inception resulting in a $1,997 deferred tax asset with a corresponding valuation allowance as of December 31, 2019. We also have a majority owned foreign subsidiary in Brazil, which has a $573 deferred tax asset with a corresponding valuation allowance as of December 31, 2019 due to historical operating losses. Foreign loss before income taxes was $(28), $(577) and $(1,268) for 2019, 2018, and 2017, respectively.

As of December 31, 2019, we were in a net tested loss position in our subsidiaries located outside of the U.S. In the event that we generate earnings in these subsidiaries, our intention is to indefinitely reinvest these earnings outside the U.S. If we were to remit our foreign earnings, we would be subject to state income taxes or withholding taxes imposed on actual distributions, or currency transaction gains (losses) that would result in taxation upon remittance. However, the amounts of any such tax liabilities resulting from the repatriation of foreign earnings are not material.

Boingo Wireless, Inc.

Notes to the Consolidated Financial Statements (Continued)

(In thousands, except shares and per share amounts)

Deferred income tax reflects the tax effects of temporary differences that gave rise to significant portions of our deferred tax assets and liabilities and consisted of the following for the years ended December 31:

	2019	2018
Deferred tax assets:		
Net operating loss carryforwards	$ 44,565	$ 34,545
Outside basis differences for U.S. partnerships	8,656	9,558
Operating lease liabilities	4,695	—
Deferred revenue	782	640
Deferred compensation	623	120
State taxes	44	80
Stock options	—	2,396
Other	939	1,525
Valuation allowance	(41,646)	(33,810)
Net deferred tax assets	18,658	15,054
Deferred tax liabilities:		
Property and equipment	(6,943)	(7,318)
Convertible Notes	(4,366)	(5,470)
Operating lease right-of-use assets	(3,348)	—
Intangible assets	(3,079)	(3,339)
Stock options	(1,915)	—
Net deferred tax liabilities	(19,651)	(16,127)
Net deferred taxes	$ (993)	$ (1,073)

Boingo Wireless, Inc.

Notes to the Consolidated Financial Statements (Continued)

(In thousands, except shares and per share amounts)

17. Income taxes (Continued)

In December 2017, the Tax Cuts and Jobs Act ("TCJA") was enacted in the U.S. In 2017, we recorded a $1,274 income tax benefit resulting from the reduction of the corporate federal tax rate as well as a $1,766 income tax benefit provided by the indefinite carryforward of NOLs, which are expected to be available to recover our deferred tax liabilities that have an indefinite reversal pattern.

In assessing the realizability of deferred tax assets, we consider whether it is more likely than not that some portion or all of the deferred tax assets will not be realized. As of December 31, 2019 and 2018, we had federal net operating loss carryforwards of approximately $164,373 and $124,637, respectively, state net operating loss carryforwards of approximately $170,831 and $121,091, respectively, and foreign net operating loss carryforwards of $11,671 and $11,642, respectively. The federal net operating loss carryforwards will begin to expire in 2025, and our foreign net operating loss carryforwards have an indefinite life. Our state net operating loss carryforwards will begin to expire in 2032. Our ability to utilize certain of our net operating loss carryforwards may be limited in the event that a change in ownership, as defined in the Internal Revenue Code, occurs in the future.

The following table sets forth the changes in the valuation allowance, for all periods presented:

		Valuation Allowance
Balance, December 31, 2016	$	36,331
Additions charged to operations		16,527
Effect of U.S. tax reform law changes		(17,868)
Balance, December 31, 2017		34,990
Decrease credited to operations		(1,180)
Balance, December 31, 2018		33,810
Additions charged to operations		7,843
Decrease credited to operations		(7)
Balance, December 31, 2019	$	41,646

The decreases credited to operations in 2018 were related to the deferred tax liabilities established against the equity component of the Convertible Notes.

In reaching the determination of the valuation allowance, we have evaluated all significant available positive and negative evidence including, but not limited to, our three-year cumulative results, trends in our business, expected future results and the character, amount and expiration periods of our net deferred tax assets. The underlying assumptions we used in forecasting future income required significant judgment and considered our recent performance.

We recognized interest and penalties related to income tax matters in income taxes. Interest and penalties were not material during the years ended December 31, 2019, 2018, and 2017.

We identify, evaluate and measure all uncertain tax positions taken or to be taken on tax returns and record liabilities for the amount of these positions that may not be sustained, or may only partially be sustained, upon examination by the relevant taxing authorities. Although we believe that our estimates and judgments were reasonable, actual results may differ from these estimates. Some or all of these judgments are subject to review by the taxing authorities. As of December 31, 2019 and 2018, we had $0 in uncertain tax positions. We accrue interest and penalties related to unrecognized tax benefits as a component of income taxes.

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17. Income taxes (Continued)

Our annual income taxes and the determination of the resulting deferred tax assets and liabilities involve a significant amount of judgment. Our judgments, assumptions and estimates relative to current income taxes consider current tax laws, their interpretation of current tax laws and possible outcomes of current and future audits conducted by foreign and domestic tax authorities. We operate within federal, state and international taxing jurisdictions and are subject to audit in these jurisdictions. These audits can involve complex issues which may require an extended period to resolve. We are subject to taxation in the United States and in various states. Our tax years 2016 and forward are subject to examination by the IRS and our tax years 2015 and forward are subject to examination by material state jurisdictions. However, due to prior year loss carryovers, the IRS and state tax authorities may examine any tax years for which the carryovers are used to offset future taxable income.

18. Commitments and contingencies

Venue guarantees

We have long-term non-cancellable contracts to provide Wi-Fi connectivity and cellular phone access to our DAS network for our managed and operated locations. Our venue contracts generally contain initial terms that range up to 20 years. The venue contracts generally contain renewal clauses and may include escalation clauses. We may pay revenue share to our venues and certain venue contracts include minimum revenue share guarantees. Revenue share expense related to our venue contracts for the years ended December 31, 2019, 2018 and 2017 was $41,395, $37,991 and $32,637, respectively.

Future minimum obligations under non-cancellable venue contracts at December 31, 2019 are as follows:

Year	Venue Guarantees
2020	$
2021	
2022	
2023	
2024	
Thereafter	
	$ 4

Letters of credit

We have entered into Letter of Credit Authorization agreements (collectively, “Letters of Credit"), which are issued under our Credit Agreement. The Letters of Credit are irrevocable and serve as performance guarantees that will allow our customers to draw upon the available funds if we are in default. As of December 31, 2019, we have Letters of Credit totaling $12,633 that are scheduled to expire or renew over the next one-year period. There have been no drafts drawn under these Letters of Credit as of December 31, 2019.

Legal proceedings

From time to time, we may be subject to claims, suits, investigations and proceedings arising out of the normal course of business. We are not currently a party to any litigation that we believe could have a material adverse effect on our business, financial position, results of operations or cash flows. Legal costs are expensed as incurred.

18. Commitments and contingencies (Continued)

Indemnification

Indemnification provisions in our third-party service provider agreements provide that we will indemnify, hold harmless, and reimburse the indemnified parties on a case-by-case basis for losses suffered or incurred by the indemnified parties in connection with any claim by any third party as a result of our website, advertising, marketing, payment processing, collection or customer service activities. The maximum potential amount of future payments we could be required to make under these indemnification provisions is undeterminable. We have never paid a claim, nor have we been sued in connection with these indemnification provisions. At December 31, 2019 and 2018, we have not accrued a liability for these guarantees, because the likelihood of incurring a payment obligation in connection with these guarantees is not probable.

Employment contracts

As of December 31, 2019, we have entered into employment contracts with 10 of our officers and other employees. These contracts generally provide for severance benefits, including salary continuation, if employment is terminated by us without cause or by the officer for good reason. In addition, in order to assure that they would continue to provide independent leadership consistent with our best interests in the event of an actual or threatened change in control, the contract also generally provides for certain protections in the event of such a change in control. These protections generally include the payment of certain severance benefits, including salary continuation, upon the termination of employment following a change in control.

Other matters

We have received a claim from one of our venue partners with respect to contractual terms on our revenue share payments. The claim asserts that we have underpaid revenue share payments and related interest by approximately $4,600. We are currently in settlement discussions with our venue partner. As of December 31, 2019, we have accrued for the probable and estimable losses that have been incurred, which have been recorded as general and administrative expenses in the consolidated statements of operations. We are not currently a party to any other claims that we believe could have a material adverse effect on our business, financial position, results of operations or cash flows.

19. Stock repurchases

On April 1, 2013, the Company approved a stock repurchase program to repurchase up to $10,000 of the Company’s common stock in the open market, exclusive of any commissions, markups or expenses. The Company did not repurchase any of our common stock during the years ended December 31, 2018 and 2017. In July 2019, the stock repurchase plan was terminated and was replaced with a new stock repurchase program to repurchase up to $20,000 of the Company’s common stock in the open market. The stock repurchased will be retired and will resume the status of authorized but unissued shares of common stock. During the year ended December 31, 2019, we repurchased approximately 56,000 shares under the new stock repurchase program for $745, excluding commissions paid, at a weighted average price per share of $13.24, which was not in excess of current market values at the time of repurchase. As of December 31, 2019, the remaining approved amount for repurchase was approximately $19,255.

(In thousands, except shares and per share amounts)

20. Stock incentive plans

In March 2011, our board of directors approved the 2011 Plan. The 2011 Plan provides for the grant of incentive and non-statutory stock options, stock appreciation rights, restricted shares of our common stock, stock units, and performance cash awards. As of December 31, 2019, 13,739,820 shares of common stock were reserved for issuance. As of December 31, 2019, options to purchase approximately 228,000 shares of common stock and RSUs covering approximately 633,000 shares of common stock were outstanding under the 2011 Plan.

No further awards will be made under our Amended and Restated 2001 Stock Incentive Plan, and it will be terminated. Options outstanding under the 2001 Plan will continue to be governed by their existing terms. As of December 31, 2019, options to purchase approximately 7,000 shares of common stock were outstanding under the 2001 Plan.

The following table summarizes our stock-based compensation expense included in the consolidated statements of operations for 2019, 2018 and 2017:

	Year Ended December	
	2019	2018
Network operations	$ 1,660	$ 2,070
Development and technology	1,264	1,242
Selling and marketing	2,228	1,868
General and administrative	3,444	7,088
Total stock-based compensation expense	$ 8,596	$ 12,268

For the years ended December 31, 2019, 2018, and 2017, we realized an income tax benefit from stock-based compensation of $5,915, $4,594, and $5,699, respectively. For the years ended December 31, 2019, 2018, and 2017, we capitalized $860, $789, and $696, respectively, of stock-based compensation expense to software and capital projects.

Stock option awards

We grant stock option awards to both employees and non-employee directors. The grant date for these awards is the same as the measurement date. The stock option awards generally vest over a four-year service period with 25% vesting when the individual completes 12 months of continuous service and the remaining 75% vesting monthly thereafter. These awards are valued as of the measurement date and the stock-based compensation expense, net of forfeitures, is recognized on a straight-line basis over the requisite service period. A summary of the activity for stock option awards for 2019 is presented below:

	Number of Options (000's)	Weighted Average Exercise Price	Weighted-Average Remaining Contract Life (years)
Outstanding at December 31, 2018	304	$ 7.49	
Exercised	(69)	$ 6.88	
Canceled/forfeited	—	$ —	
Outstanding and exercisable at December 31, 2019	235	$ 7.67	

The aggregate intrinsic value in the table above represents the difference between the estimated fair value of our common stock at December 31, 2019 and the option exercise price, multiplied by the number of in-the-money options at December 31, 2019. The intrinsic value changes are based on the estimated fair value of our common stock.

Stock options to purchase approximately 69,000, 972,000 and 1,776,000 shares of our common stock were exercised during the years ended December 31, 2019, 2018 and 2017 for cash proceeds of $470, $9,979 and $9,244, respectively. The total intrinsic value of stock options exercised for the years ended December 31, 2019, 2018 and 2017 was $423, $14,935 and $20,551, respectively.

Boingo Wireless, Inc.

Notes to the Consolidated Financial Statements (Continued)

(In thousands, except shares and per share amounts)

20. Stock incentive plans (Continued)

Restricted stock unit awards

We grant service-based restricted stock units ("RSUs") to executive and non-executive personnel and non-employee directors. The service -based RSUs granted to executive and non-executive personnel generally vest over a three-year period subject to continuous service on each vesting date. The service -based RSUs for our non-employee directors generally vest over a one-year period for existing members and 33.3% per year over a three-year period for new members subject to continuous service on each vesting date.

We grant performance-based RSUs to executive personnel. These awards vest subject to certain performance objectives based on the Company's revenue growth, Adjusted EBITDA growth, and/or relative total stockholder return achieved during the specified performance period and certain long-term service conditions. The maximum number of RSUs that may vest is determined based on actual Company achievement and performance-based RSUs generally vest over a three-year period subject to continuous service on each vesting date and achievement of the performance conditions.

A summary of the RSU activity in 2019 is as follows:

	Number of Shares (000's)	Weighted Average Grant Date Fair Value
Non-vested at December 31, 2018	3,119	$ 8.60
Granted(1)	655	$ 21.88
Vested	(2,988)	$ 7.91
Canceled/forfeited	(153)	$ 23.16
Non-vested at December 31, 2019	633	$ 22.04

[redacted] executive officers in 2017 were subject to satisfaction of specified service-based and performance-based conditions. The performance objectives were su over- achievement on a sliding scale, with a threshold of 50% of the target number of RSUs and a maximum of 150% of the target RSUs. In February 2019, our Compensation Committee determ achievement of the 2017 performance-based RSUs resulting in additional RSUs granted of approximately 29,000 at a grant-date fair value of $11.94 per share during the year ended December 31

During the year ended December 31, 2019, approximately 2,988,000 shares of RSUs vested. The Company issued approximately 1,542,000 shares and the remaining shares were withheld to pay minimum statutory federal, state, and local employment payroll taxes on those vested awards.

At December 31, 2019, the total remaining stock-based compensation expense for unvested RSU awards is $10,497, which is expected to be recognized over a weighted average period of 1.9 years.

21. Employee benefit plan

We have a defined contribution savings plan in accordance with Section 401(k) of the Internal Revenue Code. This plan covers substantially all employees who meet the IRS requirements and allows participants to contribute a portion of their annual compensation on a pre-tax basis. The Company's matching contributions are paid each pay period and employees are immediately vested in the Company's matching contributions regardless of the employee's length of service with the Company. Employer contributions of $1,415, $1,154 and $891 were made to the plan by us in 2019, 2018 and 2017, respectively.

[redacted]

Boingo Wireless, Inc.

Notes to the Consolidated Financial Statements (Continued)

(In thousands, except shares and per share amounts)

22. Net loss per share attributable to common stockholders

The following table sets forth the computation of basic and diluted net loss per share attributable to common stockholders:

	Year Ended December 31,		
	2019	2018	2017 (1)
		(in thousands)	
Numerator:			
Net loss attributable to common stockholders, basic and diluted	$ (10,296)	$ (1,220)	$ (19,366)
Denominator:			
Weighted average number of common stock, basic and diluted	43,977	42,066	39,824
Net loss per share attributable to common stockholders:			
Basic and diluted	$ (0.23)	$ (0.03)	$ (0.49)

[redacted] have not been adjusted upon adoption of ASC 606 under the modified retrospective method.

For the years ended December 31, 2019, 2018 and 2017, we excluded all assumed exercises of stock options and the assumed issuance of common stock under RSUs from the computation of diluted net loss per share as the effect would be anti-dilutive due to the net loss for the periods. For the years ended December 31, 2019 and 2018, we also excluded the shares that would be issuable assuming conversion of all of the Convertible Notes and the shares for the capped call as their effect would be anti-dilutive. Diluted EPS for our Convertible Notes is calculated under the treasury method in accordance with ASC 260, *Earnings Per Share*.

23. Quarterly financial data (unaudited)

Summarized unaudited quarterly financial data for fiscal years 2019 and 2018 are as follows:

	Quarter Ended		
2019	**March 31**	**June 30**	**September 30**
Revenue	$ 66,473	$ 68,554	$ 64,707
(Loss) income from operations	$ (3,371)	$ 1,810	$ 1,843
Net (loss) income attributable to common stockholders	$ (5,153)	$ 216	$ (187)
Basic and diluted (loss) income per share	$ (0.12)	$ 0.00	$ 0.00

	Quarter Ended		
2018	**March 31**	**June 30**	**September 30**
Revenue	$ 58,159	$ 59,601	$ 65,253
(Loss) income from operations	$ (2,566)	$ 2,576	$ 150
Net (loss) income attributable to common stockholders	$ (3,229)	$ 2,115	$ (522)
Basic and diluted (loss) income per share	$ (0.08)	$ 0.05	$ (0.01)

Income (losses) per share are computed separately for each quarter and the full year using the respective weighted average number of shares. Therefore, the sum of the quarterly income (losses) per share amounts may not equal the annual amounts reported.

[redacted]

24. Subsequent events

Equity Incentive Plan

In February 2020, we granted approximately 274,000 service-based RSUs to certain executive officers that vest periodically over three years of continuous service and approximately 274,000 performance-based RSUs (assuming at-target achievement) that cliff- vest upon achievement of performance objectives through December 31, 2022. We also granted approximately 312,000 service-based RSUs to non-executive personnel that will vest quarterly over three years of continuous service.

The grants were made pursuant to our 2011 Plan.

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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, on the 2nd day of March 2020.

BOINGO WIRELESS, INC.

By: /s/ MICHAEL FINLEY
Michael Finley
Chief Executive Officer and Member of the Board

POWER OF ATTORNEY

KNOW ALL PERSONS BY THESE PRESENTS, that each person whose signature appears below constitutes and appoints Michael Finley and Peter Hovenier, and each of them, as his true and lawful attorney-in-fact and agent, with full power of substitution and resubstitution, for him and in his name, place and stead, in any and all capacities, to sign any and all amendments to this Annual Report on Form 10-K, and to file the same, with all exhibits thereto, and other documents in connection therewith, with the Securities and Exchange Commission, granting unto said attorneys-in-fact and agents, and each of them, full power and authority to do and perform each and every act and thing requisite and necessary to be done in connection therewith, as fully to all intents and purposes as he might or could do in person, hereby ratifying and confirming all that said attorneys-in-fact and agents, or any of them, or their or his substitutes, may lawfully do or cause to be done by virtue thereof.

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.

/s/ MICHAEL FINLEY Michael Finley	Chief Executive Officer and Member of the Board (Principal Executive Officer)	Mar
/s/ PETER HOVENIER Peter Hovenier	Chief Financial Officer (Principal Financial and Accounting Officer)	Mar
/s/ LANCE ROSENZWEIG Lance Rosenzweig	Chairman of the Board	Mar
/s/ MAURY AUSTIN Maury Austin	Director	Mar
/s/ ROY CHESTNUTT Roy Chestnutt	Director	Mar
/s/ MICHELE CHOKA Michele Choka	Director	Mar
/s/ CHUCK DAVIS Chuck Davis	Director	Mar

/s/ DAVID HAGAN David Hagan	Director	Mar
/s/ TERRELL JONES Terrell Jones	Director	Mar
/s/ KATHY MISUNAS Kathy Misunas	Director	Mar

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Section 2: EX-4.4 (EX-4.4)

Exhibit 4.4

DESCRIPTION OF CAPITAL STOCK

General

Boingo Wireless, Inc. (“we,” “us,” and “our”) has one class of securities registered under Section 12 of the Securities Exchange Act of 1934, as amended - our common stock, $0.0001 par value per share.

The following information describes our capital stock, as well as certain provisions of our amended and restated certificate of incorporation, as amended, and amended and restated bylaws. The summary does not purport to be complete and is qualified in its entirety by reference to our amended and restated certificate of incorporation and amended and restated bylaws, copies of which have been filed as exhibits to our public filings with the Securities and Exchange Commission.

Our authorized capital stock consists of 100,000,000 shares of common stock and 5,000,000 shares of preferred stock with a $0.0001 par value per share, all of which shares of preferred stock are undesignated. Our board of directors may establish the rights and preferences of the preferred stock from time to time. As of February 21, 2020, there were 44,280,374 shares of common stock issued and outstanding, held of record by 21 stockholders, although we believe that there may be a significantly larger number of beneficial owners of our common stock. We derived the number of stockholders by reviewing the listing of outstanding common stock recorded by our transfer agent as of February 21, 2020.

Common Stock

The holders of common stock are entitled to one vote per share on all matters to be voted upon by the stockholders. The holders of common stock are entitled to receive ratably such dividends, if any, as may be declared from time to time by the board of directors out of funds legally available, subject to preferences that may be applicable to preferred stock, if any, then outstanding. In the event of a liquidation, dissolution or winding up of our company, the holders of common stock are entitled to share ratably in all assets remaining after payment of liabilities, subject to prior distribution rights of preferred stock, if any, then outstanding. The common stock has no preemptive or conversion rights or other subscription rights. There are no redemption or sinking fund provisions applicable to the common stock. All outstanding shares of common stock are fully paid and non-assessable.

The rights, preferences and privileges of the holders of our common stock are subject to, and may be adversely affected by, the rights of the holders of shares of any series of preferred stock that we may designate and issue in the future.

Our common stock is listed on the Nasdaq Global Market under the symbol “WIFI.” The transfer agent and registrar for the common stock is American Stock Transfer & Trust Company. Its address is 6201 15th Avenue, Brooklyn, NY 11219, and its telephone number is (800) 937-5449.

Preferred Stock

Our board of directors is authorized, subject to limitations prescribed by Delaware law, to issue preferred stock in one or more series, to establish from time to time the number of shares to be included in each series, and to fix the designation, powers, preferences, and rights of the shares of each series and any of its qualifications, limitations, or restrictions, in each case without further vote or action by our stockholders. Our board of directors may authorize the issuance of preferred stock with voting or conversion rights that could adversely affect the voting power or other rights of the holders of our common stock. The issuance of preferred stock, while providing flexibility in connection with possible acquisitions and other corporate purposes, could, among other things, have the effect of delaying, deferring, or preventing a change in our control and might adversely affect the market price of our common stock and the voting and other rights of the holders of our common stock. We have no current plan to issue any shares of preferred stock.

Effect of Certain Provisions of our Amended and Restated Certificate of Incorporation and Amended and Restated Bylaws

Provisions of our amended and restated certificate of incorporation and our amended and restated bylaws could have the effect of delaying, deferring or discouraging another party from acquiring control of us. These provisions, which are summarized below, may have the effect of discouraging takeover bids. These provisions are also designed, in part, to encourage persons seeking to acquire control of us to first negotiate with our board of directors. We believe that the benefits of increased protection of our potential ability to negotiate with an unfriendly or unsolicited acquirer outweigh the disadvantages of discouraging a proposal to acquire us because negotiation of these proposals could result in an improvement of their terms.

Undesignated preferred stock. Our board of directors has the ability to issue preferred stock with voting or other rights or preferences that could impede the success of any attempt to change control of us. These and other provisions may have the effect of deferring hostile takeovers or delaying changes in control or management of our company.

Limits on ability of stockholders to act by written consent or call a special meeting. Our stockholders may not act by written consent, which may lengthen the amount of time required to take stockholder actions. As a result, a holder controlling a majority of our capital stock would not be able to amend our amended and restated bylaws or remove directors without holding a meeting of our stockholders called in accordance with our amended and restated bylaws.

In addition, our amended and restated bylaws provide that special meetings of the stockholders may be called only by the chairperson of our board of directors, our Chief Executive Officer, or our board of directors. Our amended and restated bylaws prohibit a stockholder from calling a special meeting, which may delay the ability of our stockholders to force consideration of a proposal or for holders controlling a majority of our capital stock to take any action, including the removal of directors.

Requirements for advance notification of stockholder nominations and proposals. Our amended and restated bylaws establish advance notice procedures with respect to stockholder proposals and the nomination of candidates for election as directors, other than nominations made by or at the direction of our board of directors or a committee of our board of directors. However, our amended and restated bylaws may have the effect of precluding the conduct of certain business at a meeting if the proper procedures are not followed. These provisions may also discourage or deter a potential acquirer from conducting a solicitation of proxies to elect the acquirer's own slate of directors or otherwise attempting to obtain control of our company.

Board vacancies filled only by majority of directors then in office. Vacancies and newly created seats on our board of directors may be filled only by our board of directors. Only our board of directors may determine the number of directors on our board of directors. The inability of stockholders to determine the number of directors or to fill vacancies or newly created seats on our board of directors makes it more difficult to change the composition of our board of directors, but these provisions promote a continuity of existing management.

No cumulative voting. The Delaware General Corporation Law provides that stockholders are not entitled to the right to cumulate votes in the election of directors unless our amended and restated certificate of incorporation provides otherwise. Our amended and restated certificate of incorporation and amended and restated bylaws do not expressly provide for cumulative voting.

Amendment of charter provisions. The amendment of the above provisions in our amended and restated certificate of incorporation requires approval by holders of at least two-thirds of our outstanding common stock.

Delaware Anti-Takeover Statute

We are subject to the provisions of Section 203 of the Delaware General Corporation Law regulating corporate takeovers. In general, Section 203 generally prohibits a publicly-held Delaware corporation from engaging in a business combination with an interested stockholder for a period of three years following the date on which the person became an interested stockholder unless:

- prior to the date of the transaction, the board of directors of the corporation approved either the business combination or the transaction which resulted in the stockholder becoming an interested stockholder;

- upon completion of the transaction that resulted in the stockholder becoming an interested stockholder, the interested stockholder owned at least 85% of the voting stock of the corporation outstanding at the time the transaction commenced, excluding for purposes of determining the voting stock outstanding, but not the outstanding voting stock owned by the interested stockholder, (1) shares owned by persons who are directors and also officers and (2) shares owned by employee stock plans in which employee participants do not have the right to determine confidentially whether shares held subject to the plan will be tendered in a tender or exchange offer; or at or subsequent to the date of the transaction, the business combination is approved by the board of directors of the corporation and authorized at an annual or special meeting of stockholders, and not by written consent, by the affirmative vote of at least $66^{2}/3\%$ of the outstanding voting stock that is not owned by the interested stockholder.

In general, Section 203 defines business combination to include the following:

any merger or consolidation involving the corporation and the interested stockholder;

any sale, lease, exchange, mortgage, transfer, pledge or other disposition of 10% or more of either the assets or outstanding stock of the corporation involving the interested stockholder;

subject to certain exceptions, any transaction that results in the issuance or transfer by the corporation of any stock of the corporation to the interested stockholder;

any transaction involving the corporation that has the effect of increasing the proportionate share of the stock of any class or series of the corporation beneficially owned by the interested stockholder; or

the receipt by the interested stockholder of the benefit of any loans, advances, guarantees, pledges or other financial benefits by or through the corporation.

In general, Section 203 defines interested stockholder as an entity or person who, together with affiliates and associates, beneficially owns, or within three years prior to the determination of interested stockholder status did own, 15% or more of the outstanding voting stock of the corporation.

The provisions of Delaware law and our amended and restated certificate of incorporation and our amended and restated bylaws could have the effect of discouraging others from attempting hostile takeovers and, as a consequence, they may also inhibit temporary fluctuations in the market price of our common stock that often result from actual or rumored hostile takeover attempts. These provisions may also have the effect of preventing changes in our management. It is possible that these provisions may make it more difficult to accomplish transactions that stockholders may otherwise deem to be in their best interests.

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Section 3: EX-21.1 (EX-21.1)

Exhibit 21.1

List of Subsidiaries as of December 31, 2019

Name of Subsidiary	Jurisdiction
Advanced Wireless Group, LLC	Florida
Boingo Broadband, LLC.	California
Boingo Holding Participações, Ltda.	Brazil
Boingo Limited	England
Boingo LLC	Delaware
Boingo MDU, LLC	Delaware
Chicago Concourse Development Group, LLC	Delaware
Concourse Communications Baltimore, LLC	Delaware
Concourse Communications Canada, Inc.	Delaware
Concourse Communications Detroit, LLC	Delaware
Concourse Communications Group, LLC	Delaware
Concourse Communications Illinois, LLC	Illinois
Concourse Communications Minnesota, LLC	Delaware
Concourse Communications Nashville, LLC	Illinois
Concourse Communications Ottawa, LLC	Illinois
Concourse Communications SSP, LLC	Delaware
Concourse Communications St. Louis, LLC	Delaware
Concourse Communications UK, Ltd.	England
Concourse Holding Co., LLC.	Delaware
Concourse Telecomunicacoes Brasil Ltda	Brazil
Electronic Media Systems, Inc.	Florida
Endeka Group, Inc.	California
InGate Holding, LLC	Illinois
InGate Technologies, LLC	Delaware
New York Telecom Partners, LLC	Delaware
Opti-Fi Networks, LLC	Delaware
Tego Communications, Inc.	Delaware

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Section 4: EX-23.1 (EX-23.1)

Exhibit 23.1

Consent of Independent Registered Public Accounting Firm

We hereby consent to the incorporation by reference in the Registration Statements on Form S-8 (No. 333-223606, No. 333-216649, No. 333-210108, No. 333-203474, No. 333-195248, No. 333-187471, No. 333-181180, and No. 333-174157) of Boingo Wireless, Inc. of our report dated March 2, 2020 relating to the financial statements and the effectiveness of internal control over financial reporting, which appears in this Form 10-K.

/s/ PricewaterhouseCoopers LLP
Los Angeles, California
March 2, 2020

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Section 5: EX-31.1 (EX-31.1)

Exhibit 31.1

Certification

I, Michael Finley, certify that:

1. I have reviewed this annual report on Form 10-K of Boingo Wireless, Inc.;

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

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

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

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

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

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

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

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

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

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

Date: March 2, 2020

/s/ MICHAEL FINLEY
Michael Finley
Chief Executive Officer and Member of the Board
(Principal Executive Officer)

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Section 6: EX-31.2 (EX-31.2)

Exhibit 31.2

Certification

I, Peter Hovenier, certify that:

1. I have reviewed this annual report on Form 10-K of Boingo Wireless, Inc.;

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

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

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

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

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

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

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

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

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

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

Date: March 2, 2020

/s/ PETER HOVENIER
Peter Hovenier

Chief Financial Officer (Principal Financial and Accounting Officer)

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Section 7: EX-32.1 (EX-32.1)

Exhibit 32.1

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 Boingo Wireless, 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 period 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: March 2, 2020

/s/ MICHAEL FINLEY
Michael Finley
Chief Executive Officer and Member of the Board (Principal 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. A signed original of this written statement required by Section 906 has been provided to the Company and will be retained by the Company and furnished to the Securities and Exchange Commission or its staff upon request.

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Section 8: EX-32.2 (EX-32.2)

Exhibit 32.2

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 Boingo Wireless, 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 period 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: March 2, 2020

/s/ PETER HOVENIER
Peter Hovenier
Chief Financial Officer
(Principal Financial and Accounting 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. A signed original of this written statement required by Section 906 has been provided to the Company and will be retained by the Company and furnished to the Securities and Exchange Commission or its staff upon request.

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