



# 2020 Annual Meeting

**Proxy Statement** | 2019 Annual Report







April 1, 2020

Fellow Calix stockholders:

We are all experiencing a global pandemic and the social and economic challenges it brings. The full impact from this is likely still to be determined in the coming months and potentially years. At this time, the Calix team is focused on ensuring we can deliver the platforms, products and services our customers require for the critical role they play in this time of social distancing. Over the long term, our mission and our vision remain unchanged despite the broader challenges impacting the global economy in the near term.

Our [mission](#) is to connect everyone and everything. Calix platforms empower our customers to build new business models, rapidly deploy new services and make the promise of the smart home and business a reality.

Our [vision](#) is focused on providing the platforms and services that enable innovative service providers to create services at a DevOps pace and provide their subscribers with an exceptional experience. Service providers achieve this objective by building their infrastructure and service offerings on platforms.

In view of the global pandemic, we have further sharpened our focus on the transformation of Calix into a communications cloud and software platform, systems and services business. As you know, this has been our core effort for the last few years, and it yielded further progress in 2019. As we have stated in our quarterly letters to stockholders, over the long term, we believe this transformation will manifest in improved financial performance across four measurable metrics:

- Deliberate revenue growth
- Gross margin expansion
- Disciplined operating expense investment
- Increased predictability

We are happy to report in 2019 that we continued to deliver on these objectives and expect these metrics will continue to improve as our platforms and related services increase as a percentage of our total business. We will continue to take every opportunity to simplify our business and increase our focus on our all-platform solutions.

Additional examples of our progress made in 2019 were:

- Added 101 new customers during the year spanning all classes of communications service providers including traditional wireline, cable/MSO, hospitality, fiber overbuilders, municipalities, utilities and cooperatives;
- More than tripled our Calix Cloud offering revenue on a full year basis while nearly doubling the number of customers on the platform compared to a year ago;
- Launched the Revenue Edge Solution leveraging our EXOS systems and Calix Cloud, integrating real-time subscriber insights with new EDGE suites to help CSPs manage, secure and monetize the increasingly complex smart, connected home;

- Led the market with AXOS everyPON, ending the year with 75 customers deploying our 10G PON solutions; and
- Through Success Services, enabled our customers to achieve exceptional business outcomes such as reducing support costs by up to 66%, generating up to 9-fold improvements in campaign response rates and growing revenue by up to 23%.

We finished the final quarter of 2019 on a high note with quarterly revenue increasing 4% year-over-year and marking the first year-over-year revenue growth quarter during the past eight quarters. Overall in 2019 revenue from our all-platform offerings exceeded our plan while our legacy revenue fell short of our expectations. To help our stockholders better understand the underlying shift in our customer base, we began sharing with you customer segmentation with revenue divided into small, medium and large customers. Small customers have less than 250,000 broadband subscribers. Medium customers have between 250,000 to less than 2,500,000 broadband subscribers. And, large customers have 2,500,000 or more broadband subscribers.

For 2019, revenue from large customers was 22% of total revenue and declined 15% compared to the year ago period due to lower shipments to CenturyLink and Frontier, resulting primarily from pressure to reduce their capital expenditures and a pending asset divestment. These decreases were partially offset primarily by higher shipments to Verizon as they continue to build out their next generation network. Revenue from medium-sized customers was 8% of total revenue for 2019 and declined 24% compared to the year ago period as this group continued to reduce capital investments in response to broadband subscriber losses. Revenue from small customers was 70% of total revenue in 2019 and increased 3% as compared to a year ago on continued momentum with our platform offerings and the addition of new customers more than offset a decline in legacy product revenue. In other words, our total revenue reflects our deliberate effort to increase revenue with strategically aligned customers while revenue from our traditional product offerings continued its decline.

In a traditional communications systems company, a decline in revenue similar to what we experienced in 2019 would have historically led to lower gross margin and lower profits. With our all-platform solutions representing a growing portion of our overall revenue in 2019, the opposite occurred. Excluding the impact of U.S. tariff and tariff-related expenses incurred in 2019, our GAAP and non-GAAP gross margin each expanded in 2019, demonstrating the positive benefit from our platforms. In addition, our platforms represent multi-year agreements that will yield positive benefits over the coming quarters and years.

We also continued to demonstrate disciplined operating expense investment in 2019 as both GAAP and non-GAAP operating expenses declined by a higher percentage relative to the decline in revenue. These actions were done without slowing our pace of innovation. The combination of higher gross margin and lower operating expenses led to an improvement in our GAAP net loss for 2019 as well as led to the second consecutive year of profitability on a non-GAAP basis for the full year.

On the balance sheet, we ended the year with cash of \$46.8 million, a slight decrease from the \$49.6 million at the end of 2018. Our cash decreased compared to last year despite finishing 2019 with positive operating cash flow of \$4.7 million as we made additional investments in our next generation ERP system and accelerated the realignment of our global supply chain, substantially mitigating the impact from U.S. tariffs imposed on products manufactured in China. We ended the year with a cash conversion cycle that we believe is industry-leading, ending the year with days sales outstanding of 36 days.

In summary, we made significant progress towards our mission in 2019, and as we continue to execute, we expect to see our performance improve over the long term. In 2019, we grew our

customer base, adding service providers of all types to our all-platform solutions, expanded our gross margin and continued to demonstrate discipline in operating expense investment, all despite a decline in revenue. All of which I believe continues to demonstrate the benefit inherent in our all-platform solutions.

With an expanding pipeline of opportunities spanning service providers of every type, Calix...an all-platform company...is well positioned in front of the largest wave of disruption our industry has ever experienced. We remain committed to our vision.

As always, I want to thank you – my fellow Calix stockholders, customers, suppliers and employees – for your continued support. As we transformed Calix over the last several years, we made significant investments in people, systems and platforms. We remain focused on helping our existing customers transform their business models while striving to win new strategically-aligned customers. As we continue to diversify our customer base across different markets and geographies, we are laying the groundwork for sustained growth and improved profitability. Finally, I want to assure you that we are committed to the safety and well-being of our people, customers, partners and communities, and we are focusing our efforts on the resilience and continuity of our business and operations as we all navigate the unprecedented impacts of the COVID-19 pandemic.

Sincerely,

A handwritten signature in blue ink, appearing to read "Russo", with a stylized flourish at the end.

Carl Russo  
President & CEO

Forward-Looking Statements: This letter includes forward-looking statements based on our expectations as of the date of this letter. Forward-looking statements are subject to risks and uncertainties that could cause actual results to differ materially from expectations, including but not limited to risks and impacts related to the outbreak of COVID-19 which is a situation that continues to evolve and for which there is significant uncertainty, third-party dependencies for production and resource management associated with our global supply-chain that may cause delays in production and unavailability of systems to meet customer orders which may be substantial, fluctuations in our financial and operating results, customer spending decisions, changes and disruptions in the market and industry, changes in regulations or government sponsored programs, competition, market acceptance of our products, growth opportunities, cost overruns and other unanticipated factors, which could materially adversely affect our financial condition and results of operations. Additional important risks and uncertainties that could cause actual results to differ materially from expectations are described in our annual reports on Form 10-K and quarterly reports on Form 10-Q filed with the SEC and available at [www.sec.gov](http://www.sec.gov). Forward-looking statements speak only as of the date the statements are made.

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CALIX, INC.  
2777 Orchard Parkway  
San Jose, California 95134

**NOTICE OF ANNUAL MEETING OF STOCKHOLDERS  
TO BE HELD ON MAY 13, 2020**

To the Stockholders of Calix, Inc.:

The Annual Meeting of Stockholders (“Annual Meeting”) of Calix, Inc. (“Calix”), will be held virtually, via live webcast at [www.virtualshareholdermeeting.com/CALX20](http://www.virtualshareholdermeeting.com/CALX20), on Wednesday, May 13, 2020 at 10:30 a.m. Pacific Daylight Time. The Annual Meeting will be held for the following purposes:

1. To elect three directors to the Calix Board of Directors (“Board”);
2. To approve the Amended and Restated 2019 Equity Incentive Award Plan (“2019 Plan”) to increase the number of shares of common stock issuable under the 2019 Plan by 3,500,000 shares;
3. To approve the Amended and Restated 2017 Nonqualified Employee Stock Purchase Plan (“Nonqualified ESPP”) to amend certain terms and increase the number of shares of common stock issuable under the Nonqualified ESPP by 1,200,000 shares;
4. To approve, on a non-binding, advisory basis, the compensation of our named executive officers;
5. To ratify the selection of KPMG LLP as Calix’s independent registered public accounting firm for the fiscal year ending December 31, 2020; and
6. To transact such other business as may properly come before the Annual Meeting or any adjournment or postponement thereof.

The above items of business are more fully described in the Proxy Statement. Only stockholders who owned Calix common stock at the close of business on March 18, 2020 can vote at this meeting or any adjournments that take place.

We have elected to use the Internet as our primary means of providing our proxy materials to stockholders. As a result, we are sending a Notice of Internet Availability of Proxy Materials (“Notice”) rather than mailing a paper copy of this Proxy Statement and our 2019 Annual Report. The Notice will be sent on or about April 1, 2020 to our stockholders of record as of the close of business on March 18, 2020. We are also providing access to our proxy materials over the Internet beginning on or about April 1, 2020. Electronic delivery of our proxy materials minimizes printing and mailing costs and reduces the environmental impact of the proxy materials.

The Notice contains instructions for accessing the proxy materials, including the Proxy Statement and our 2019 Annual Report, and provides information on how stockholders may obtain paper copies free of charge. The Notice also provides the date and time of the virtual Annual Meeting, the matters to be acted upon at the meeting and the Board’s recommendation with regard to each matter and information on how to attend the virtual Annual Meeting and vote online.

You are cordially invited to attend the virtual Annual Meeting. Whether or not you expect to attend, you should vote and submit your proxy over the Internet following the voting procedures described in the Notice to ensure that your vote is recorded. In light of current circumstances and disruptions relating to the COVID-19 pandemic, we strongly encourage you to vote by Internet or phone by following the instructions described in the Notice. If you have requested and received paper copies of proxy materials in lieu of the Notice, we still encourage you to vote by phone, but if you do not have access to a phone you may sign, date and return by mail the proxy card sent to you.

By Order of the Board of Directors

/s/ Suzanne Tom

Suzanne Tom

Corporate Secretary

San Jose, California  
April 1, 2020

The Notice of Annual Meeting, Proxy Statement and Form of Proxy are being distributed and made available on or about April 1, 2020.

**PROXY STATEMENT  
FOR 2020 ANNUAL MEETING OF STOCKHOLDERS**

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**CALIX, INC.**  
**2777 Orchard Parkway**  
**San Jose, California 95134**

**PROXY STATEMENT**  
**FOR THE 2020 ANNUAL MEETING OF STOCKHOLDERS**

**IMPORTANT NOTICE REGARDING THE AVAILABILITY OF PROXY MATERIALS FOR THE STOCKHOLDER MEETING TO BE HELD ON MAY 13, 2020**

The Board of Directors of Calix, Inc. is soliciting your proxy to vote at the virtual Annual Meeting of Stockholders to be held on May 13, 2020, at 10:30 a.m. Pacific Daylight Time, and any adjournment or postponement of that meeting (“Annual Meeting”). The Annual Meeting will be held via live webcast only at [www.virtualshareholdermeeting.com/CALX20](http://www.virtualshareholdermeeting.com/CALX20).

We have elected to provide access to our proxy materials on the Internet. Accordingly, we are sending a Notice of Internet Availability of Proxy Materials (“Notice”) to our stockholders of record as of March 18, 2020 (“Record Date”), while brokers and other nominees who hold shares on behalf of beneficial owners will be sending their own similar notice. All stockholders will have the ability to access the proxy materials on the website referred to in the Notice or to request a printed set of the proxy materials. Instructions on how to request a printed copy by mail or email may be found in the Notice and on the website referred to in the Notice, including an option to request paper copies on an ongoing basis. On or about April 1, 2020, we are making this Proxy Statement available on the Internet and are mailing the Notice to all stockholders entitled to vote at the Annual Meeting. We intend to mail or email this Proxy Statement, together with a proxy card, to those stockholders entitled to vote at the Annual Meeting who have properly requested paper copies of such materials within three business days of request.

The only voting securities of Calix, Inc. are shares of common stock, \$0.025 par value per share (“common stock”), of which there were 56,633,378 shares outstanding as of the Record Date (excluding treasury shares). We need the holders of a majority of the outstanding shares of common stock, present or represented by proxy, to hold the Annual Meeting.

In this Proxy Statement, we refer to Calix, Inc. as the “Company,” “Calix,” “we” or “us” and the Board of Directors as the “Board.” When we refer to Calix’s fiscal year, we mean the year ended December 31 of the stated year.

Our 2019 Annual Report to Stockholders, which contains consolidated financial statements for fiscal year 2019, accompanies this Proxy Statement. Stockholders who received the Notice can access this Proxy Statement and the 2019 Annual Report to Stockholders at the website referred to in the Notice. You also may obtain a copy of our 2019 Annual Report, which was filed with the Securities and Exchange Commission (“SEC”), without charge, by writing to our Investor Relations department at the above address. Our 2019 Annual Report and Proxy Statement are also available under “Financials” in the Investor Relations section of our website at [investor-relations.calix.com](http://investor-relations.calix.com) and at the SEC’s web site at [www.sec.gov](http://www.sec.gov).

**THE PROXY PROCESS AND STOCKHOLDER VOTING**  
**QUESTIONS AND ANSWERS ABOUT THIS PROXY MATERIAL AND VOTING**

**Who can vote at the Annual Meeting?**

Only stockholders of record at the close of business on March 18, 2020 will be entitled to vote online at the Annual Meeting. At the close of business on March 18, 2020, there were 56,633,378 shares of common stock outstanding and entitled to vote.

***For Shares Registered in Your Name***

If, on March 18, 2020, your shares were registered directly in your name with Calix's transfer agent, Computershare, Inc., then you are a registered stockholder and will receive the proxy materials directly from Broadridge Financial Solutions, Inc. ("Broadridge"), an independent agent who we have engaged to tabulate votes for the Annual Meeting. You are the stockholder of record and may vote online at the Annual Meeting or vote by proxy. Whether or not you expect to attend, you should vote and submit your proxy over the Internet following the voting procedures described in the Notice to ensure that your vote is recorded. If you have requested and received paper copies of proxy materials, you can also vote over the phone or by signing, dating and returning by mail the proxy card sent to you.

***For Shares Registered in the Name of a Broker, Bank or Other Agent***

If, on March 18, 2020, your shares were held in an account at a brokerage firm, bank, dealer or other similar organization, then you are the beneficial owner of shares held in "street name" and these proxy materials are being forwarded to you by that organization. The organization holding your account is considered the stockholder of record for purposes of voting at the Annual Meeting. As the beneficial owner of the shares, you have the right to direct your broker or other agent on how to vote the shares in your account. You are also welcome to join the Annual Meeting and to vote online.

**What do I need in order to be able to join the Annual Meeting online?**

Any stockholder can join the Annual Meeting live online at [www.virtualshareholdermeeting.com/CALX20](http://www.virtualshareholdermeeting.com/CALX20). The webcast will start at 10:30 a.m. Pacific Daylight Time. Stockholders may vote and submit questions while attending the Annual Meeting online. In order to be able to participate in the online Annual Meeting, you will need the control number included on your Notice or, if you received a printed copy of the proxy materials, your proxy card if you are a registered stockholder, or included with your voting instruction card and voting instructions you received from your broker, bank or other agent if you hold your shares in "street name." Instructions on how to participate online are also posted online at [www.virtualshareholdermeeting.com/CALX20](http://www.virtualshareholdermeeting.com/CALX20).

**Why is Calix holding the Annual Meeting online?**

Among other reasons, Calix believes holding the Annual Meeting online enables broader stockholder attendance and participation from any location around the world, minimizing travel time and cost. In designing our online format, we have taken measures to facilitate easy access and to ensure our virtual meeting provides all stockholders with equal access to ask questions of our Board and management. Our virtual meeting allows participating stockholders to vote on proposals, access our Proxy Statement and 2019 Annual Report and engage in a live Q&A with our Board, management and auditors. In addition, a recording of our Annual Meeting is publicly available for a year following each annual meeting at [www.virtualshareholdermeeting.com/CALX20](http://www.virtualshareholdermeeting.com/CALX20).

**What am I being asked to vote on?**

You are being asked to vote on:

- election of three Class I directors to hold office until our 2023 Annual Meeting of Stockholders (Proposal No. 1);
- approval of the Amended and Restated 2019 Equity Incentive Award Plan ("2019 Plan") to increase the number of shares of common stock issuable under the 2019 Plan by 3,500,000 shares (Proposal No. 2);
- approval of the Amended and Restated 2017 Nonqualified Employee Stock Purchase Plan ("Nonqualified ESPP") to amend certain terms and increase the number of shares of common stock issuable under the Nonqualified ESPP by 1,200,000 shares (Proposal No. 3);
- approval, on a non-binding, advisory basis of the compensation of our named executive officers ("NEOs") as disclosed in this Proxy Statement (Proposal No. 4); and

- ratification of the selection of KPMG LLP as our independent registered public accounting firm for the fiscal year ending December 31, 2020 (Proposal No. 5).

In addition, you are entitled to vote on any other matters that are properly brought before the Annual Meeting.

### **How does the Board recommend I vote on the Proposals?**

The Board recommends that you vote:

- **FOR** each of the Class I director nominees;
- **FOR** approval of the 2019 Plan to increase the number of shares of common stock issuable under the 2019 Plan by 3,500,000 shares;
- **FOR** approval of the Nonqualified ESPP to amend certain terms and increase the number of shares of common stock issuable under the Nonqualified ESPP by 1,200,000 shares;
- **FOR** approval, on a non-binding, advisory basis, of the compensation of our NEOs; and
- **FOR** ratification of KPMG LLP as our independent registered public accounting firm.

### **How do I vote?**

For election of directors, you may either vote “For” the three nominees or you may “Withhold” your vote for all or for any nominee you specify. For any other matter to be voted on, you may vote “For” or “Against” or abstain from voting. The procedures for voting are as follows:

#### ***For Shares Registered in Your Name***

If your shares are registered in your name, you may vote using any of the following methods:

- To vote over the Internet prior to or during the Annual Meeting, follow the online instructions provided on the Notice.
- To vote by phone, call the toll-free number found on the proxy card, which you can request by following the instructions provided on the Notice.
- To vote by mail, follow the instructions provided on the Notice to request a proxy card and complete, sign and date the proxy card, and return it promptly by mail.
- Whether or not you plan to join the Annual Meeting, we strongly encourage you to vote by Internet or phone in light of current circumstances and disruptions relating to the COVID-19 pandemic to ensure that your vote is timely received and counted. You may still vote by mail if you do not have access to the Internet or a phone. As long as we receive your signed proxy card, or your vote by Internet or phone, by 11:59 p.m. Eastern Daylight Time on May 12, 2020, we will vote your shares as you direct. Even if you have submitted a proxy or voted by phone or the Internet before the Annual Meeting, you may still join the Annual Meeting and vote online. In such case, your previously submitted proxy or vote will be disregarded.

#### ***For Shares Registered in the Name of a Broker, Bank or Other Agent***

If you are a beneficial owner of shares registered in the name of your broker, bank or other agent, you should have received a voting instruction card and voting instructions with these proxy materials from that organization rather than from us. You should follow the instructions from your broker, bank or other agent included with these proxy materials, or contact your broker, bank or other agent to request a proxy card. You may also vote online at the Annual Meeting by following the voting instructions provided by your broker, bank or other agent to log in to [www.virtualshareholdermeeting.com/CALX20](http://www.virtualshareholdermeeting.com/CALX20) and cast your vote. You should also complete and mail the voting instruction card to ensure that your vote is counted.

### **Who counts the votes?**

We have engaged Broadridge as our independent agent to tabulate stockholder votes. If you are a registered stockholder and you choose to vote over the Internet (either prior to or during the Annual Meeting) or by phone, Broadridge will access and tabulate your vote electronically, and if you have requested and received proxy materials via mail or email and choose to sign and mail your proxy card, your executed proxy card is returned directly to Broadridge for tabulation. As noted above, if you hold your shares through a broker, your broker (or its agent for tabulating votes of shares held in “street name”) returns one proxy card to Broadridge on behalf of all its clients.

## **What is the required vote and how are votes counted?**

A majority of the outstanding shares of common stock must be present or represented by proxy at the Annual Meeting in order to have a quorum. Abstentions and broker non-votes will be treated as shares present for the purpose of determining the presence of a quorum.

With respect to Proposal No. 1, the election of directors, directors will be elected by a plurality of the votes cast, which means that the three nominees receiving the highest number of “For” votes will be elected. Abstentions and broker non-votes will have no effect with regard to this proposal, because approval of a percentage of shares present or outstanding is not required for this proposal.

With respect to Proposals No. 2, 3, 4 and 5, the affirmative vote of the holders of a majority of the shares of common stock present or represented by proxy and entitled to vote on the proposal is required for approval. Abstentions have the same effect as a vote against these proposals.

Because your vote on Proposal No. 4 is advisory, it will not be binding on us, our Board or our Compensation Committee. However, we value our stockholders’ views on the effectiveness of our executive compensation program. Our Board and Compensation Committee consider the annual advisory vote of our stockholders and our stockholders’ views when making decisions about executive compensation.

Under the New York Stock Exchange (“NYSE”) rules, brokers are permitted to vote their clients’ proxies in their own discretion as to certain “routine” proposals. However, where a proposal is considered “non-routine,” a broker who has received no instructions from its client generally does not have discretion to vote its clients’ uninstructed shares on that proposal. When a broker indicates on a proxy that it does not have discretionary authority to vote certain shares on a particular proposal, the missing votes are referred to as “broker non-votes.” Those shares would be considered present for purposes of determining whether a quorum is present but would not be counted in determining the number of votes present for the proposal. Those shares would not be taken into account in determining the outcome of the non-routine proposal.

Under NYSE rules, Proposals No. 1 through No. 4 are non-routine matters while Proposal No. 5 is a routine matter. Because brokers cannot vote uninstructed shares on behalf of their customers for non-routine matters, it is important that stockholders vote their shares.

Broadridge will separately count “For” and “Withhold” votes with respect to Proposal No. 1, “For” and “Against” votes and abstentions, with respect to Proposal Nos. 2, 3 and 4, and “For” and “Against” votes, abstentions and broker non-votes with respect to Proposal No. 5.

## **How many votes do I have?**

On each matter to be voted upon, you have one vote for each share of common stock you own as of March 18, 2020.

## **What if I return a proxy card but do not make specific choices?**

If you have properly requested and received a proxy card by mail or email, and we receive a signed and dated proxy card that does not specify how your shares are to be voted, your shares will be voted “For” the election of each of the three nominees for director and “For” Proposals No. 2, 3, 4 and 5. If any other matter is properly presented at the Annual Meeting, the individuals named as proxy holders on your proxy card will vote your shares in the manner recommended by the Board on all proposals presented in this Proxy Statement and as they may determine in their best judgment as to any other matters properly presented for vote at the Annual Meeting.

## **Who is paying for this proxy solicitation?**

We will pay for the entire cost of soliciting proxies. In addition to these mailed proxy materials, our directors, officers and employees may also solicit proxies in person, by phone or by other means of communication. Directors, officers and employees will not be paid any additional compensation for soliciting proxies. We may also reimburse brokerage firms, banks and other agents for the cost of forwarding proxy materials to beneficial owners.

In addition, we have engaged D.F. King & Co., Inc., a proxy solicitation firm, to assist in the solicitation of proxies for a fee of approximately \$12,500, plus reasonable out-of-pocket expenses.

### **What does it mean if I receive more than one Notice or set of materials?**

If you receive more than one Notice or more than one set of materials, your shares are registered in more than one name or are registered in different accounts. In order to vote all the shares you own, you must follow the instructions for voting on the Internet on all of the Notices or proxy cards you receive via mail or email upon your request, which includes voting over the Internet, phone or by signing and returning all of the proxy cards you request and receive.

### **Can I change my vote after submitting my proxy or voting on the Internet or by phone?**

Yes. You can revoke your proxy or prior vote at any time before the final vote at the Annual Meeting. If you are the registered stockholder for your shares, you may revoke your proxy or prior vote in any one of three ways:

- You may submit another properly completed proxy card with a later date or submit a new vote on the Internet or by phone using the same instructions followed when you submitted your prior vote.
- You may send a written notice that you are revoking your proxy to Calix's Corporate Secretary at Calix, Inc., 2777 Orchard Parkway, San Jose, California 95134.
- You may join the Annual Meeting and vote online. Simply logging into the Annual Meeting will not, by itself, revoke your proxy or prior vote.

If your shares are held by your broker, bank or other agent, you should follow the instructions provided by them, or you may join the Annual Meeting and vote online.

### **How will voting on any business not described in this Proxy Statement be conducted?**

We are not aware of any business to be considered at the Annual Meeting other than the items described in this Proxy Statement. If any other matter is properly presented for vote at the Annual Meeting and you are not attending the meeting in person but have voted by proxy, the individuals named as proxy holder on your proxy card will vote your shares as they may determine in their best judgment.

### **When are stockholder proposals due for next year's Annual Meeting?**

To be considered for inclusion in next year's proxy materials, your proposal must be submitted in writing by December 2, 2020, to Calix's Corporate Secretary at 2777 Orchard Parkway, San Jose, California 95134. If you wish to submit a proposal that is not to be included in next year's proxy materials under the SEC's stockholder proposal procedures or nominate a director, you must do so between January 13, 2021 and February 12, 2021; provided that if the date of the annual meeting is earlier than April 13, 2021 or later than July 12, 2021, you must give notice not later than the 90<sup>th</sup> day prior to the annual meeting date or, if later, the 10<sup>th</sup> day following the date on which public disclosure of the annual meeting date is first made. You are also advised to review our bylaws, which contain additional requirements about advance notice of stockholder proposals and director nominations.

### **What is the quorum requirement?**

A quorum of stockholders is necessary to hold a valid meeting. A quorum will be present if the holders of a majority of the shares of common stock issued and outstanding and entitled to vote are present or represented by proxy at the Annual Meeting. On the Record Date, there were 56,633,378 shares outstanding and entitled to vote. Accordingly, 28,316,690 shares must be represented by stockholders present at the Annual Meeting or by proxy to have a quorum.

Your shares will be counted towards the quorum if you submit a valid proxy vote or vote online at the Annual Meeting. Abstentions and broker non-votes also will be counted towards the quorum requirement. If there is no quorum, either the chairperson of the Annual Meeting or a majority in voting power of the stockholders entitled to vote at the Annual Meeting, present or represented by proxy, may adjourn the Annual Meeting to another time or place.

### **How can I find out the results of the voting at the Annual Meeting?**

Voting results will be announced by the filing of a Current Report on Form 8-K within four business days after the Annual Meeting. If final voting results are unavailable at that time, we will file an amended Current Report on Form 8-K within four business days of the day the final results are available.

## CORPORATE GOVERNANCE

### Overview

Our Board is responsible for providing oversight over the Company's business and affairs, including the Company's strategic direction, as well as the management and financial and operational execution that can best perpetuate the success of the business and support the long-term interests of our stockholders. To effectively support its responsibilities, the Board has three principal board committees: an Audit Committee, a Compensation Committee and a Nominating and Corporate Governance Committee that each carry out responsibilities set out in specific committee charters approved by the Board and consistent with applicable requirements of the NYSE and the SEC. The Board has also established a Cybersecurity Committee and a Strategic Committee, each with specific committee charters approved by the Board. The Board and each Board committee may at their discretion retain outside advisors at the Company's expense in carrying out their responsibilities.

Our Board is committed to good corporate governance practices and seeks to represent stockholder interests through the exercise of sound judgment. To this end, the Board has adopted Corporate Governance Guidelines ("Guidelines") that provide specific provisions for the governance of the Board and Company. We have a Code of Business Conduct and Ethics ("Code of Conduct") applicable to all directors, officers and employees that is approved and adopted by our Board representing our commitment to the highest standards of ethics and integrity in the conduct of our business. Our bylaws, together with the Guidelines, the Board committee charters and our Code of Conduct serve as the governance and compliance framework of the Company.

On an annual basis, the Board and its committees review the Guidelines, Board committee charters and our Code of Conduct. The Guidelines, the written charter for each of the Audit Committee, Compensation Committee, Nominating and Corporate Governance Committee, Cybersecurity Committee, Strategic Committee and the Code of Conduct, as well as any amendments from time to time, may be found under "Governance" in the Investor Relations section of our website at [investor-relations.calix.com](http://investor-relations.calix.com). The referenced information on the Investor Relations section of our website is not a part of this Proxy Statement.

### *Leadership Structure of the Board*

Under our bylaws, our Board appoints our corporate officers, including the chief executive officer. We separate the roles of chief executive officer and chairman of the Board in recognition of the differences between the two roles. Mr. Russo serves as president and chief executive officer and is responsible for setting the strategic direction for and the day-to-day leadership and performance of Calix, while Mr. Listwin serves as chairman and provides guidance to the chief executive officer and management, sets the agenda for Board meetings and presides over meetings of the full Board. The Board does not have a policy on whether the role of the chairman and chief executive officer should be separate and, if it is to be separate, whether the chairman should be selected from the non-employee directors or be an employee and if it is to be combined, whether a lead independent director should be selected. As president and chief executive officer, Mr. Russo is not "independent" under the rules of the NYSE. Mr. Listwin, Calix's chairman, is an independent director as defined under the rules of the NYSE and has significant executive leadership, strategic and operational experience including multiple executive leadership roles at large publicly-traded technology companies. The Board believes that the current board leadership structure is best for Calix and its stockholders at this time. Our Nominating and Corporate Governance Committee periodically reviews and recommends to the Board the leadership structure of the Board.

## ***Board Independence***

Among other considerations, the Board strongly values independent board oversight as an essential component of strong corporate performance. On at least an annual basis, the Board undertakes a review of the independence of each director and considers whether any director has a material relationship with Calix. The Board evaluates each director under the independence rules of the NYSE and the non-employee director and audit committee independence requirements of the SEC.

Nine of the total ten current directors of our Board are independent under NYSE rules:

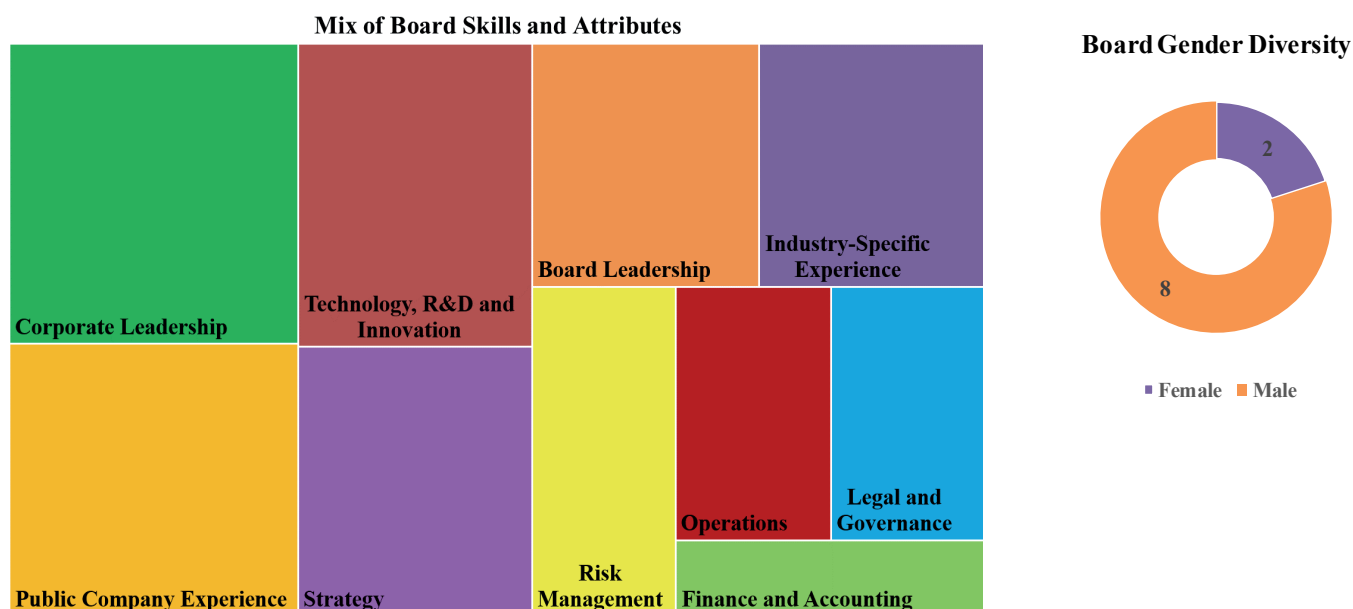
<u>Director</u>	<u>Independent</u>	<u>Director Since</u>
Christopher Bowick	Independent	2014
Kathy Crusco	Independent	2017
Kevin DeNuccio	Independent	2012
Michael Everett	Independent	2007
Don Listwin	Independent	2007
Kira Makagon	Independent	2017
Michael Matthews	Independent	2010
Kevin Peters	Independent	2014
J. Daniel Plants	Independent	2018
Carl Russo	Not Independent	1999

The NYSE rules require listed company boards have at least a majority of independent directors. Based on its evaluation, our Board determined that each of Messrs. Bowick, DeNuccio, Everett, Listwin, Matthews, Peters and Plants, and each of Meses. Crusco and Makagon, representing nine of Calix's ten current directors, are independent directors as defined under the NYSE rules. Mr. Russo, who has served as our president and chief executive office since 2002, is the only member of the Board who is not independent.

## ***Board Composition and Qualifications***

The Board assesses Board composition and qualifications at least annually. In assessing Board composition and qualifications, as well as in evaluating candidates for nomination or to fill vacancies on the Board, the Board seeks to maximize effectiveness of the Board and its committees to perpetuate the success of the Company, to best represent stockholder interests through the exercise of sound judgment and to assure continuity in the Board's oversight over the Company and management. The Board places significant emphasis on ensuring an appropriate mix of characteristics, skills and experience for the Board as a whole and as to each individual director. The Board, through its Nominating and Corporate Governance Committee, evaluates the skills and attributes of the Board as a whole and each individual director against the Company's needs and strategic direction. Among other considerations, the Board seeks to ensure an appropriate mix of expertise in executive and corporate leadership, diversity of background, perspective and experience (including diversity of gender, age and ethnicity), personal and professional integrity, ethics and values, financial and operational experience, depth of knowledge related to our business, business risks and operations, as well as expertise and insights in technologies, industries and markets relevant to the Company's strategic plans.

Our Board believes the current mix of skills, backgrounds, service period and attributes of our Board maximizes the effectiveness of our Board in its oversight responsibilities. More recently, in 2017, Mses. Makagon and Crusco joined our Board, with Ms. Makagon bringing substantial expertise in global platform strategy, technology, cybersecurity, operations and high-technology executive leadership and Ms. Crusco adding deep financial, accounting and operational expertise, public company leadership and governance experience. In 2018, Mr. Plants joined our Board, bringing expertise in corporate governance and leadership, as well as adding stockholder insight. The Board values the added diversity of gender, experience and perspective with the additions of Mses. Crusco and Makagon and Mr. Plants to the Board and intends to continue to include diversity in its assessment of Board composition and qualifications. A depiction of the mix of key skills and attributes representative of our current Board is as follows:



Our Board also considers board tenure in its review of Board composition. Our Board consists of a mix of board tenure. The average tenure of our independent directors is approximately six years. With respect to our overall Board composition, three directors have served tenures of less than five years, three directors have served tenures of five to ten years and three directors have served tenures of ten or more years.

<u>Director</u>	<u>Date Joined</u>
Christopher Bowick	July 2014
Kathy Crusco	September 2017
Kevin DeNuccio	September 2012
Michael Everett	August 2007
Don Listwin	January 2007
Kira Makagon	July 2017
Michael Matthews	December 2010
Kevin Peters	October 2014
J. Daniel Plants	March 2018
Carl Russo	December 1999

### Board Meetings and Committees

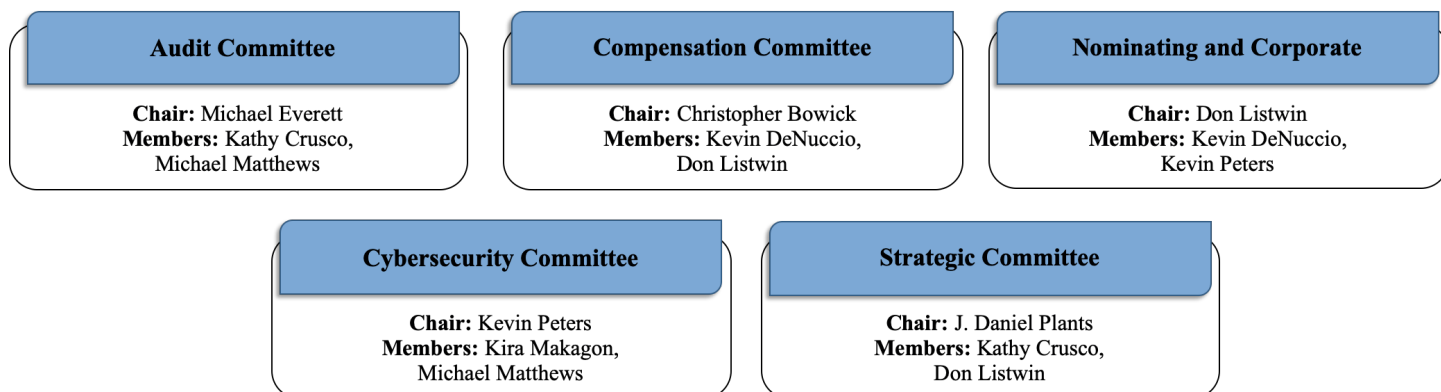
Our Board met six times during fiscal year 2019. During 2019, each Board member attended 75% or more of the total number of meetings of the Board and of the committees on which he or she served. In addition, our Board met in executive session without management present during its four regularly scheduled in-person meetings in 2019. Our chairman of the Board presides over the executive sessions of the Board.

We encourage our directors to attend our annual meetings of stockholders, and all of our directors attended our 2019 annual meeting of stockholders.



The Board has established three principal Board committees: the Audit Committee, the Compensation Committee and the Nominating and Corporate Governance Committee. In June 2017, the Board established a fourth Board committee, the Cybersecurity Committee, and in June 2018, the Board established a fifth Board committee, the Strategic Committee. The membership of all five Board committees are composed entirely of independent directors.

**Committees of the Board of Directors  
(All Committee Members are Independent)**



Our Audit Committee is established in accordance with Section 3(a)(58)(A) of the Exchange Act and is responsible for overseeing management of Calix’s risks relating to accounting matters, financial reporting and legal and regulatory compliance. Each director serving on our Audit Committee is independent within the meaning of the NYSE listing standards and applicable rules and regulations of the SEC.

The current members of our Audit Committee are Mr. Everett, Ms. Crusco and Mr. Matthews, with Mr. Everett serving as the Audit Committee chair. Our Board has determined that Mr. Everett and Ms. Crusco are each an “audit committee financial expert” as defined under the SEC rules. During 2019, the Audit Committee met eleven times and conducted private sessions with our independent registered public accounting firm and with individual members of management at its regularly scheduled meetings. The Audit Committee also meets regularly in executive session without management present at its scheduled meetings.

Our Audit Committee oversees our corporate accounting and financial reporting process. Among other matters, the Audit Committee evaluates the independent registered public accounting firm’s qualifications, independence and performance; determines the engagement of the independent registered public accounting firm; reviews and approves the scope of the annual audit and the audit fees; discusses with management and the independent registered public accounting firm the results of the annual audit and the review of Calix’s quarterly consolidated financial statements; approves the retention of the independent registered public accounting firm to perform any proposed permissible non-audit services; monitors the rotation of partners of the independent registered public accounting firm on Calix’s engagement team as required by law; reviews Calix’s critical accounting policies and estimates; oversees the internal audit function; oversees the Company’s management of the legal function and compliance program; and annually reviews the Audit Committee charter and the committee’s performance. The Audit Committee operates under a written charter pursuant to applicable standards and rules of the SEC and the NYSE. The Audit Committee’s written charter is available under “Governance” in the Investor Relations section of our website at [investor-relations.calix.com](http://investor-relations.calix.com).

In carrying out its responsibilities, the Audit Committee may at its discretion retain outside advisors at the Company’s expense.

**Compensation Committee**

Our Compensation Committee is responsible for overseeing the management of risks relating to Calix’s executive compensation plans and arrangements. Each director serving on our Compensation Committee is independent within the meaning of the NYSE listing standards and applicable rules and regulations of the SEC.

The current members of our Compensation Committee are Messrs. Bowick, DeNuccio and Listwin, with Mr. Bowick serving as the Compensation Committee chair. During 2019, the Compensation Committee met seven times.

Our Compensation Committee reviews and oversees policies relating to compensation and benefits of Calix executive officers and employees. The Compensation Committee reviews and approves corporate goals and objectives relevant to compensation of the chief executive officer and other executive officers, certifies performance against such corporate goals and objectives and sets the

compensation of our executive officers. The Compensation Committee also administers Calix's stock-based compensation plans, including the issuance of stock options and other awards under Calix's equity incentive award plan. The Compensation Committee reviews and evaluates, at least annually, the performance of the Compensation Committee and its members, including compliance of the Compensation Committee with its charter. The Compensation Committee operates under a written charter pursuant to applicable standards and rules of the SEC and the NYSE. The Compensation Committee's written charter is available under "Governance" in the Investor Relations section of our website at [investor-relations.calix.com](http://investor-relations.calix.com).

In carrying out its responsibilities, the Compensation Committee may at its discretion retain outside advisors at the Company's expense.

#### *Compensation Committee Interlocks and Insider Participation*

Each of Messrs. Bowick, DeNuccio and Listwin served on Calix's Compensation Committee for the entirety of 2019. None of the members of Calix's Compensation Committee is or was at any time during 2019 an officer or employee of Calix, was formerly an officer of Calix or has engaged in certain related transactions with Calix, as required to be disclosed by SEC regulations. None of Calix's executive officers currently serves or in the past year has served as a member of the board of directors or compensation committee of any other entity that has one or more executive officers serving on Calix's Board or Compensation Committee.

#### *Nominating and Corporate Governance Committee*

The Nominating and Corporate Governance Committee is responsible for overseeing management of Calix's risks associated with the composition of the Board and its committees and the independence of the Board and potential conflicts of interest as well as for overseeing matters of corporate governance. Each director serving on our Nominating and Corporate Governance Committee is independent within the meaning of the NYSE listing standards.

Our Nominating and Corporate Governance Committee currently consists of Messrs. DeNuccio, Listwin and Peters, with Mr. Listwin serving as the Nominating and Corporate Governance Committee chair. During 2019, the Nominating and Corporate Governance Committee met four times.

The Nominating and Corporate Governance Committee is responsible for making recommendations regarding candidates for directorships and the size and composition of the Board. In addition, the Nominating and Corporate Governance Committee is responsible for overseeing Calix's Corporate Governance Guidelines and reporting and making recommendations concerning governance matters. The Nominating and Corporate Governance Committee operates under a written charter pursuant to applicable standards and rules of the SEC and the NYSE. The Nominating and Corporate Governance Committee's written charter is available under "Governance" in the Investor Relations section of our website at [investor-relations.calix.com](http://investor-relations.calix.com).

In carrying out its responsibilities, the Nominating and Corporate Governance Committee may at its discretion retain outside advisors at the Company's expense.

#### *Director Nominations*

The Nominating and Corporate Governance Committee considers director candidate recommendations from a variety of sources, including nominees recommended by stockholders. The Nominating and Corporate Governance Committee may also retain an executive search firm to assist in identifying, screening and facilitating the interview process of director candidates. The Nominating and Corporate Governance Committee may take into account minimum qualifications including, among other factors the Committee may deem appropriate: diversity of personal and professional background, perspective and experience, including diversity of gender, age and ethnicity; personal and professional integrity, ethics and values; executive experience in corporate management, operations or finance; experience relevant to the Company's business and industry and with relevant social policy concerns; experience as a board member or executive officer of another publicly-held company; relevant academic expertise; practical and mature business judgment; promotion of a diversity of business or career experience relevant to the success of the Company; and any other relevant qualifications, attributes or skills, which will be evaluated in the context of the Board as a whole, with the objective of assembling a board that can best perpetuate the success of the business and represent stockholder interests through the exercise of sound judgment using its diversity of experience in these various areas. In addition, the Nominating and Corporate Governance Committee expects any candidate for the Board to be able to represent the interests of the Company's stockholders as a whole rather than any special interest or constituency.

Each of our nominees standing for election at this 2020 Annual Meeting was recommended to the Board by the Nominating and Corporate Governance Committee based on the Committee's evaluation as set forth above.

The policy of the Nominating and Corporate Governance Committee is to consider properly submitted director candidates recommended by stockholders. For a stockholder to make any nomination for election to the Board at an annual meeting, the stockholder must provide notice to Calix, which must be received at Calix's principal executive office not less than 90 days and not more than 120 days prior to the one-year anniversary of the preceding year's annual meeting; provided, that if the date of the annual meeting is more than 30 days before or more than 60 days after such anniversary date, the stockholder's notice must be delivered not later than 90 days prior to the date of the annual meeting or, if later, the 10<sup>th</sup> day following the date on which public disclosure of the annual meeting date is first made. Further updates and supplements to such notice may be required at the times and in the forms required under our bylaws. As set forth in our bylaws, submissions must include the name and address of the proposed nominee, information regarding the proposed nominee that is required to be disclosed in a proxy statement or other filings in a contested election under Section 14(a) of the Exchange Act, information regarding the proposed nominee's indirect and direct interests in shares of Calix's common stock, and a completed and signed questionnaire, representation and agreement of the proposed nominee. Our bylaws also specify further requirements as to the form and content of a stockholder's notice. We recommend that any stockholder wishing to make a nomination for director review a copy of our bylaws, as amended and restated to date, which is available, without charge, from our Corporate Secretary at 2777 Orchard Parkway, San Jose, California 95134. The presiding officer at the applicable annual meeting may, if the facts warrant, determine that a nomination was not properly made in accordance with the foregoing and our bylaws, in which case the defective nomination may be disregarded.

### ***Cybersecurity Committee***

The Cybersecurity Committee was constituted by the Board in June 2017 as a Board committee of independent directors responsible for overseeing the management of enterprise security over cyber risks, overall data and security breach programs and readiness and our program for data and security breach response and management. The Cybersecurity Committee also oversees risk management associated with the Company's business continuity and disaster recovery program. Each director serving on our Cybersecurity Committee is independent within the meaning of the NYSE listing standards.

Calix's Cybersecurity Committee currently consists of Mr. Peters, Ms. Makagon and Mr. Matthews, with Mr. Peters serving as the Cybersecurity Committee chair. During 2019, the Cybersecurity Committee met four times.

Our Cybersecurity Committee oversees Calix's management of risks associated with cybersecurity threats and reviews with management at each meeting the Company's assessment of cybersecurity threats and risks, data security programs, and management and mitigation of potential and any actual cybersecurity and information technology risks and breaches. Among other responsibilities, the Cybersecurity Committee also reviews and provides oversight of: the effectiveness of Calix's data breach incident response plan; Calix's cybersecurity risk systems against industry benchmarks and best practices; Calix's information security planning and resources to manage changes in Calix's cybersecurity threat landscape, including assessments of the potential impact of cybersecurity risk on Calix's business, operations and reputation; and Calix's business continuity and disaster recovery program. The Cybersecurity Committee's written charter is available under "Governance" in the Investor Relations section of our website at [investor-relations.calix.com](http://investor-relations.calix.com).

In carrying out its responsibilities, the Cybersecurity Committee may at its discretion retain outside advisors at the Company's expense.

### ***Strategic Committee***

The Board constituted a Strategic Committee in June 2018 as a committee of independent directors with responsibility to oversee our business strategy, strategic direction and objectives.

Our Strategic Committee currently consists of Ms. Crusco and Messrs. Listwin and Plants, with Mr. Plants serving as the Strategic Committee Chair since May 2019. Mr. Listwin previously served as chair of the Strategic Committee from its formation until May 2019.

Among other duties, the Strategic Committee provides oversight over our long-term strategic plan to support our objectives and to create long-term stockholder value and evaluates potential strategic actions and financing strategies. The Strategic Committee also works with management to monitor internal and external risks, threats and potential disruptions to our strategic plan. The Strategic Committee's written charter is available under "Governance" in the Investor Relations section of our website at [investor-relations.calix.com](http://investor-relations.calix.com).

In carrying out its responsibilities, the Strategic Committee may at its discretion retain outside advisors at the Company's expense.

## **Annual Self-Assessment and Board Education**

Annually, the Board and each Board committee conduct a self-assessment to assess the performance and effectiveness of the Board and Board committees, as well as to provide feedback on individual directors. The chairman of the Board leads discussions and actions related to the self-assessments. The Board is committed to the ongoing director education and advancement. To that end, the Company has a written Board education policy and provides its directors with membership in the National Association of Corporate Directors (“NACD”) to assist them in remaining current with best practices and developments in board oversight and corporate governance, as well as opportunities to participate in NACD fellowship programs on leading boardroom practices and commitment to boardroom excellence.

## **Board Oversight Over Risks**

The Board has an active role, as a whole and also at the committee level, in overseeing management of Calix’s risks, including financial risks, cybersecurity risks, credit and liquidity risks, legal and regulatory risks and operational risks, including risks that may impact continuity of our business in the event of disruptions or disasters that may materially impact our business. The Board is responsible for general oversight of risks and regularly reviews information from management who is responsible for the day-to-day processes and operations to manage and mitigate risks.

The Audit Committee has primary responsibility for oversight over management’s processes over financial, credit and liquidity, legal and regulatory risks, including the Company’s compliance program; the Cybersecurity Committee oversees Calix’s overall business continuity and disaster recovery, including management of risks associated with cybersecurity and data breach threats; the Compensation Committee is responsible for risk assessments over Calix’s compensation practices and policies; and the Strategic Committee has oversight over internal and external risks to our strategic plan. While Board committees have responsibility for evaluating certain areas of risks and overseeing the management of such risks, the entire Board retains overall responsibility and remains regularly informed through committee reports about such risks.

### *Code of Conduct and Compliance*

We are committed to the conduct of our business to the highest standards of ethics and integrity as reflected in our Code of Conduct. All of our directors, officers and employees annually review our Code of Conduct and are expected to comply with our Code of Conduct, including our principal executive officer, principal financial officer, principal accounting officer and persons performing similar functions. Under our Code of Conduct, we have established a compliance hotline that is operated by an independent third party to receive complaints about any accounting, internal control or auditing matters as well as compliance, ethical or other matters of concern (including on an anonymous basis where permitted under applicable law). Annually, our Audit Committee reviews our Code of Conduct and related policies and processes with management. Our Code of Conduct is available under “Governance” in the Investor Relations section of our website at [investor-relations.calix.com](http://investor-relations.calix.com).

### *Risk Assessment of Compensation Practices and Policies*

We have assessed, with input from outside consultants, and discussed with the Compensation Committee our compensation policies and practices for our employees as they relate to risk management. Based upon this assessment, we believe that any risks arising from such policies and practices are not reasonably likely to have a material adverse effect on the Company.

Our employees’ base salaries are fixed in amount and thus we do not believe that they encourage excessive risk-taking. While performance-based cash incentives and sales-based incentives focus on achievement of short-term or annual goals, we believe that our performance-based cash incentives and sales-based incentives appropriately balance risk and the desire to focus employees on specific goals important to our growth and long-term success. We believe these programs also do not encourage unnecessary or excessive risk taking as the potential payout is limited, with payouts on performance-based cash incentives for our executives generally limited to 100% of target and payouts of greater than target based on limited incremental achievement above 100% of target. Further, such programs represent only one portion of the total compensation opportunities available to most employees, and we believe that our internal policies and controls help mitigate this risk.

A significant portion of the compensation provided to senior management is in the form of long-term equity-based incentives that are conditioned on achievement of one or more annual financial performance targets that we believe are important to help further align management’s interests with those of our stockholders. We do not believe that these equity-based incentives encourage unnecessary or excessive risk taking because their ultimate value is tied to our financial performance and stock price.

The statements regarding the risks arising from our compensation policies and practices contain forward-looking statements that involve substantial risks and uncertainties. We have based these forward-looking statements largely on our current expectations and projections about future events and financial trends that we believe may affect our financial condition, results of operations, business strategy and financial needs.

### **Communications with the Board**

Stockholders and other interested parties may communicate with the Board or any specified individual directors. Such correspondence should be sent to the attention of the Board or specific directors, *c/o* Corporate Secretary, 2777 Orchard Parkway, San Jose, California 95134.

## SECURITY OWNERSHIP OF CERTAIN BENEFICIAL OWNERS AND MANAGEMENT

The following table presents information as to the beneficial ownership of our common stock as of March 18, 2020 for:

- each stockholder known by us to be the beneficial owner of more than 5% of our common stock;
- each of our directors;
- each NEO as set forth in the Summary Compensation Table in this Proxy Statement; and
- all current executive officers and directors as a group.

Beneficial ownership is determined in accordance with the rules of the SEC and generally includes voting or investment power with respect to securities. Unless otherwise indicated below, to our knowledge, the persons and entities named in the table have sole voting and sole investment power with respect to all shares beneficially owned, subject to community property laws where applicable. Shares of our common stock subject to options that are currently exercisable or exercisable within 60 days of March 18, 2020 and restricted stock units (“RSUs”) that vest within 60 days of March 18, 2020, are deemed to be outstanding and to be beneficially owned by the person holding the options or RSUs for the purpose of computing the percentage ownership of that person, but are not treated as outstanding for the purpose of computing the percentage ownership of any other person.

Percentage ownership of our common stock in the table is based on 56,633,378 shares of our common stock outstanding (exclusive of treasury shares) on March 18, 2020. Unless otherwise indicated, the address of each of the individuals and entities named below is c/o Calix, Inc., 2777 Orchard Parkway, San Jose, California 95134.

Name of Beneficial Owner	Shares of Common Stock Beneficially Owned (1)				
	Common Stock	Options Exercisable Within 60 Days	RSUs Vesting Within 60 Days	Total Number of Shares Beneficially Owned	Percent
<b>5% Stockholder:</b>					
BlackRock, Inc. 55 East 52nd Street New York, NY 10055	4,447,494(2)	—	—	4,447,494	8.00%
Dimensional Fund Advisors LP Dimensional Place 6300 Bee Cave Road, Building One Austin, TX 78746	2,821,796(3)	—	—	2,821,796	5.09%
<b>Named Executive Officers:</b>					
Carl Russo	6,127,855(4)	420,000	—	6,547,855	11.56%
Cory Sindelar	63,000	267,750	—	330,750	*
Michael Weening	10,374	508,000	—	518,374	*
<b>Non-Employee Directors:</b>					
Don Listwin	948,852(5)	7,500	21,148	977,500	1.73%
J. Daniel Plants	651,493(6)	—	21,148	672,641	1.19%
Kevin DeNuccio	287,655(7)	—	21,148	308,803	*
Michael Everett	144,081	10,000	21,148	175,229	*
Kevin Peters	92,403	—	21,148	113,551	*
Christopher Bowick	75,462	—	21,148	96,610	*
Kathy Crusco	45,256	—	21,148	66,404	*
Michael Matthews	39,260	12,500	21,148	72,908	*
Kira Makagon	30,650	—	21,148	51,798	*
<b>All Current Directors and Executive Officers as a Group (12 persons)</b>	8,516,341	1,225,750	190,332	9,932,423	17.54%

\* Represents beneficial ownership of less than one percent of the outstanding shares of common stock.

- (1) Shares shown in the table include shares held in the beneficial owner’s name or jointly with others, or in the name of a bank, nominee or trustee for the beneficial owner’s account.
- (2) The information was based upon a Schedule 13G filed with the SEC on February 5, 2020 by BlackRock, Inc. BlackRock, Inc. has sole voting with respect to 4,197,644 of these shares and sole dispositive power over 4,447,494 of these shares. The shares reported as being beneficially held by BlackRock, Inc. may be held by one or more of its subsidiaries: BlackRock Advisors,

LLC; BlackRock Asset Management Canada Limited; BlackRock Fund Advisors; BlackRock Institutional Trust Company, N.A.; Blackrock Financial Management, Inc.; BlackRock Investment Management, LLC; Blackrock Investment Management (UK) Limited; or Blackrock Japan Co., Ltd.

- (3) The information was based upon a Schedule 13G/A filed with the SEC on February 12, 2020 by Dimensional Fund Advisors LP. Dimensional Fund Advisors LP has sole voting power with respect to 2,682,528 of these shares, sole dispositive power with respect to 2,821,796 of these shares. Dimensional Fund Advisors LP disclaims beneficial ownership of the shares.
- (4) Includes 2,239,188 shares held by The Crescentico Trust, Carl Russo, Trustee; 275,633 shares held by Equanimous Investments; and 284,653 shares held by Calgrat Partners, L.P. The managing members of Equanimous Investments are Carl Russo and Tim Pasquinelli. The managing partner of Calgrat Partners, L.P. is Tim Pasquinelli. Mr. Russo and Mr. Pasquinelli may be deemed to have shared voting and investment power over the shares held by Equanimous Investments and Calgrat Partners, L.P., as applicable. Mr. Russo and Mr. Pasquinelli each disclaim beneficial ownership of such shares, except to the extent of his pecuniary interest therein. The address of each of The Crescentico Trust, Carl Russo, Trustee; Equanimous Investments; and Calgrat Partners, L.P. is 1960 The Alameda #150, San Jose, California 95126.
- (5) Includes 235,000 shares held by No Mas Ninos, L.P. Mr. Listwin is a general partner of No Mas Ninos, L.P. and may be deemed to have shared voting and investment power over the shares held by the partnership.
- (6) Includes 623,907 shares held by Voce Capital Management LLC. Mr. Plants is a managing member of Voce Capital Management LLC and disclaims beneficial ownership of such shares, except to the extent of his pecuniary interest therein.
- (7) Includes 3,900 shares held in an individual retirement account by Mr. DeNuccio's spouse and 10,000 shares held by Mount Madonna Ranch LLC. Mr. DeNuccio is the manager of Mount Madonna Ranch LLC.

### **DELINQUENT SECTION 16(A) REPORTS**

Section 16(a) of the Exchange Act requires our directors and executive officers, and persons who own more than 10% of a registered class of our equity securities, to file with the SEC initial reports of ownership and reports of changes in ownership of our common stock and other equity securities. Officers, directors and greater than 10% stockholders are required by SEC regulations to furnish us with copies of all Section 16(a) forms they file. We believe that during fiscal year 2019, our directors and Section 16 officers complied with all Section 16(a) filing requirements, except as to one late Form 4 for Mr. Matthews to report a transaction in May 2019. In making the above statements, we have relied upon the written representations of our directors and Section 16 officers.

**PROPOSAL NO. 1**  
**ELECTION OF DIRECTORS**

Our Amended and Restated Certificate of Incorporation provides that our Board shall be divided into three classes, with the directors in each class having a three-year term. Unless the Board determines that vacancies (including vacancies created by increases in the number of directors) shall be filled by the stockholders, and except as otherwise provided by law, vacancies on the Board may be filled only by the affirmative vote of a majority of the remaining directors. A director elected by the Board to fill a vacancy (including a vacancy created by an increase in the number of directors) shall serve for the remainder of the full term of the class of directors in which the vacancy occurred and until such director's successor is elected and qualified.

As of April 1, 2020, the date this Proxy Statement is made available, the Board consists of ten directors, divided into the following three classes:

- **Class I directors:** Kathy Crusco, Kevin DeNuccio and Michael Everett, whose current terms will expire at the 2020 Annual Meeting;
- **Class II directors:** Don Listwin, Kevin Peters and J. Daniel Plants, whose current terms will expire at the 2021 Annual Meeting; and
- **Class III directors:** Christopher Bowick, Kira Makagon, Michael Matthews and Carl Russo, whose current terms will expire at the 2022 Annual Meeting.

Our Nominating and Corporate Governance Committee recommended, and our Board has approved, Kathy Crusco, Kevin DeNuccio and Michael Everett as nominees for election to the Board as Class I directors at the 2020 Annual Meeting. Ms. Crusco and Messrs. DeNuccio and Everett have each agreed to stand for reelection as Class I directors. Each director to be elected will hold office from the date of such director's election by the stockholders until the third subsequent annual meeting of stockholders or until his or her successor is elected and has been qualified, or until such director's earlier death, resignation or removal. Shares of common stock represented by executed proxies will be voted, if authority to do so is not withheld, for the election of the three Class I director nominees named above.

The Board expects each of the nominees to be available for election to the Board at the 2020 Annual Meeting. In the event that any nominee should be unable to serve or for good cause will not serve, such shares will be voted for the election of such substitute nominee as the Board may propose. Each person nominated for election has agreed to serve if elected, and management has no reason to believe that any nominee will be unable to serve. Directors are elected by a plurality of the votes cast at the meeting.

**Our Director Nominees and Board of Directors**

At least annually our Nominating and Corporate Governance Committee reviews the skills and characteristics of directors and the mix of skills and experience and diversity of the Board in the context of our business strategy, growth initiatives and our customers and target market, our business and operating requirements and the long-term interests of our stockholders. In doing so, the Nominating and Corporate Governance Committee seeks a board composition that can best perpetuate the success of the business and represent stockholder interests. The Committee also considers the tenure of our directors and seeks to maintain a balance of longer tenured directors with deep institutional knowledge and newer directors who bring new perspectives to the Board. See "*Board Meetings and Committees — Nominating and Corporate Governance Committee*" above regarding the Nominating and Corporate Governance Committee's evaluation and selection of director nominees.

The Board believes that all the nominees for reelection are highly qualified and have the skills and experience required for effective service on the Board. Ms. Crusco's experience centers around financial, accounting and operational leadership roles at technology and platform companies, and she brings a combination of financial, operational and strategic expertise. Mr. DeNuccio brings deep telecommunications industry and substantial chief executive, strategic and governance experience at global publicly-held companies. Mr. Everett has extensive financial, legal and risk oversight experience, having served as chief financial officer at global publicly-held companies and as a corporate partner at a large international law firm. Ms. Crusco and Mr. Everett serve on our Audit Committee as our audit committee financial experts. We believe the skills and attributes of these nominees complement the expertise, background and experience of our other continuing directors.

Biographical information describing the qualifications and relevant experience, skills and attributes of our Class I nominees and our other current directors who will continue in office after the Annual Meeting as of April 1, 2020 is set forth below.



## Nominees for Election to a Three-Year Term Expiring at the 2023 Annual Meeting of Stockholders

### **Kathy Crusco**

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#### **Independent director**

Ms. Crusco brings to our Board a wealth of experience instilling operational rigor at leading technology companies.

**Age:** 55

**Director since** 2017

#### **Calix Board committees:**

- Audit (Audit Committee financial expert)
- Strategic

#### **Other current directorships:**

- Poly (member of audit and compensation committees)
- QAD Inc. (member of audit and corporate governance committees)
- Code42 Software, Inc. (private)
- Duck Creek Technologies LLC (private)

From December 2017 until January 2020, Ms. Crusco served as executive vice president and chief financial officer at Kony, Inc., a privately-held mobile applications solutions provider, which was acquired by Temenos, a banking software company.

From August 2016 until November 2017, Ms. Crusco served as executive vice president, chief operating officer and chief financial officer at Epicor Software Corporation, a privately-held software company. Ms. Crusco joined Epicor in May 2011 when the company merged with Activant Solutions Inc., a business management software company where she served as senior vice president and chief financial officer from May 2007 to November 2010, then as executive vice president and chief financial officer. Before joining Activant, she worked for Polycom from 2002 to 2007, rising to the role of vice president of worldwide finance during her tenure. Ms. Crusco has also held a variety of financial roles at Documentum, Inc., Adaptec, Inc. and Price Waterhouse LLP.

Ms. Crusco holds a Bachelor of Science in Business Administration with an emphasis in accounting from California State University, Chico.

### **Kevin DeNuccio**

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#### **Independent director**

Mr. DeNuccio brings to our Board over 25 years of leadership, strategic and governance experience at communications technology companies and service providers worldwide. Mr. DeNuccio is presently general partner of Wild West Capital LLC, a private investment firm which he co-founded in July 2012.

**Age:** 60

**Director since** 2012

#### **Calix Board committees:**

- Compensation
- Nominating and Corporate Governance

#### **Other current directorships:**

- Juniper Networks, Inc. (member of compensation committee)
- Zededa (private)

From February 2014 until April 2017, Mr. DeNuccio served as president, chief executive officer and a member of the board of directors of Violin Memory, Inc., a publicly-held data storage company, which filed a voluntary petition for Chapter 11 bankruptcy protection in December 2016 and was subsequently acquired by a unit of Soros Fund Management LLC. Mr. DeNuccio served as chief executive officer of Metaswitch Networks, a telecommunications hardware and software company, from February 2010 until June 2012. From January 2007 until the present, Mr. DeNuccio has also worked as a private equity investor, both individually and through Wild West Capital. Mr. DeNuccio served as chief executive officer of Redback Networks from August 2001 until its acquisition by Ericsson in January 2007. From 1995 to 2001, he held a number of executive positions at Cisco Systems, Inc., including senior vice president of worldwide service provider operations. Prior to joining Cisco, Mr. DeNuccio was founder, president, and chief executive officer of Bell Atlantic Network Integration, a wholly owned subsidiary of Bell Atlantic (now Verizon Communications). He has also held senior management positions at both Unisys Corporation's and Wang Laboratories' network integration and worldwide channel partner businesses. Mr. DeNuccio previously served on numerous public and private boards of directors, including Sandisk, Redback and JDS Uniphase Corporation, each a publicly-held company.

Mr. DeNuccio has a Master of Business Administration from Columbia University and a Bachelor's degree in Finance from Northeastern University.

**Independent director****Age:** 70**Director since** 2007

Mr. Everett brings to our Board over 40 years of experience in senior management and financial operations at communications technology companies, as well as his background as a corporate attorney. Mr. Everett was named chief financial officer of the year by San Francisco Business Times in 2007 and is admitted to the State Bar of California and the New York Bar.

**Calix Board committees:**

Audit (Chair and Audit Committee financial expert)

From May 2007 until his retirement in December 2008, Mr. Everett served as vice president of finance at Cisco Systems, Inc. From April 2003 to May 2007, Mr. Everett was chief financial officer of WebEx Communications, Inc., a web collaboration service provider that was acquired by Cisco. From 2001 to 2003, Mr. Everett served as chief financial officer of Bivio Networks, Inc., a network appliance company. In 2001, Mr. Everett served as chief financial officer of VMware, Inc., an infrastructure software company. From February 1997 to November 2000, Mr. Everett served as executive vice president and chief financial officer of Netro Corporation, a broadband wireless technology provider. Mr. Everett served in several senior management positions at Raychem Corporation from 1987 through 1996, including senior vice president and chief financial officer from August 1988 to August 1993, and was involved in the company's early fiber to the home initiatives. Before joining Raychem Corporation, Mr. Everett served as a partner in the law firm of Heller, Ehrman, White & McAuliffe LLC. He currently serves on the advisory boards of Moxtra, Inc. and Zuora, Inc. and as chair and trustee of the Santa Fe Chamber Music Festival. Mr. Everett also formerly served on the board of directors and as chairman of the audit committee of Smart Focus, Ltd., a privately-held marketing analytics company, and on the board of directors of Broncus Technologies, Inc., a privately-held medical technology company, including as chairman of the audit committee and member of the compensation committee.

**Other current directorships:**

None

Mr. Everett holds a Juris Doctor from the University of Pennsylvania Law School and a Bachelor of Arts in History from Dartmouth College.

**THE BOARD OF DIRECTORS RECOMMENDS A VOTE "FOR" THE ELECTION OF EACH CLASS I DIRECTOR NOMINEE NAMED ABOVE.**

## Directors Continuing in Office Until the 2021 Annual Meeting of Stockholders

**Don Listwin** Chairman of the Board  
Nominating and Corporate Governance Committee Chair

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**Independent director**

**Age:** 61

**Director since** 2007

Mr. Listwin has served as chairman of our Board since July 2007 and brings over 30 years of experience in the networking industry to our Board. Since January 2018, Mr. Listwin has served as chief executive officer of iSchemaView, a privately-held medical device company.

**Calix Board committees:**

- Compensation
- Nominating and Corporate Governance (Chair)
- Strategic

Mr. Listwin founded BelizeKIDS.org in 2016, a non-profit organization focused on helping children in Belize, and Canary Foundation in 2004, a non-profit organization devoted to the early detection of cancer, and has served on the board of directors of both organizations since their inception. From January 2008 to January 2009, Mr. Listwin served as chief executive officer of Sana Security, Inc., a security software company, which was acquired by AVG Technologies. From September 2000 to October 2004, Mr. Listwin served as chief executive officer of Openwave Systems Inc., a leader in mobile internet infrastructure software. From August 1990 to September 2000, he served in various capacities at Cisco Systems, Inc., most recently as executive vice president. Mr. Listwin formerly served on the board of directors of Violin Memory, Inc., Isilon Systems, Inc., Openwave Systems Inc. (now known as Unwired Planet, Inc.), TIBCO Software Inc., Redback Networks, Inc. and E-Tek Dynamics Inc., each a publicly-held company. Mr. Listwin also previously served as a member of the board of scientific advisors of the National Cancer Institute.

**Other current directorships:**

- AwareX, Inc. (private)
- iSchemaView (private)
- D-Wave Systems, Inc. (private)
- POET Technologies Inc. (member of audit and compensation committees)
- Robin Systems, Inc. (private)
- Teradici Corporation (private)

Mr. Listwin holds an honorary Doctorate of Law from the University of Saskatchewan and a Bachelor of Science in Electrical Engineering from the University of Saskatchewan.

**Kevin Peters**

Cybersecurity Committee Chair

**Independent director**

**Age:** 56

**Director since** 2014

Mr. Peters brings to our Board a wealth of leadership experience gained over the course of a 28-year career with AT&T, one of world's largest communications companies. Since February 2018, Mr. Peters has served as president and chief executive officer of NetNumber Inc., a privately-held technology company.

**Calix Board committees:**

- Cybersecurity (Chair)
- Nominating and Corporate Governance

**Other current directorships:**

- AwareX, Inc. (private)
- NetNumber Inc. (private)
- UniTek Global Services, Inc. (private)

Mr. Peters formerly served as executive vice president, global customer service for AT&T, Inc., from 2012 until his retirement in 2014. Mr. Peters joined AT&T in 1986, and held various functional roles, including in information technology, sales, engineering and finance until 2000. Mr. Peters then served as vice president, local network planning and project management in 2001. During his subsequent career at AT&T, Mr. Peters served in the following capacities: senior vice president, network engineering from 2003 until 2004; senior vice president, global network technology program management, AT&T Labs in 2005; senior vice president-enterprise systems and software engineering in 2006; executive vice president, global network operations from 2006 until 2009; and chief marketing officer, business from 2010 until 2011. Since retiring, Mr. Peters has provided advisory services to a number of companies, including Accenture, a global management consulting and professional services firm, J&L Group, a privately-held telecommunications company and the Howe School of Business, Stevens Institute of Technology. In addition to the other current directorships described, Mr. Peters also currently volunteers and serves on the board of directors of the Crandon Lakes Country Club and the Yogi Berra Museum and Learning Center.

Mr. Peters holds a Master of Business Administration with honors (Beta Gamma Sigma) from Columbia University, a Master of Science in Telecommunications Engineering from Stevens Institute of Technology and a Bachelor of Science in Psychology from Fairfield University, and attended the Harvard University Advanced Management Program.

**Independent director****Age:** 53**Director since** 2018**Calix Board committees:**

Strategic (Chair)

**Other current directorships:**

Cutera, Inc. (chairman of the board and member of compensation committee)

Mr. Plants brings to our Board extensive experience as a successful investor, director and advisor to public companies. Currently, Mr. Plants serves as chief investment officer of Voce Capital Management LLC, an investment advisor that he founded in 2011.

From July 2007 until May 2009, Mr. Plants served as managing director and head of communications technology and media for Needham & Company LLC, an investment banking and asset management firm. Prior to joining Needham & Company, Mr. Plants held a number of executive leadership roles at investment banking firms Goldman Sachs and JPMorgan Chase. Mr. Plants also served on the board of directors of Destination Maternity Corporation, a maternity apparel retailer, from November 2014 until December 2016.

Mr. Plants holds a Juris Doctor from the University of Michigan Law School and a Bachelor of Arts in economics from Baylor University. Mr. Plants is also admitted to the New York Bar.

**Directors Continuing in Office Until the 2022 Annual Meeting of Stockholders****Christopher Bowick**

Compensation Committee Chair

**Independent director****Age:** 64**Director since** 2014**Calix Board committees:**

Compensation (Chair)

**Other current directorships:**

- Minerva Networks (private)
- ComSonics, Inc. (private)

Mr. Bowick brings to our Board extensive experience in advising and managing companies in the technology and telecommunications industries. Mr. Bowick is principal of The Bowick Group, LLC, where he provides technology, product, business and executive-development advice and counsel to clients in the cable television and telecommunications industries.

From 1998 until his retirement in 2009, Mr. Bowick held various positions at Cox Communications. Mr. Bowick joined Cox in 1998 as vice president, technology development, and was named senior vice president of engineering and chief technical officer in 2000. Mr. Bowick retired as chief technology officer of Cox in June of 2009. At Cox, Mr. Bowick was responsible for strategic technology planning, day-to-day technical operations and the development and deployment of technology solutions for the company's video, voice, high speed data and wireless products, including the development and deployment of telecommunications services, such as circuit-switched telephone, voice over IP, high-speed data, digital video, HDTV, video-on-demand and interactive television. Mr. Bowick was also responsible for network engineering and network operations for Cox's nation-wide network infrastructure including its national backbone, Metropolitan Area Networks and HFC networks. Prior to joining Cox, Mr. Bowick served as group vice president of technology and chief technical officer for Jones Intercable, Inc., while simultaneously serving as president of Jones Futurex, a designer and manufacturer of triple DES, PC-based hardware encryption devices and provider of contract manufacturing services. Prior to Jones, Mr. Bowick served as vice president of engineering for Scientific Atlanta's Transmission Systems Business Division, and as a design engineer for Rockwell International, Collins Avionics Division. Mr. Bowick also formerly served on the board of directors of VIXS Systems Inc., a publicly-held company.

Mr. Bowick holds a Master of Business Administration from the University of Colorado and a Bachelor of Science in Electrical Engineering from the Georgia Institute of Technology. Mr. Bowick is a National Association of Corporate Director ("NACD") Governance Fellow under the NACD's director credential program.

## Kira Makagon

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### **Independent director**

**Age:** 56

**Director since** 2017

### **Calix Board committees:**

Cybersecurity

### **Other current directorships:**

None

Ms. Makagon brings to the Board extensive experience in global platform strategy, technology, cybersecurity, operations and high technology executive leadership. Since July 2019, Ms. Makagon has served as executive vice president and chief innovation officer at RingCentral, Inc., a publicly-held provider of cloud-based global collaborative communications solutions, and previously served as RingCentral's executive vice president of innovation from August 2012 to July 2019.

From January 2012 to July 2012, Ms. Makagon served as the senior vice president of products of iCrossing, a global digital marketing agency owned by Hearst Corporation. From June 2009 to December 2011, she held various executive leadership roles at Red Aril, Inc., an online media technology company, serving as founder, chief executive officer and member of the board of directors from June 2009 to April 2010, and president from April 2010 to December 2011. Prior to joining Red Aril, Ms. Makagon held various executive leadership roles at NebuAd, Inc., an online data and media company, serving as co-founder and president from September 2006 to July 2008, chief executive officer from August 2008 to December 2008, and consultant and board member from January 2009 to May 2009. Ms. Makagon has also served in various roles at Exigen Group, a provider of SaaS workflow platforms and call center solutions, including president, ventures and alliances, and executive vice president, marketing and business development, as well as serving on the board of directors. Prior to that, Ms. Makagon co-founded and held key executive positions in flagship online marketing and CRM companies, including Octane Software, which was acquired by E.piphany, and Scopus Technology, where she brought multiple generations of CRM products to market.

Ms. Makagon holds a Bachelor of Science in computer science and a Master of Business Administration from the University of California, Berkeley.

## Michael Matthews

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### Independent director

**Age:** 63

**Director since** 2010

### Calix Board committees:

- Audit
- Cybersecurity

### Other current directorships:

- AwareX, Inc. (private)
- NetNumber, Inc. (private)

Mr. Matthews is a marketing and business strategy executive with significant exposure to the telecommunications industry and to global markets. Mr. Matthews brings to our Board over 30 years of experience in the technology industry, and a strong background in telecommunications, software, technology and innovation. Mr. Matthews currently serves as an advisor to the TMForum, a global trade association with over 850 member companies including communication service providers, digital service providers and enterprises. Since January 2016, Mr. Matthews has served as chief executive officer and chairman of AwareX, Inc., a privately-held software technology company.

From January 2012 through September 2013, Mr. Matthews served as chief corporate development officer for the information technology company AGT International GMBH, where he was responsible for AGT's research and development, new business ventures and marketing. From September 2008 to December 2011, Mr. Matthews served as head of strategy and business development at Nokia Siemens Networks, a telecommunications company, where he directed the company's strategic planning and investments, mergers and acquisitions program and strategic alliances and partnerships. From February 2003 to January 2008, Mr. Matthews served as chief marketing officer at Amdocs Inc., a publicly-held software and services provider. From September 1999 to March 2002 he served as the executive vice president, sales and marketing, at Groove Networks, a privately-held software company which was acquired by Microsoft Corporation. Prior to this, he served in leadership positions across technology companies in the United States and Australia such as Platinum Technology, Inc. a database management software company which was acquired by Computer Associates, Inc.; Sterling Software, a software company which was acquired by Computer Associates, Inc.; and Digital Equipment Corporation, which was acquired by Compaq Computer Corporation.

Mr. Matthews has a degree in Civil Engineering from the University of Queensland, Australia.

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## Carl Russo

President and Chief Executive Officer

### Director

**Age:** 63

**Director since** 1999

### Calix Board committees:

None

### Other current directorships:

None

Mr. Russo has served as Calix's president and chief executive officer since December 2002. As Calix's president and chief executive officer, Mr. Russo brings substantial expertise and knowledge regarding our business strategy, markets and operations to Calix's board of directors. He also brings to the Board an extensive background in the telecommunications and networking technology industries.

From November 1999 to May 2002, Mr. Russo served as vice president of optical strategy and group vice president of optical networking of Cisco Systems, Inc. From April 1998 to October 1999, Mr. Russo served as president and chief executive officer of Cerent Corporation, which was acquired by Cisco. From April 1995 to April 1998, Mr. Russo served in various capacities, including as chief operating officer, at Xircom, Inc., which was acquired by Intel Corporation. Previously, Mr. Russo served as senior vice president and general manager for the hyperchannel networking group of Network Systems Corporation and as vice president and general manager of the data networking products division of AT&T Paradyne Corporation. Mr. Russo served on the board of directors of Vital Network Services, Inc., a privately-held company delivering network lifecycle services, and Xirrus, Inc., a privately-held company providing products that enable high-performance wireless networks.

Mr. Russo attended Swarthmore College and previously served on its board of managers.

There are no family relationships among any directors, director nominees or executive officers of Calix.

## Our Executive Officers

The following is biographical information for our current executive officers who were not discussed above.

<u>Name</u>	<u>Age</u>	<u>Position(s)</u>
Cory Sindelar	51	Chief Financial Officer
Michael Weening	51	Executive Vice President, Global Operations

**Cory Sindelar** has served as Calix's chief financial officer and principal accounting officer since October 1, 2017, and previously served as Calix's interim chief financial officer and principal accounting officer from May 31, 2017 to September 30, 2017. Prior to joining Calix, Mr. Sindelar served from December 2011 to April 2017 as the chief financial officer of Violin Memory, Inc., a publicly-held data storage company, which filed a voluntary petition for Chapter 11 bankruptcy protection in December 2016 and was subsequently acquired by a unit of Soros Fund Management LLC. He also previously served as chief financial officer of Kilopass Technology, Inc. from November 2010 to December 2011, and as chief financial officer of Ikanos Communications, Inc. from September 2006 to July 2010. From 2003 to 2006, Mr. Sindelar held various finance positions at EMC Corporation. From 2000 to 2003, Mr. Sindelar was vice president, corporate controller and principal accounting officer at Legato Systems, Inc., an enterprise software company, which was acquired by EMC. Mr. Sindelar holds a Bachelor of Science in Business Administration with an emphasis in accounting from Georgetown University.

**Michael Weening** has served as Calix's executive vice president, global operations since January 2019, and previously served as executive vice president, field operations from July 2018 until January 2019, as executive vice president, sales and marketing from November 2016 until June 2018, and as executive vice president of sales from June 2016 until November 2016. Prior to joining Calix, Mr. Weening held various sales executive leadership roles at Salesforce.com, a customer relationship management company. From August 2014 until June 2016, Mr. Weening served as senior vice president of global customer success and services at Salesforce.com, and from May 2012 until August 2014 as senior vice president of customer and sales growth in Japan and Asia Pacific at Salesforce.com. From May 2009 until May 2012, Mr. Weening served as vice president of business sales at Bell Mobility in Canada. Prior to joining Bell Mobility, Mr. Weening also held various sales leadership roles at Microsoft Corporation in Canada and the United Kingdom. Mr. Weening holds a Bachelor of Arts in Business Administration from Brock University.

## Independence of the Board

The NYSE prescribes independence standards for listed companies. These standards require a majority of the Board to be independent. They also require each member of the Audit Committee, Compensation Committee and Nominating and Corporate Governance Committee of the Board to be independent. No director qualifies as independent unless the Board determines that the director has no direct or indirect material relationship with us. The Board also evaluates each director's independence to serve on our Board and committees under the applicable requirements of the SEC. On an annual basis, each director and executive officer is obligated to complete a director and officer questionnaire which requires disclosure of any transactions with us in which the director or executive officer, or any member of his or her immediate family, have a direct or indirect material interest. We also review our relationship with any entity employing a director or on which the director currently serves as a member of the board.

After review of all relevant transactions or relationships between each director, or any of his or her immediate family members, and Calix, its senior management and its independent registered public accounting firm, the Board has affirmatively determined that all of Calix's current directors are independent directors within the meaning of the applicable NYSE standards, except for Mr. Russo, Calix's current president and chief executive officer. All of the committees of our Board are comprised entirely of directors determined by the Board to be independent within the meaning of the NYSE standards and applicable SEC regulations.

## PROPOSAL NO. 2

### APPROVAL OF THE AMENDED AND RESTATED CALIX, INC. 2019 EQUITY INCENTIVE AWARD PLAN

We are asking our stockholders to approve the amendment and restatement of the Calix, Inc. 2019 Equity Incentive Award Plan (as amended and restated, the “2019 Plan”) to increase the number of shares authorized for issuance under the 2019 Plan by 3,500,000 shares, resulting in an increase to the total shares authorized for issuance under the 2019 Plan from 3,129,039 shares to 6,629,039 shares. The amendment and restatement of the 2019 Plan also includes a prohibition on liberal stock recycling and a “fungible share recycling provision” as described more fully below. Our Board, upon recommendation of the Compensation Committee, approved the increase by 3,500,000 shares of the shares authorized for issuance in March 2020, subject to stockholder approval. The 2019 Plan was originally adopted by our Board in March 2019 and approved by stockholders in May 2019.

Our Board and Compensation Committee believe that the ability to continue to grant equity compensation is vital to our ability to attract and retain employees in the competitive labor markets in which we recruit and to hire the talent necessary to execute on our strategy. Further, the 2019 Plan includes provisions that implement compensation and governance best practices to ensure our equity compensation aligns employee interests with that of our stockholders and incentivizes the creation of long-term stockholder value. Accordingly, our Board and Compensation Committee believe that the share increase to the 2019 Plan is reasonable and appropriate at this time. We expect that this share increase, if approved, would provide sufficient shares in the plan reserve for two years after the Annual Meeting.

Employees and consultants of the Company, its subsidiaries and affiliates, as well as members of our Board, are eligible to receive awards under the 2019 Plan. The 2019 Plan provides for the grant of stock options, including incentive stock options (“ISOs”) and nonqualified stock options (“NQSOs”), stock appreciation rights (“SARs”), restricted stock, restricted stock units (“RSUs”), other stock or cash-based awards and dividend equivalents to eligible individuals.

As of December 31, 2019, the Company had an aggregate of 56,447,593 shares of Company common stock outstanding. As of December 31, 2019, the Company had a total of approximately 2.0 million shares of Company common stock reserved for issuance and available for future grants under the 2019 Plan. As of December 31, 2019, there were approximately 334,000 shares of Company common stock subject to full-value awards, which are equity awards that do not require the holder to pay a purchase price equal to at least fair market value as of the date of grant to acquire the underlying shares, and approximately 6,877,000 shares of Company common stock subject to options outstanding under the 2019 Plan and our other equity incentive plans and arrangements (other than our Amended and Restated Employee Stock Purchase Plan and our Amended and Restated 2017 Nonqualified Employee Stock Purchase Plan), with an approximate weighted average exercise price of the outstanding options of \$7.66 per share and an approximate weighted average remaining contractual term for the outstanding options of 7.30 years.

Approval of the 2019 Plan will constitute approval pursuant to the stockholder approval requirements of Section 422 of the Code, relating to ISOs.

A summary of the principal provisions of the 2019 Plan, including a number of important compensation and governance best practices we implemented to ensure the 2019 Plan furthers our compensation plan objectives and supports long-term stockholder interests, is set forth below. The summary is qualified by reference to the full text of the 2019 Plan, which is attached as Appendix A to this Proxy Statement.

#### Key Features of the 2019 Plan

The 2019 Plan reflects a broad range of compensation and governance best practices, including the following:

- **No repricing of awards without stockholder approval.** Under the 2019 Plan, awards may not be repriced, replaced or regranted through cancellation or modification without stockholder approval if the effect would be to reduce the exercise price for the shares underlying the award.
- **No evergreen feature/stockholder approval required for share reserve increases.** The 2019 Plan does not provide for an annual increase in the share reserve, and the 2019 Plan may not be amended to increase the share reserve without stockholder approval.
- **Prohibition of liberal stock recycling on all awards.** The 2019 Plan prohibits any shares withheld for taxes on all awards from being added back to the share reserve, in addition to prohibiting other practices considered to be liberal stock recycling with respect to stock options and SARs.
- **Minimum vesting requirements.** Subject to limited exceptions, no awards granted under the 2019 Plan may vest until the first anniversary of the date of grant.



- **Fungible share counting.** The aggregate number of shares available for issuance under the 2019 Plan will be reduced by 1.5 shares for each share delivered in settlement of any full-value award.
- **Payment of dividends only if underlying awards vest.** Under the 2019 Plan, dividends and dividend equivalents in respect of shares underlying an award may only be paid to the extent the award vests.
- **Requirement that all awards granted to NEOs are subject to our clawback policy.** Awards granted to our NEOs under the 2019 Plan are subject to our clawback policy.
- **Limit on grant date fair value for non-employee directors.** Under the 2019 Plan, the grant date fair value of equity-based awards granted to a non-employee director during any calendar year shall not exceed \$750,000.
- **No loans.** Executive officers and directors are not permitted to make payment with respect to any awards granted under the 2019 Plan with loans from the Company.

## Background on Share Request

In its determination to approve the share increase to the 2019 Plan, our Compensation Committee reviewed an analysis prepared by Aon, its compensation consultant, which included an analysis of our historical share usage, certain burn rate metrics and the costs of the 2019 Plan. Specifically, our Compensation Committee considered the following:

- In determining the reasonableness of the 2019 Plan share reserve, our Compensation Committee considered our historic burn rate. The following historical grant information results in an average annual burn rate for the last three fiscal years of 4.82% of the total of then-outstanding shares, or Basic Weighted Average Common Shares Outstanding, as shown in the following table, counting both options and full-value awards on a one-for-one basis. Our Compensation Committee considered our historic burn rate levels and the impact of utilizing regular annual equity compensation grants in determining how long the amended share authorization could potentially last. We expect the share authorization under the 2019 Plan to provide us with enough shares for awards for two years, with such timing dependent on a variety of factors, including the price of our shares and hiring activity during the next few years, forfeitures of outstanding awards, and noting that future circumstances may require us to change our current equity grant practices. We cannot predict our future equity grant practices, the future price of our shares or future hiring activity with any degree of certainty at this time, and the share reserve under the 2019 Plan could last for a shorter or longer time.

Year	Options Granted	RSUs Granted	Total Awards Granted	Basic Weighted Average Common Shares Outstanding	Burn Rate
2019	2,925,000	190,000	3,115,000	54,993,000	5.66%
2018	230,000	174,000	404,000	52,609,000	0.77%
2017	3,527,000 (1)	505,000	4,032,000	50,155,000	8.04%
<b>3-Year Average</b>					<b>4.82%</b>

(1) Options granted in 2017 were higher due to the timing of annual grants. Options granted in 2017 consist of a grant of 1,165,000 performance-based stock options subject to achievement of 2017 corporate performance objectives and a grant of 1,602,000 performance-based stock options subject to achievement of 2018 corporate performance objectives.

- In addition to maintaining a reasonable average annual burn rate, the Company has also provided meaningful performance-based stock options grants, historically as follows: 2,000,000 performance-based stock options granted in 2019 subject to achievement of 2019 corporate performance objectives, 1,602,000 performance-based stock options granted in 2017 subject to achievement of 2018 corporate performance objectives and 1,165,000 performance-based stock options granted in 2017 subject to achievement of 2017 corporate performance objectives.
- Aon's analysis, which is based on generally accepted evaluation methodologies, concluded that the share increase under the 2019 Plan is reasonable and within generally accepted standards as measured by an analysis of the plan cost relative to industry standards.

In light of the factors described above, and that the ability to continue to grant equity compensation is vital to our ability to attract and retain employees in the competitive labor markets in which we compete, our Compensation Committee and our Board have determined that the increase to the share reserve under the 2019 Plan is reasonable and appropriate at this time.

## **Administration**

The Compensation Committee (or, with respect to awards to non-employee directors, our Board) (together, the “administrator”) is charged with the general administration of the 2019 Plan. The 2019 Plan provides that, subject to certain limitations, our Board and the Compensation Committee may from time to time delegate its authority to grant awards to a committee consisting of one or more members of our Board or one or more of our officers. Subject to the terms and conditions of the 2019 Plan, the administrator will have the authority to select the persons to whom awards are to be made; to determine the type of awards to be granted, the number of shares to be subject to awards and the terms and conditions of awards; to determine when awards can be settled in cash, shares, other awards or whether to cancel, forfeit or surrender awards; to prescribe the form award agreements; to accelerate vesting or lapse restrictions; and to make all other determinations and to take all other actions necessary or advisable for the administration of the 2019 Plan. The administrator will also be authorized to adopt, amend or rescind rules relating to the administration of the 2019 Plan, excluding certain matters described below that will require the approval of our stockholders.

## **Eligibility**

Persons eligible to participate in the 2019 Plan include all members of the Board, currently comprised of nine non-employee directors and approximately 753 employees (including three NEOs) of the Company and its subsidiaries, as well as approximately six consultants of the Company and its subsidiaries, in each case, as determined by the administrator of the 2019 Plan. Only employees may be granted ISOs under the 2019 Plan.

## **Limitation on Awards and Shares Available**

If our stockholders approve the 2019 Plan, the number of shares available for issuance under 2019 Plan will be equal to 6,629,039 shares. In addition, the aggregate number of shares available for issuance under the 2019 Plan will be reduced by 1.5 shares (the “Fungible Share Counting Ratio”) for each share delivered in settlement of any full-value award. If any shares subject to an award under the 2019 Plan or any award under the Calix Networks, Inc. 2010 Equity Incentive Award Plan, the Calix Networks, Inc. 2000 Stock Plan or the Calix Networks, Inc. Amended and Restated 2002 Stock Plan are forfeited, expire or are settled for cash, any shares deemed subject to such award may, to the extent of such forfeiture, expiration or cash settlement, be used again for new grants under the 2019 Plan (using the Fungible Share Counting Ratio to determine the number of shares returned to the share reserve with respect to full-value awards). However, the following shares may not be used again for grant under the 2019 Plan: (1) shares tendered or withheld to satisfy the exercise price of an option; (2) shares tendered or withheld to satisfy the tax withholding obligations with respect to an award; (3) shares subject to a SAR (or other stock-settled award) that are not issued in connection with the stock settlement of the SAR or other award on its exercise; and (4) shares purchased on the open market with the cash proceeds from the exercise of stock options. In addition, the following items will not be counted against the shares available for issuance under the 2019 Plan: (i) the payment of dividend equivalents in cash in conjunction with any outstanding awards and (ii) to the extent permitted by applicable law or any exchange rule, shares issued in assumption of, or in substitution for, any outstanding awards of any entity acquired in any form of combination by our company or any of its subsidiaries, except as may be required by reason of Section 422 of the Code.

Awards granted under the 2019 Plan must vest no earlier than one year measured from the date of grant and no award agreement may reduce or eliminate such minimum vesting requirement, provided that an award may provide that such minimum vesting restrictions may lapse or be waived upon a participant’s termination of service. In addition, up to an aggregate of five percent of the number of shares available for issuance under the 2019 Plan may be granted without regard to the foregoing minimum vesting requirement. For the purposes of awards to non-employee directors, a vesting period shall be deemed to be one year if it runs from the date of one annual meeting of the Company’s stockholders to the next annual meeting of the Company’s stockholders, so long as the period between such meetings is not less than 50 weeks.

As of March 18, 2020, the closing price of a share of our common stock on the NYSE was \$5.91.

## **Awards**

The 2019 Plan provides for the grant of ISOs, NQSOs, SARs, restricted stock, RSUs, dividend equivalents and other share or cash-based awards. All awards under the 2019 Plan will be set forth in award agreements, which will detail all terms and conditions of the awards, including any applicable vesting and payment terms and post-termination exercise limitations. No fractional shares shall be issued or delivered pursuant to the 2019 Plan or any award thereunder.

The 2019 Plan provides that the administrator may grant or issue stock options, SARs, restricted stock, RSUs, dividend equivalents and other stock or cash awards, or any combination thereof. Each award will be set forth in an agreement with the person receiving the award and will set forth the type, terms and conditions of the award, including exercise price, vesting schedule, and

treatment of awards upon termination of employment, if applicable. Vesting provisions may require that certain conditions be met, such as continued employment or specified performance goals, before an awardee may receive the shares underlying an award or before such shares become freely tradeable and nonforfeitable.

*Stock Options.* Stock options, including ISOs and NQSOs may be granted pursuant to the 2019 Plan. The per share exercise price of all stock options granted pursuant to the 2019 Plan will not be less than 100% of the fair market value of a share of common stock on the date of grant, or in the case of ISOs granted to an individual who owns (or is deemed to own) at least 10% of the total combined voting power of all classes of our capital stock, 110% of the fair market value of a share on the date of grant. Stock options may be exercised as determined by the administrator, but in no event more than ten years after their date of grant, or in the case of ISOs granted to an individual who owns (or is deemed to own) at least 10% of the total combined voting power of all class of our capital stock, five years. The aggregate fair market value of the shares with respect to which options intended to be incentive stock options are exercisable for the first time by an employee in any calendar year may not exceed \$100,000, or such other amount as the Code provides.

*Restricted Stock.* Restricted stock may be granted pursuant to the 2019 Plan. A restricted stock award is the grant of shares of common stock at a price determined by the administrator (which may be zero), that is nontransferable and may be subject to substantial risk of forfeiture until specific conditions are met. Conditions may be based on continuing employment or service or achieving performance goals. During the period of restriction, participants holding shares of restricted stock may have full voting and dividend rights with respect to such shares. The restrictions will lapse in accordance with a schedule or other conditions determined by the administrator. Dividends that otherwise would be paid prior to vesting are held by the Company and will be paid to the participants only to the extent that the vesting conditions are met.

*SARs.* SARs may be granted pursuant to the 2019 Plan, either alone or in tandem with other awards. A SAR is the right to receive payment of an amount equal to the excess of the fair market value of a share of common stock on the date of exercise of the SAR over the fair market value of a share of common stock on the date of grant of the SAR. SARs may be paid in cash or stock. SARs may be exercised as determined by the administrator, but in no event more than 10 years after their date of grant.

*RSUs.* RSUs represent the right to receive shares of common stock at a specified date in the future, subject to forfeiture of such right. If the RSU has not been forfeited, then on the date specified in the RSU award we shall deliver to the holder of the RSU unrestricted shares of common stock which will be freely transferable. The administrator will specify the purchase price, if any, to be paid by the grantee for the common stock.

*Dividend Equivalents / Dividends.* Dividend equivalents represent the value of the dividends per share of common stock paid by the Company, calculated with reference to the number of shares covered by an Award (other than a dividend equivalent award, option or SAR) held by the participant. Dividend Equivalents will not be granted on options or SARs. In addition, no dividend or dividend equivalents will be paid in respect of shares underlying any unvested awards.

*Other Stock or Cash Based Awards.* Other stock or cash-based awards are awards of cash, fully vested shares of common stock and other awards valued wholly or partially by referring to, or otherwise based on, our common stock. Other stock or cash-based awards may be granted to participants and may also be available as a payment form in the settlement of other awards, as standalone payments and as payment in lieu of base salary, bonus, fees or other cash compensation otherwise payable to any individual who is eligible to receive awards. The administrator will determine the terms and conditions of other stock or cash-based awards, which may include vesting conditions based on continued service, performance and/or other conditions.

*Limits for Non-Employee Directors.* Under the 2019 Plan, the grant date fair value of equity-based awards granted to a non-employee director during any calendar year shall not exceed \$750,000.

*Prohibition on Loans for Award Payments.* Directors or executive officers of the Company are not permitted to make payment with respect to any awards granted under the 2019 Plan with loans from the Company.

### **Prohibition on Repricing Without Stockholder Approval**

Except in connection with a corporate transaction involving our company, the terms of outstanding awards may not be amended without the approval of our stockholders to (a) reduce the exercise price per share of outstanding options or SARs or (b) cancel outstanding options or SARs in exchange for cash, other awards or options or SARs with an exercise price per share that is less than the exercise price per share of the original options or SARs.

## **Awards Subject to Clawback**

Awards granted under the 2019 Plan (including any proceeds, gains or other economic benefit actually or constructively received by a participant) are subject to the clawback provisions of our Compensation Recovery Policy and any clawback policy we adopt to comply with applicable law, including, without limitation, the Dodd-Frank Wall Street Reform and Consumer Protection Act and any rules or regulations promulgated thereunder, whether or not such clawback policy was in place at the time of grant of an award, to the extent set forth in such clawback policy and/or in the applicable award agreement.

## **MISCELLANEOUS PROVISIONS**

### **Adjustment Upon Certain Events**

In the event of a stock dividend, stock split, combination or exchange of shares, merger, consolidation, spin-off, recapitalization, distribution of assets or any other corporate event affecting the common stock or the share price of the common stock in a manner that causes dilution or enlargement of benefits or potential benefits under the 2019 Plan, the administrator will make proportionate and equitable adjustments, in its discretion, to: (i) the aggregate number and types of shares of stock that may be issued under the 2019 Plan; (ii) the number and kind of shares subject to outstanding awards; (iii) the terms and conditions of any outstanding awards (including any applicable performance targets); and/or (iv) the grant or exercise price for any outstanding awards.

In addition, in such a case as noted above or in the event of any unusual or nonrecurring transactions or events affecting the Company or the financial statements of the Company, or of changes in applicable laws, the administrator, may, in its discretion, subject to the terms of the 2019 Plan, take any of the following actions if it determines that such action is appropriate in order to prevent the dilution or enlargement of benefits or potential benefits intended to be made available under the 2019 Plan or with respect to any award: (i) provide for either the payment and termination of the award or the replacement of the award; (ii) provide that the awards shall be assumed by the successor or survivor corporation, or a parent or subsidiary thereof, or shall be substituted for by similar awards covering the stock of the successor or survivor corporation, or a parent or subsidiary thereof, with appropriate adjustments as to the number and kind of shares and prices; (iii) make adjustments in the number and type of shares of stock (or other securities or property) subject to outstanding awards and/or in the terms and conditions of (including the grant or exercise price), and the criteria included in, outstanding awards which may be granted in the future; (iv) provide for the acceleration of vesting or exercisability of the awards; (v) replace such Awards with other rights or property selected by the Administrator; and/or (vi) provide that the awards cannot vest or be exercised after the event that triggers the action.

If a Change in Control of the Company occurs (as defined in the 2019 Plan), all outstanding options and SARs that are not exercised shall be assumed or substituted by the surviving corporation and other outstanding awards shall be converted into similar awards of the surviving corporation. If the surviving corporation refuses to assume or substitute for an award, the award shall accelerate and become fully vested and exercisable upon the Change in Control and all restrictions on the award shall lapse.

### **Transferability of Awards**

Except by will or the laws of descent and distribution or pursuant to beneficiary designation procedures approved from time to time by the administrator or as otherwise provided by the administrator, no award granted under the 2019 Plan may be assigned, transferred or otherwise disposed of by the awardee, unless and until the award has been exercised or the shares underlying the award have been issued, and all restrictions applicable to the shares have lapsed.

### **Rights as a Stockholder**

An awardee will not have any rights as a stockholder with respect to the shares covered by an award until the awardee becomes the owner of the shares.

### **No Rights as Employee**

Nothing in the 2019 Plan or in any award agreement will give any awardee under the 2019 Plan any right to continue as an employee, consultant or non-employee director for our Company or any of our Subsidiaries or will interfere with or restrict in any way the rights of any such entity to discharge any awardee at any time.

### **Data Privacy**

The 2019 Plan provides that, as a condition of receipt of any award, each awardee explicitly consents to the collection, use and transfer, in electronic or other form, of personal data by and among, as applicable, our Company and subsidiaries, including any

transfer of this data required to a broker or other third party with whom our Company or any of our Subsidiaries or the awardee may elect to deposit any shares, to implement, administer and manage the awardee's participation in the 2019 Plan.

### **Tax Withholding**

We may deduct or withhold, or require an awardee to remit to our Company, an amount sufficient to satisfy applicable withholding tax obligations with respect to any taxable event concerning the awardee arising as a result of the 2019 Plan or any award. The administrator may in its discretion and in satisfaction of the foregoing requirement, or in satisfaction of such additional withholding obligations as an awardee may have elected, allow the awardee to satisfy these obligations by means of cash or check, wire transfer of immediately available funds, shares, broker-assisted cashless exercise or any other form of legal consideration acceptable to the administrator. The Administrator may allow the awardee to elect to have us withhold shares otherwise issuable under any award (or allow the surrender of shares). The number of shares which may be withheld (or surrendered) will be no greater than the number of shares having a fair market value on the date of withholding or repurchase equal to the aggregate amount of such liabilities based on the maximum statutory withholding rates in the awardee's applicable jurisdictions for federal, state, local and foreign income and payroll taxes.

### **Amendment and Termination**

The 2019 Plan may be amended, modified or terminated at any time and from time to time; provided that, no amendment, suspension or termination of the 2019 Plan shall, without the consent of the awardee, materially and adversely affect any rights or obligations under any award theretofore granted or awarded, unless the award itself otherwise expressly so provides or such action is to comply with the requirements of any applicable clawback policy or Section 409A of the Code.

Notwithstanding the foregoing, the 2019 Plan requires us to obtain stockholder approval within twelve (12) months before or after doing any of the following (other than in connection with certain corporate events, as described above):

- Increasing the maximum number of shares available under the 2019 Plan;
- Reducing the price per share of any outstanding option or SAR granted under the 2019 Plan; and
- Cancelling any option or SAR in exchange for cash or another option or SAR having a lower per share exercise price.

In addition, subject to applicable law and the limitations above, the administrator may amend, modify or terminate any outstanding award, including substituting another award of the same or a different type, changing the date of exercise or settlement, and converting an ISO to an NQSO. The awardee's consent to such action will be required unless (a) the administrator determines that the action, taking into account any related action, would not materially and adversely affect the awardee, or (b) the change is otherwise permitted under the 2019 Plan.

### **Expiration Date**

The 2019 Plan will expire on, and no award will be granted pursuant to the 2019 Plan after the tenth anniversary of the date the 2019 Plan, as amended and restated, was approved by the Board of Directors. Any award outstanding on the expiration date of the 2019 Plan will remain in force according to the terms of the 2019 Plan and the applicable award agreement.

### **FEDERAL INCOME TAX CONSEQUENCES**

This discussion regarding federal tax consequences is intended for the general information of our stockholders, not 2019 Plan awardees. Alternative minimum tax and state and local income taxes are not discussed and may vary depending on individual circumstances and from locality to locality.

### **Code Section 162(m)**

Under Code Section 162(m), income tax deductions of publicly-traded companies may be limited to the extent total compensation (including, without limitation, base salary, annual bonus, RSU settlement and nonqualified benefits) for certain executive officers exceeds \$1 million (less the amount of any "excess parachute payments" as defined in Code Section 280G) in any one year. Under the tax rules in effect before 2018, the Code Section 162(m) deduction limit did not apply to qualified "performance-based" compensation that was established by an independent compensation committee and conformed to certain restrictive conditions stated under the Code and related regulations. However, the U.S. Tax Cuts and Jobs Act of 2017 eliminated this performance-based compensation exception effective January 1, 2018, subject to a special rule that "grandfathers" certain awards and arrangements that

were in effect on or before November 2, 2017. As a result, compensation awarded under the 2019 Plan in excess of \$1 million to our current and former NEOs generally is not deductible.

### Code Section 409A

Certain awards under the 2019 Plan may be considered “nonqualified deferred compensation” subject to Code Section 409A, which imposes additional requirements on the payment of deferred compensation. These requirements generally provide that, if at any time during a taxable year a nonqualified deferred compensation plan fails to meet the requirements of Code Section 409A or is not operated in accordance with those requirements, all amounts deferred under the nonqualified deferred compensation plan for the then-current taxable year and all preceding taxable years, by or for any awardee with respect to whom the failure relates, are includible in the gross income of the awardee for the taxable year to the extent not subject to a substantial risk of forfeiture and not previously included in gross income. If a deferred amount is required to be included in income under Code Section 409A, the amount will be subject to income tax at regular income tax rates plus a 20 percent penalty, as well as potential premium interest tax.

### Federal Tax Treatment of Award Types

With respect to NQSOs, the Company is generally entitled to deduct and the optionee recognizes taxable income in an amount equal to the difference between the option exercise price and the fair market value of the shares at the time of exercise. A participant receiving ISOs will not recognize taxable income upon grant. Additionally, if applicable holding period requirements are met, the participant will not recognize taxable income at the time of exercise. However, the excess of the fair market value of the Common Stock received over the option price is an item of tax preference income potentially subject to the alternative minimum tax. If stock acquired upon exercise of an ISO is held for a minimum of two years from the date of grant and one year from the date of exercise, the gain or loss (in an amount equal to the difference between the fair market value on the date of sale and the exercise price) upon disposition of the stock will be treated as a long-term capital gain or loss, and the Company will not be entitled to any deduction. If the holding period requirements are not met, the ISO will be treated as one which does not meet the requirements of the Code for ISOs and the tax consequences described for NQSOs will apply.

The current federal income tax consequences of other awards authorized under the 2019 Plan generally follow certain basic patterns: SARs are taxed and deductible in substantially the same manner as NQSOs; nontransferable restricted stock subject to a substantial risk of forfeiture results in income recognition equal to the excess of the fair market value over the price paid, if any, only at the time the restrictions lapse (unless the recipient elects to accelerate recognition as of the date of grant); stock-based performance awards, dividend equivalents and other types of awards are generally subject to tax at the time of payment. Compensation otherwise effectively deferred is taxed when paid. In each of the foregoing cases, the Company will generally have a corresponding deduction at the time the participant recognizes income, subject to Section 162(m) with respect to our current and former NEOs. An award of a retainer, committee fee or meeting-based fee generally realizes ordinary income and we are entitled to a deduction in an amount equal to the amount of such retainer or fees upon payment thereof.

### New Plan Benefits

As of March 18, 2020, 1,815,000 shares subject to stock options and no RSUs have been granted under the 2019 Plan. Other than with respect to annual grants of stock options to our non-employee directors that will be made immediately following the date of the Annual Meeting and certain incentive time-based equity grants to be awarded to Messrs. Sindelar and Weening, all future awards under the 2019 Plan are subject to the discretion of the plan administrator, and therefore it is not possible to determine the benefits that will be received in the future by other participants in the 2019 Plan (the *Grants of Plan-Based Awards in 2019* table in this Proxy Statement describes all equity awards granted to our named executive officers during our fiscal year ended December 31, 2019 under the 2010 Plan and 2019 Plan).

<u>Name and Position</u>	<u>Dollar Value (\$)</u>	<u>Number of Shares Underlying Future Award Grants (#) (1)</u>
Carl Russo, <i>President and Chief Executive Officer</i>	—	—
Cory Sindelar, <i>Chief Financial Officer</i>	—	450,000
Michael Weening, <i>Executive Vice President, Global Operations</i>	—	660,000
All current executive officers as a group	—	1,110,000
All current directors who are not executive officers as a group (2)	1,260,000	—
All employees who are not executive officers as a group	—	—

- (1) Represents the number of shares underlying time-based option grants to be awarded to Messrs. Sindelar and Weening pursuant to letter agreements approved by the Compensation Committee in November 2019. For a further discussion on these option grants, see “*Compensation Discussion and Analysis - November 2019 Awards for Cory Sindelar and Michael Weening.*”
- (2) Our Non-Employee Director Equity Compensation Policy provides that each director who is a non-employee director (provided that such director has served as a director for at least six months prior to such date) will automatically be granted RSUs valued at \$140,000 (based on the per share closing price of our common stock on the date of such annual meeting of stockholders), which will be granted on the first business day after the Annual Meeting and vest on the earlier of the first anniversary of the grant date or the day prior to the next annual general meeting of our stockholders, subject to continuous service as a director until such vesting date, except in the event of certain terminations of service.

#### Awards Granted Under the 2019 Plan

The following table shows the number of shares of our common stock underlying options and RSUs granted under the 2019 Plan through March 18, 2020 and stock options to be received in the future, to the extent determinable, by certain individuals and certain groups of individuals.

Name	Stock Options	RSUs
Carl Russo, <i>President and Chief Executive Officer</i>	—	—
Cory Sindelar, <i>Chief Financial Officer</i> (1)	650,000	—
Michael Weening, <i>Executive Vice President, Global Operations</i> (1)	1,260,000	—
<b>All current executive officers as a group</b>	1,910,000	—
<b>All current non-executive officer directors as a group</b>	—	—
<b>All nominees for election as a director</b>	—	—
Don Listwin, <i>Director</i>	—	—
Christopher J. Bowick, <i>Director</i>	—	—
Kathy Crusco, <i>Director</i>	—	—
Kevin DeNuccio, <i>Director</i>	—	—
Michael Everett, <i>Director</i>	—	—
Kira Makagon, <i>Director</i>	—	—
Michael Matthews, <i>Director</i>	—	—
Kevin Peters, <i>Director</i>	—	—
J. Daniel Plants, <i>Director</i>	—	—
<b>Associate of any such directors, executive officers or nominees</b>	—	—
<b>Other persons who received or is to receive 5% of such options or rights</b>	—	—
<b>All non-executive officer employees as a group</b>	1,015,000	—

- (1) Represents the number of shares underlying time-based option grants awarded and to be awarded to Messrs. Sindelar and Weening pursuant to letter agreements approved by the Compensation Committee in November 2019. For a further discussion on these option grants, see “*Compensation Discussion and Analysis - November 2019 Awards for Cory Sindelar and Michael Weening.*”

To be approved, this proposal must receive a “For” vote from the holders of a majority in voting power of the shares of common stock which are present or represented by proxy and entitled to vote on the proposal. Abstentions will have the same effect as an “Against” vote for purposes of determining whether this matter has been approved. Broker non-votes will not be counted for any purpose in determining whether this matter has been approved.

**THE BOARD OF DIRECTORS RECOMMENDS A VOTE “FOR” APPROVAL OF THE  
CALIX, INC. AMENDED AND RESTATED 2019 EQUITY INCENTIVE AWARD PLAN AS DISCUSSED ABOVE.**

### PROPOSAL NO. 3

#### APPROVAL OF THE CALIX, INC. AMENDED AND RESTATED 2017 NONQUALIFIED EMPLOYEE STOCK PURCHASE PLAN

We are asking our stockholders to approve the amendment and restatement of the Calix, Inc. Amended and Restated 2017 Nonqualified Employee Stock Purchase Plan (the “Nonqualified ESPP”) that amends certain terms and increases the number of shares authorized for issuance under the current Nonqualified Employee Stock Purchase Plan by 1,200,000 shares, resulting in an increase to the total shares authorized for issuance under the Nonqualified ESPP from 3,500,000 to 4,700,000 shares. If the Nonqualified ESPP is not approved by our stockholders, the amended provisions will not become effective, the Nonqualified ESPP will continue in effect on its current terms, and we may continue to offer employees the right to purchase shares under the Nonqualified ESPP, subject to its current terms, conditions and limitations, using the shares available for issuance thereunder. Our Board approved the amendment and restatement of the Nonqualified ESPP in March 2020, upon recommendation of our Compensation Committee, to be effective subject to stockholder approval. The amendment and restatement of the Nonqualified ESPP implements the following changes:

- Increases the number of shares of our common stock authorized for issuance under the Nonqualified ESPP by 1,200,000 shares;
- Removes accounting expense limitations, which currently prohibit the Company incurring accounting expenses in excess of \$3,000,000 per Offering Period, or \$6,000,000 per year; and
- Provides the plan administrator authority to exercise discretion under certain limited circumstances to waive forfeiture of Restricted Shares if a participant ceases to be employed during the one-year period following an Offering Period.

The purpose of the Nonqualified ESPP is to assist our employees, excluding our executive officers and certain members of senior management, in acquiring a stock ownership interest in the Company pursuant to a plan which is intended to help them provide for their future security and to encourage them to remain in the employment of the Company. We believe that the Nonqualified ESPP aligns employee interests with that of our stockholders and serves as a key recruiting and retention tool in a competitive market.

We have attempted, in the design of some of the terms of the Nonqualified ESPP, to balance considerations of recruiting and retention in a competitive labor market with the costs to our stockholders. We obtained and reviewed an independent consultant’s analyses of the potential dilution to stockholders over the term of the Nonqualified ESPP and potential expense. Based on that information, 1) we have set the number of additional shares contained in this proposal, 1,200,000, such that the aggregate number of shares available under the Nonqualified ESPP and our Amended and Restated Employee Stock Purchase Plan is, we believe, reasonable under the standards of many institutional investors; 2) we have also set a limit on the number of shares that can be acquired in an Offering Period to 500,000 shares, which will similarly serve to limit dilution to stockholders; and 3) we anticipate the additional 1,200,000 shares under the Nonqualified ESPP would provide sufficient shares in the plan reserve for two years after the Annual Meeting. In addition, shares acquired under the Nonqualified ESPP are generally required to be held for a period of one year from the Exercise Date. We believe that the design of the Nonqualified ESPP allows us to offer a vehicle through which employees can continue to acquire an ownership interest in the Company on favorable terms and be aligned with stockholders by acquiring equity, while also being mindful of dilution.

Under the Nonqualified ESPP, eligible employees purchase our common stock through accumulated payroll deductions, and for each share of our common stock purchased, we issue an additional share at no cost to the employee that is subject to a one-year vesting period. The Nonqualified ESPP is not intended to qualify as an “employee stock purchase plan” under Section 423 of the Code.

A copy of the proposed Nonqualified ESPP is included as Appendix B to this Proxy Statement.

Our stockholders last approved an increase in the shares authorized for issuance under the Nonqualified ESPP in May 2018 which increased the shares available for issuance under the Nonqualified ESPP from 1,000,000 to 3,500,000. Since its inception in May 2017, a total of 1,019,585 shares have been purchased under the Nonqualified ESPP, and 1,019,585 Restricted Shares (as defined below) have been issued subject to a risk of forfeiture. Given the current rate of participation by our employees in the Nonqualified ESPP, we expect that the additional 1,200,000 share increase to the Nonqualified ESPP will cover two years of purchases.



## Background on Share and Amendment Request

In its determination to approve the 1,200,000 shares increase to the Nonqualified ESPP, our Board and Compensation Committee reviewed an analysis prepared by Aon, its compensation consultant, which included an analysis of our historical share usage, certain dilution metrics and the costs of the Nonqualified ESPP. Specifically, our Board and Compensation Committee considered the following:

- We issued a total of 476,706 shares out of a maximum of 500,000 shares during the Offering Period ending on December 20, 2019. Based on the participation rates of our employees during 2019, we expect to exhaust the shares of our common stock reserved for issuance under the current Nonqualified ESPP after the Offering Period ending on June 20, 2021. For the Offering Periods ending June 20 and December 20, 2019, participating employees elected to contribute an average of 12.13% of their eligible earnings to purchase shares under the Nonqualified ESPP. As such, our Board and Compensation Committee believe that the Nonqualified ESPP acts as an important incentive to both newly hired and existing employees to invest in our common stock and aligning their interests with the interests of our stockholders.
- Our Board and Compensation Committee considered the dilutive effect of the share increase to the Nonqualified ESPP and sought to balance such dilutive effect with the benefits of providing sufficient shares to promote employee participation.
- No more than an aggregate of 500,000 shares may be purchased or acquired on any Exercise Date in an Offering Period. Therefore, we expect the new share reserve to permit us to operate the Nonqualified ESPP for two years after the Annual Meeting.

In addition, in order to provide the plan administrator flexibility in administering the Nonqualified ESPP, our Board and Compensation Committee considered and approved the following amendments to the Nonqualified ESPP, subject to stockholder approval:

- Removal of the accounting expense limit incurred by the Company of \$3,000,000 per Offering Period, while still maintaining the limit on the number of shares that can be acquired in an Offering Period at 500,000 shares, which we believes adequately limits dilution to stockholders and permits our employees to continue to invest in us if the value of our common stock increases; and
- Providing the plan administrator authority to exercise discretion under certain limited circumstances to waive forfeiture of Restricted Shares if a participant ceases to be employed during the one-year period following an Offering Period, which affords the Company flexibility with regards to participants whose positions may be eliminated without cause, such as during a restructuring.

In light of the factors described above, and our Board's and our Compensation Committee's assessment that the ability to continue to offer the opportunity to purchase shares of our common stock and be issued matching shares of our common stock is vital to our ability to continue to attract and retain employees in the labor markets in which we compete, our Board and our Compensation Committee have determined that the size of the increase in the share reserve under the Nonqualified ESPP and the proposed amendments are reasonable and appropriate at this time.

A summary of the principal provisions of the Nonqualified ESPP is set forth below. The summary is qualified by reference to the full text of the Nonqualified ESPP, which is attached as Appendix B to this Proxy Statement.

## Summary of the Nonqualified ESPP

*Administration.* The Nonqualified ESPP will be administered by our Compensation Committee, which, unless otherwise determined by the Board, will consist solely of two or more members of the Board, each of whom is intended to qualify as a "non-employee director" as defined by Rule 16b-3 of the Exchange Act and an "independent director" under the applicable exchange rules. The Administrator has broad authority to construe the Nonqualified ESPP and to make determinations with respect to the terms and conditions of each Offering Period under the Nonqualified ESPP, awards, designated subsidiaries and other matters pertaining to plan administration.

*Shares Available Under the Nonqualified ESPP.* Under the Nonqualified ESPP, the maximum number of shares of our common stock which will be authorized for issuance is 4,700,000, an increase of 1,200,000 shares from the share reserve last approved by our stockholders in May 2018. The shares available for issuance under the Nonqualified ESPP may be authorized but unissued shares or reacquired shares.

*Offerings.* Under the Nonqualified ESPP, employees have the right to acquire shares of our common stock through payroll deductions accumulated over an Offering Period. "Offering Periods" are approximately six-month periods that are set as June 21

through December 20 and December 21 through June 20 of each year, unless otherwise determined by our Compensation Committee as administrator of the Nonqualified ESPP.

*Eligibility and Enrollment.* Any employee of the Company (and such present or future subsidiaries of the Company as our Board or Compensation Committee may designate) who (i) is customarily employed more than twenty hours a week; (ii) is customarily employed more than five months per calendar year and (iii) who is an employee at the commencement of an Offering Period is eligible to participate in the Nonqualified ESPP. However, the following employees are ineligible to participate in the Nonqualified ESPP: our Chief Executive Officer, each senior management employee who reports directly to our Chief Executive Officer and other employees that are members of senior management as identified by the Administrator.

By enrolling in the Nonqualified ESPP, a participant is deemed to have elected to (a) purchase the maximum number of whole shares of common stock that can be purchased with the compensation withheld during each Offering Period for which the participant is enrolled and (b) acquire an equal number of Restricted Shares. Unless otherwise determined by the plan administrator, Restricted Shares are subject to a risk of forfeiture in the event the participant ceases to be employed prior to the first anniversary of the date the shares are acquired. If a participant ceases to be an eligible employee for any reason during an Offering Period, he or she will be deemed to have elected to withdraw from the Nonqualified ESPP and any amounts credited to the participant's account will be returned to the participant or the participant's beneficiary in the event of his or her death. If a participant ceases to be employed during the one-year period following an Offering Period, he or she will retain each purchased share but each Restricted Share will be forfeited, subject to the discretion of the plan administrator to waive such forfeiture under certain limited circumstances.

As of March 18, 2020, approximately 717 employees in the U.S., Canada and China are eligible to participate in the Nonqualified ESPP. None of our executive officers are eligible to participate in the Nonqualified ESPP. In addition, consultants and non-employee directors are not eligible to participate in the Nonqualified ESPP.

*Payroll Deductions.* The payroll deductions made for each participant may be not less than 1% nor more than 25% of a participant's compensation. Compensation is defined in the Nonqualified ESPP and generally includes cash remuneration that would be reported as income for federal income tax purposes. A participant may decrease (but not increase) his or her payroll deduction authorization once during any Offering Period. If a participant wishes to increase or decrease the rate of payroll withholding, he or she may do so effective for the next Offering Period by submitting a new election.

*Exercise Date; Purchase of Stock.* The "Exercise Date" of each Offering Period occurs on the last trading day of each Offering Period. On the Exercise Date, accumulated payroll deductions for each participant will be used to (i) purchase whole shares of common stock at a purchase price equal to the closing trading price of our common stock on the Exercise Date (the "Purchased Shares") and (ii) acquire an equal number of shares of our common stock that, unless determined otherwise by the Administrator in connection with certain terminations of employment, are subject to a risk of forfeiture in the event the participant terminates employment within the one year period immediately following the Exercise Date (the "Restricted Shares"). On March 18, 2020, the closing price of our common stock on the NYSE was \$5.91 per share.

A participant may cancel his or her payroll deduction authorization and elect to withdraw from the Nonqualified ESPP by delivering written notice of such election to the Company. Upon cancellation, the participant may elect either to withdraw all of the funds then credited to his or her Nonqualified ESPP account and withdraw from the Nonqualified ESPP or have the balance of his or her account applied to the purchase of Purchased Shares and acquisition of Restricted Shares for the Offering Period in which his or her cancellation is effective (with any remaining Nonqualified ESPP account balance returned to the participant). A participant who ceases contributions to the Nonqualified ESPP during any Offering Period shall not be permitted to resume contributions to the Nonqualified ESPP during the same Offering Period.

Unless a participant has previously canceled his or her participation in the Nonqualified ESPP in accordance with the terms of the Nonqualified ESPP, the participant will be deemed to have exercised his or her option to purchase and acquire shares in full as of each Exercise Date. Upon exercise, the participant will purchase the number of whole shares that his or her accumulated payroll deductions will buy at the purchase price and acquire an equal number of Restricted Shares, provided that no more than an aggregate of 500,000 shares may be purchased or acquired on any Exercise Date.

*Restrictions on Transferability.* A participant may not assign, transfer, pledge or otherwise dispose of (other than by will or the laws of descent and distribution) payroll deductions credited to a participant's account or any rights or interest, including purchase rights, under the Nonqualified ESPP, and during a participant's lifetime, purchase rights under the Nonqualified ESPP shall be exercisable only by such participant. Any such attempt at assignment, transfer, pledge or other disposition will not be given effect.

In addition, unless otherwise determined by the plan administrator, no shares issued pursuant to the Nonqualified ESPP may be assigned, transferred, pledged or otherwise disposed by the participant until the first anniversary of the Exercise Date upon which such

shares were purchased or acquired. However, in the event a participant ceases to be an employee of the Company prior to the first anniversary of the Exercise Date upon which the shares were purchased, the Restricted Shares will be forfeited (subject to the discretion of the plan administrator to waive such forfeiture under certain limited circumstances), and the transfer restrictions applicable to the Purchased Shares will lapse.

*Adjustments upon Changes in Recapitalization, Dissolution, Liquidation, Merger or Asset Sale.* In the event of any stock dividend, stock split, combination or reclassification of shares or any other increase or decrease in the number of shares of common stock effected without receipt of consideration, the plan administrator has broad discretion to equitably adjust the number of shares authorized for issuance and awards under the Nonqualified ESPP to prevent the dilution or enlargement of benefits under outstanding awards as a result of such transaction.

In the event of a proposed liquidation or dissolution of the Company, the Offering Period then in progress will be shortened by setting a new Exercise Date to occur prior to the consummation of the proposed liquidation or dissolution and will terminate immediately prior to such consummation.

In the event of a proposed merger or asset sale, each outstanding purchase right will be assumed or substituted by the successor corporation. In the event that the successor corporation refuses to assume or substitute the purchase rights, any Offering Periods then in progress will be shortened by setting a new Exercise Date to occur prior to the date of the proposed sale or merger.

*Insufficient Shares.* If the total number of shares of common stock which are to be acquired under outstanding rights on any particular date exceed the number of shares then available for issuance under the Nonqualified ESPP or if the number of shares with respect to which rights are to be exercised exceed the Offering Period Share Limit, the plan administrator will make a pro rata allocation of the available shares on a uniform and equitable basis.

*Rights as Stockholders.* A participant will have the rights and privileges of a stockholder of the Company when, but not until, shares have been deposited in the designated brokerage account following exercise of his or her option. However, in the event a dividend is paid in respect of shares prior to the first anniversary of the Exercise Date upon which such shares were purchased or acquired under the Nonqualified ESPP, then no dividend will be paid on the Restricted Shares unless and until the participant continues employment through such first anniversary.

*Data Privacy.* The Nonqualified ESPP provides that, as a condition of participation, each participant explicitly consents to the collection, use and transfer, in electronic or other form, of personal data by and among, as applicable, our Company and subsidiaries, including any transfer of this data required to a broker or other third party with whom our Company or any of our Subsidiaries or the participant may elect to deposit any shares, to implement, administer and manage the participant's participation in the Nonqualified ESPP.

*Amendment and Termination.* Our Board may amend, suspend or terminate the Nonqualified ESPP at any time. The plan administrator may also modify or amend the Nonqualified ESPP to reduce or eliminate any unfavorable financial accounting consequences that may result from the ongoing operation of the Nonqualified ESPP. However, the Board may not amend the Nonqualified ESPP without obtaining stockholder approval within 12 months before or after such amendment to the extent required by applicable laws.

## **Federal Income Tax Consequences**

The Nonqualified ESPP is not intended to qualify as an "employee stock purchase plan" under Section 423 of the Code. Accordingly, certain tax benefits available to participants in a Section 423 plan are not available under our Nonqualified ESPP.

For federal income tax purposes, a participant generally will not recognize taxable income on the grant of the right to purchase and acquire shares under the Nonqualified ESPP, nor will the Company be entitled to any deduction at that time. Upon the purchase of shares under the Nonqualified ESPP, a participant generally will not recognize taxable income and instead will recognize ordinary income in the amount equal to the fair market value of the Restricted Shares when the risk of forfeiture on the Restricted Shares lapses. The Company will be entitled to a corresponding deduction when the risk of forfeiture on the Restricted Shares lapses. A participant's basis in Purchased Shares, for purposes of determining the participant's gain or loss on subsequent disposition of such shares of common stock, generally, will be equal to the purchase price paid for such shares. A participant's basis in Restricted Shares, for purposes of determining the participant's gain or loss on subsequent disposition of such shares of common stock, generally, will be the fair market value of the shares of common stock on the date the risk of forfeiture on such shares lapse.

Upon the subsequent sale of the shares acquired under the Nonqualified ESPP, the participant will recognize capital gain or loss (long-term or short-term, depending on how long the shares were held following the date of purchase for Purchased Shares and the lapse of the risk of forfeiture for Restricted Shares prior to disposing of them).

The above is a general summary under current law of the material federal income tax consequences to an employee who participates in the Nonqualified ESPP. This summary deals with the general federal income tax principles that apply and is provided only for general information. Some kinds of taxes, such as state, local and foreign income taxes and federal employment taxes, are not discussed. Tax laws are complex and subject to change and may vary depending on individual circumstances and from locality to locality. The summary above does not discuss all aspects of federal income taxation that may be relevant in light of a participant's personal circumstances. Further, this summarized tax information is not tax advice and a participant in the Nonqualified ESPP should rely on the advice of his or her legal and tax advisors.

### New Plan Benefits

The increase in shares authorized for issuance under the proposed Nonqualified ESPP applies to future Offering Periods, starting with the Offering Period commencing June 21, 2020 and ending on December 20, 2020. The number of shares of common stock that may be acquired under the Nonqualified ESPP is dependent upon the closing trading price of our common stock on the last day of each future Offering Period, the voluntary election by each eligible employee to participate and the amount of a participant's payroll deductions during an Offering Period, and is not currently determinable. The following table states the amounts which were received by each of the named individuals and groups under our Nonqualified ESPP for our last completed fiscal year, and the number of shares of common stock purchased under the Nonqualified ESPP from its inception through March 18, 2020.

<u>Name and Position</u>	<u>Payroll Deductions Used to Purchase Shares in 2019 (\$ (1))</u>	<u>Number of Shares Issued in 2019 (2)</u>	<u>Number of Shares Issued from Inception through March 18, 2020 (2)</u>
Carl Russo (3) <i>President and Chief Executive Officer</i>	—	—	—
Cory Sindelar (3) <i>Chief Financial Officer</i>	—	—	—
Michael Weening (3) <i>Executive Vice President, Global Operations</i>	—	—	—
Executive Group (4)	—	—	—
Non-Executive Director Group (4)	—	—	—
Non-Executive Officer Employee Group	3,523,996	976,462	2,039,170

- (1) Represents fair market value at date of purchase. The purchase price of the shares was \$6.51 for the Offering Period ending June 20, 2019 and \$7.96 for the Offering Period ending December 20, 2019.
- (2) Includes Purchased Shares and Restricted Shares.
- (3) Messrs. Russo, Sindelar and Weening are not eligible to participate in the Nonqualified ESPP.
- (4) Groups not eligible to participate in the Nonqualified ESPP.

To be approved, this proposal must receive a "For" vote from the holders of a majority in voting power of the shares of common stock which are present or represented by proxy and entitled to vote on the proposal. Abstentions will have the same effect as an "Against" vote for purposes of determining whether this matter has been approved. Broker non-votes will not be counted for any purpose in determining whether this matter has been approved.

**THE BOARD OF DIRECTORS RECOMMENDS A VOTE "FOR" APPROVAL OF THE  
CALIX, INC. AMENDED AND RESTATED 2017 NONQUALIFIED EMPLOYEE STOCK PURCHASE PLAN AS  
DISCUSSED ABOVE.**

## PROPOSAL NO. 4

### APPROVAL ON A NON-BINDING, ADVISORY BASIS OF THE COMPENSATION OF OUR NAMED EXECUTIVE OFFICERS (“SAY-ON-PAY”)

We are seeking an advisory vote from our stockholders to approve the compensation paid to our NEOs, as disclosed in this Proxy Statement under the “Compensation Discussion and Analysis” section (“CD&A”) below.

Our Compensation Committee, with advice and information from its external compensation consultant and consideration of recommendations by our president and CEO for our executives (other than the CEO), has structured our executive compensation program to stress a pay-for-performance philosophy. The compensation opportunities provided to our NEOs are significantly dependent on Calix’s financial performance, the performance of Calix’s stock and the NEO’s individual performance, which are intended to drive creation of sustainable stockholder value. The Compensation Committee intends to continue to emphasize what it believes to be responsible compensation arrangements that attract and retain high-caliber executive officers and motivate strong performance to achieve Calix’s short- and long-term business strategies and objectives.

Our Board previously determined to hold an advisory “say-on-pay” vote every year. In accordance with this determination and Section 14A of the Exchange Act, you have the opportunity to vote “For” or “Against” or to “Abstain” from voting on the following non-binding resolution relating to executive compensation:

“RESOLVED, that the stockholders approve, on an advisory basis, the compensation paid to Calix’s NEOs as disclosed in Calix’s proxy statement for the 2020 Annual Meeting of Stockholders under the compensation disclosure rules of the SEC, including the compensation discussion and analysis, compensation tables and narrative discussion of the proxy statement.”

In deciding how to vote on this proposal, we encourage you to consider Calix’s executive compensation philosophy and objectives, the design principles and the elements of Calix’s executive compensation program described in our CD&A below. As described in the CD&A, a guiding principle of our compensation philosophy is that pay should be linked to performance and that the interests of our executives and stockholders should be aligned. Our compensation program is a mix of short- and long-term components, cash and equity elements and fixed and contingent payments in proportions we believe will provide the proper incentives, reward our NEOs, help us achieve our goals and increase stockholder value. For example:

- *Chief Executive Officer Compensation Aligned with Stockholder Interests.* A significant portion of our chief executive officer’s compensation is performance-based and reflects a market-based cash compensation package. As a holder of more than 10% of our common stock consistently since Calix’s initial public offering, our chief executive officer is a significant stockholder and his personal wealth has consistently been, and continues to be, tied directly to sustained stock price appreciation and performance, which provides direct alignment with stockholder interests.
- *Other NEOs Compensation Substantially Tied to Performance.* Our other NEOs generally earn a significant portion of their total compensation in the form of variable cash and long-term equity compensation contingent upon stated performance targets tied to achievement of growth in Calix’s stock price and Calix’s quarterly and annual financial performance along with consideration of individual executive performance. From time to time, our Compensation Committee may also choose to award our NEOs with discretionary bonuses and time-based option grants to recognize exemplary performance or for retentive purposes.
- *Change in Control and Severance Benefits Not Grossed Up.* Calix provides limited change in control and severance benefits to provide NEOs security and to remain competitive in attracting and retaining executive talent. Calix does not provide for any tax gross up to any NEO in connection with any change in control or severance benefits.
- *Clawback Policy.* Calix adopted a clawback policy in May 2019 that applies to all executive officers and covers all compensation under our cash incentive programs as well as all equity awards granted or awarded after the date the policy was adopted. The policy applies in the event our financial statements are restated as a result of material non-compliance with financial reporting rules as defined in the policy and provides our Board with broad discretion as to the actions that may be taken based on circumstances leading to the restatement, including recovery of incentive-based compensation received by an executive officer in excess of what the executive officer would have been paid under the restatement.
- *Two-Year Holding Period Upon Exercise of Time-Based Option Grants.* In November 2019, Mr. Sindelar and Mr. Weening were awarded current and future time-based option grants as discussed under “*Compensation Discussion and Analysis – November 2019 Awards for Cory Sindelar and Michael Weening*” below. Each option grant will vest and become exercisable over four years, and any shares issued upon exercise of the options are further subject to a two-year holding period from the vest date of such shares to further align our NEOs’ long-term equity compensation with the Company’s efforts to improve financial performance over the long-term.

To be approved, on a non-binding and advisory basis, the compensation paid to our NEOs must receive a “For” vote from the holders of a majority in voting power of the shares of common stock which are present or represented by proxy and entitled to vote on the proposal. Abstentions will have the same effect as “Against” votes for purposes of determining whether this matter has been approved. Broker non-votes will not be counted for any purpose in determining whether this matter has been approved.

While your vote on this proposal is advisory and will not be binding, we value the opinions of Calix’s stockholders on executive compensation matters and will take the results of this advisory vote into consideration when making future decisions regarding Calix’s executive compensation program. Unless the Board modifies its determination of the frequency of future “say on pay” advisory votes, the next “say-on-pay” advisory vote will be held at our 2021 Annual Meeting of stockholders.

**THE BOARD OF DIRECTORS RECOMMENDS A VOTE “FOR” THE APPROVAL OF THE COMPENSATION PAID TO THE NAMED EXECUTIVE OFFICERS, AS DISCLOSED IN THIS PROXY STATEMENT UNDER THE COMPENSATION DISCLOSURE RULES OF THE SEC.**

**PROPOSAL NO. 5**  
**RATIFICATION OF SELECTION OF INDEPENDENT**  
**REGISTERED PUBLIC ACCOUNTING FIRM**

Our Audit Committee has engaged KPMG LLP (“KPMG”) as our independent registered public accounting firm for the fiscal year ending December 31, 2020 and is seeking ratification of such selection by our stockholders at the Annual Meeting. KPMG has audited our financial statements since February 29, 2016. Representatives of KPMG are expected to be present at the Annual Meeting. They will have an opportunity to make a statement if they so desire and will be available to respond to appropriate questions.

Neither our bylaws nor other governing documents or law require stockholder ratification of the selection of KPMG as our independent registered public accounting firm. However, our Audit Committee is submitting the selection of KPMG to our stockholders for ratification as a matter of good corporate practice. If our stockholders fail to ratify the selection, the Audit Committee will reconsider whether or not to retain KPMG. Even if the selection is ratified, the Audit Committee in its discretion may direct the appointment of a different independent registered public accounting firm at any time during the year if they determine that such a change would be in the best interests of Calix and its stockholders.

To be approved, the ratification of the selection of KPMG as our independent registered public accounting firm must receive a “For” vote from the holders of a majority in voting power of the shares of common stock which are present or represented by proxy and entitled to vote on the proposal. Abstentions will have the same effect as an “Against” vote for purposes of determining whether this matter has been approved. Broker non-votes will not be counted for any purpose in determining whether this matter has been approved.

**Principal Accountant Fees and Services**

The following table provides information regarding the fees for the audit and other services provided by KPMG for the fiscal years ended December 31, 2019 and 2018 (in thousands).

	<b>Fiscal Years Ended December 31,</b>	
	<b>2019</b>	<b>2018</b>
Audit Fees	\$ 1,410	\$ 1,480
Audit-Related Fees	—	—
Tax Fees	—	—
All Other Fees	—	—
<b>Total Fees</b>	<b>\$ 1,410</b>	<b>\$ 1,480</b>

*Audit Fees*

Audit fees of KPMG consist of fees billed or expected to be billed for professional services rendered for the audit of our annual consolidated financial statements for the fiscal years ended 2019 and 2018, the audit of the effectiveness of our internal control over financial reporting and the review of our consolidated financial statements included in our Form 10-Q quarterly reports for the fiscal years ended 2019 and 2018. Audit fees also include services that are typically provided by the independent registered public accounting firm in connection with statutory and regulatory filings for our international subsidiaries for those fiscal years.

**Pre-Approval Policy and Procedures**

Our Audit Committee pre-approves all audit and non-audit services provided by our independent registered public accounting firm. Our Audit Committee may delegate authority to one or more members of the Audit Committee to provide such pre-approvals, provided that such approvals are presented to the Audit Committee at a subsequent meeting. This policy is set forth in the charter of the Audit Committee and available under “Governance” in the Investor Relations section of our website at [investor-relations.calix.com](http://investor-relations.calix.com).

**THE BOARD OF DIRECTORS RECOMMENDS A VOTE “FOR” THE RATIFICATION OF THE SELECTION OF KPMG LLP AS OUR INDEPENDENT REGISTERED PUBLIC ACCOUNTING FIRM FOR THE FISCAL YEAR ENDING DECEMBER 31, 2020.**

## EXECUTIVE COMPENSATION

### Compensation Discussion and Analysis

#### *Executive Summary*

Our compensation and benefits programs reflect our philosophy of compensation and incentivizing all of our employees, including our named executive officers (“NEOs”), in ways that support two primary objectives:

- attract, reward and retain exceptional talent in the markets in which we operate
- identify and reward outstanding performance that reflects Calix principles and values and aligns with long-term stockholder value creation

To help us achieve these objectives, a significant portion of our NEOs’ compensation is set to be “at risk” with significant upside potential for strong performance as well as downside exposure for underperformance. NEOs with greater responsibilities and the ability to directly impact our Company’s goals and long-term results bear a greater proportion of the risk if these goals and results are not achieved.

The following discussion describes and analyzes our compensation objectives and policies as well as the material components of our compensation program for our NEOs during 2019. Our NEOs for 2019 were:

- Carl Russo, President and Chief Executive Officer
- Cory Sindelar, Chief Financial Officer
- Michael Weening, Executive Vice President, Global Operations

#### *Compensation Philosophy and Process*

We strive to find the best talent, resources and infrastructure to serve our customers and key stakeholders, execute on our strategy as a cloud and software platforms, systems and services company and pursue our mission. Our goal is to attract and retain highly qualified executives to manage and oversee each of our business functions. We seek out individuals who we believe will be able to contribute to our business and our vision of future success, culture, principles and values and who will promote the long-term interests and growth of our Company. Our compensation philosophy is intended to promote a team-oriented approach to performance as a portion of each NEO’s incentive compensation is based on achievement against the same performance objectives as our broad-based incentive plan.

Our executive compensation program aims to achieve the following:

- enable us to attract, retain and drive a high caliber, talented leadership team to execute on our business strategy;
- foster a goal-oriented leadership team with a clear understanding of long-term business objectives and shared corporate principles and values;
- ensure that the elements of compensation provided to our employees and executives are balanced, individually and in combination, and do not encourage excessive risk-taking;
- reflect the competitive environment of our industry and our changing business needs;
- allocate our resources effectively and efficiently in the development and selling of market-leading platforms, systems and services; and
- maintain pay parity and fair compensation practices across our organization.

In furtherance of these goals, our executive compensation program is designed to:

- be market competitive, including targeting benchmarking and evaluating compensation levels and compensation practices to our peer group;
- emphasize pay for performance;
- share risks and rewards with our stockholders;
- align the interests of our executives with those of our stockholders; and
- reflect our principles and values.



Our executive compensation program includes the following components:

- base salary;
- incentive-based cash compensation;
- cash bonus awards;
- grants of long-term equity awards; and
- health, welfare and retirement benefits.

In November 2019, our Compensation Committee conducted its annual review of our executive compensation program with its independent compensation consultant, Aon, including a review of our pay philosophy, compensation mix, short and long-term incentive plan structures, equity plans and overall compensation program governance and risks and concluded that overall our executive compensation program was consistent with market practice and does not encourage excessive risk taking. In reaching these conclusions, our Compensation Committee, in consultation with Aon, also reviewed governance and pay-for-performance guidelines issued by proxy advisory firms.

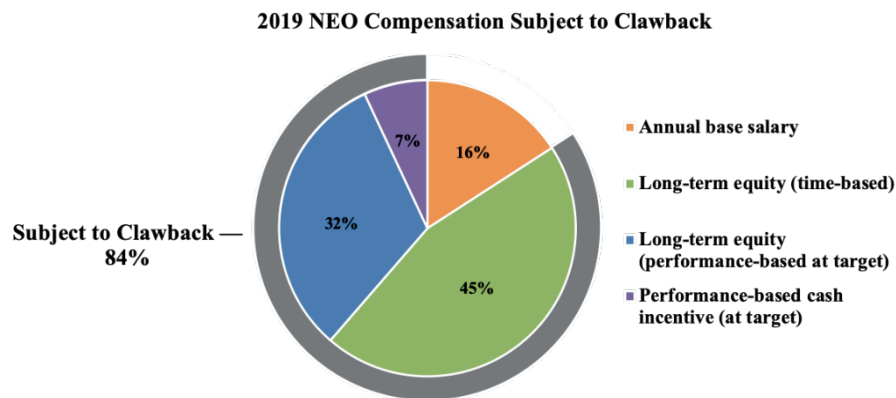
### ***Stockholder Advisory Vote on Executive Compensation***

We hold an advisory, non-binding stockholder vote on executive compensation every year. At our 2019 Annual Meeting of Stockholders, our stockholders voted to approve the compensation of our NEOs, with approval of 97% of the votes cast. The Compensation Committee also reviewed our compensation programs with Aon and management, including consideration of governance and pay-for-performance guidelines issued by proxy advisory firms. The Compensation Committee regularly reviews executive compensation programs, in conjunction with Aon, and makes changes it determines are appropriate. The Compensation Committee intends to continue to take into consideration the outcome of our stockholders' advisory "say-on-pay" votes along with market practices and the recommendations of its executive compensation advisor when making future compensation decisions for the NEOs.

### ***Clawback Policy***

In May 2019, we adopted a clawback policy that applies to all executive officers and covers all compensation under our cash incentive programs as well as all equity awards granted or awarded after the date the policy was adopted. The policy applies in the event our financial statements are restated as a result of material non-compliance with financial reporting rules as defined in the policy and provides our Board with broad discretion as to the actions that may be taken based on circumstances leading to the restatement, including recovery of incentive-based compensation received by an executive officer in excess of what the executive officer would have been paid under the restatement. Our Compensation Committee monitors regulatory developments with respect to compensation policies and will recommend to our Board of Directors any changes to the current policy that are necessary or appropriate in light of guidance issued by the SEC.

The compensation of our NEOs subject to clawback as of December 31, 2019 is as follows:



### ***Policy Prohibiting Speculative Transactions and Hedging or Pledging***

In accordance with our insider trading policy, which is annually reviewed by our Nominating and Corporate Governance Committee, we do not permit any officer, director or employee, and their respective family members, to directly or indirectly participate in certain trading activities related to our common stock that are considered aggressive or speculative in nature, including short sales, publicly-traded options, hedging transactions, margin purchases and pledging our common stock.

### ***Role of Our Compensation Committee***

Our Compensation Committee approves and interprets our executive compensation and benefit plans and policies. The Compensation Committee is appointed by the Board and consists entirely of directors who are non-employee directors for purposes of Rule 16b-3 of the Exchange Act. In 2019, our Compensation Committee determined the compensation for all of our NEOs. Our chief executive officer assesses NEO individual performance and compensation, excluding his own performance and compensation, each year and makes recommendations regarding each element of NEO compensation to the Compensation Committee. Our chief executive officer does not participate in any formal discussion with the Compensation Committee regarding decisions on his own compensation and recuses himself from discussions in which his compensation is assessed or determined by the Compensation Committee.

### ***Competitive Market Review***

The market for experienced executive leaders is highly competitive in our industry and for the skills and experience we desire. We strive to attract and retain highly qualified executives to effectively lead each of our business functions to achieve our business strategy. In doing so, we draw upon a pool of talent that is highly sought after by both large and established technology and telecommunications companies in our geographic area and by other competitive companies in development or growth phases. Established organizations in our industry seek to recruit top talent from emerging companies in the sector just as smaller organizations look to attract and retain the best talent from the industry as a whole. We also compete for key talent on the basis of: our vision of future success; our culture and values; the cohesiveness and productivity of our teams; and the excellence of our technical and leadership teams. The competition for technical and non-technical skills is aggressive across the sector, and we expect it to remain high for the foreseeable future.

Our Compensation Committee determines compensation for our NEOs in large part based upon its assessment of competitive market data and individual executive roles and responsibilities to pursue our short and long-term strategy. In setting executive compensation for 2019, our Compensation Committee conducted a review of our NEOs' compensation, as well as a mix of elements used to compensate our NEOs, and compared that information with data provided by Aon, as discussed below.

Our 2019 peer group criteria consisted of companies within the technology industry, with an increasing shift toward software and platform companies, with revenue between \$200 million and \$1.2 billion and market capitalizations between \$150 million and \$1.5 billion that we believe compete with us for executive talent. Our 2019 peer group was set by our Compensation Committee based on recommendations from Aon, consideration of ISS and Glass Lewis peer group criteria, and discussion with management. Although 8x8, Inc., Five9 Inc. and NetScout Systems, Inc. were above \$1.5 billion in market capitalization at the time of our 2019 peer group evaluation and selection, our Compensation Committee determined to retain these companies in the peer group after consideration as these companies align across all other peer group metrics. Our 2019 peer group consisted of the following companies:

- |                                    |                                  |
|------------------------------------|----------------------------------|
| • 8x8, Inc.                        | • Forescout Technologies, Inc. * |
| • A10 Networks, Inc.               | • Harmonic Inc.                  |
| • Applied Optoelectronics, Inc.    | • Infinera Corporation           |
| • CalAmp Corp.                     | • Inseego Corp.                  |
| • Carbon Black, Inc. *             | • Mobiletron, Inc. *             |
| • Casa Systems, Inc.               | • NetScout Systems, Inc.         |
| • Comtech Telecommunications Corp. | • QAD Inc. *                     |
| • Digi International Inc.          | • Ribbon Communications US LLC   |
| • Extreme Networks, Inc.           | • Talend *                       |
| • Five9 Inc.                       | • TESSCO Technologies, Inc.      |

\* Represents new additions to our peer group for 2019.

Our annual revenue and market cap were positioned at approximately the 65<sup>th</sup> percentile and 10<sup>th</sup> percentile, respectively, of our 2019 peer group. We determine our approximate position relative to the appropriate market benchmark by comparing our practices and levels: by target annual cash compensation, which includes base salary, target annual incentive opportunity; and by total direct compensation, which includes target cash compensation and equity compensation. Our Compensation Committee seeks to set the total

target cash compensation for our NEOs at approximately the 50<sup>th</sup> percentile of our peer group, when looking at the group in the aggregate.

During 2019, our Compensation Committee continued to engage Aon as its independent executive compensation advisor. Aon was hired directly by our Compensation Committee and works with management only at our Compensation Committee’s direction to interpret results, make recommendations and assist in setting compensation levels for our executive officers. Our Compensation Committee annually assesses the independence of its executive compensation advisor, including conducting a review with the advisor. After review, our Compensation Committee determined that Aon is independent and that there is no conflict of interest in retaining Aon currently or during 2019.

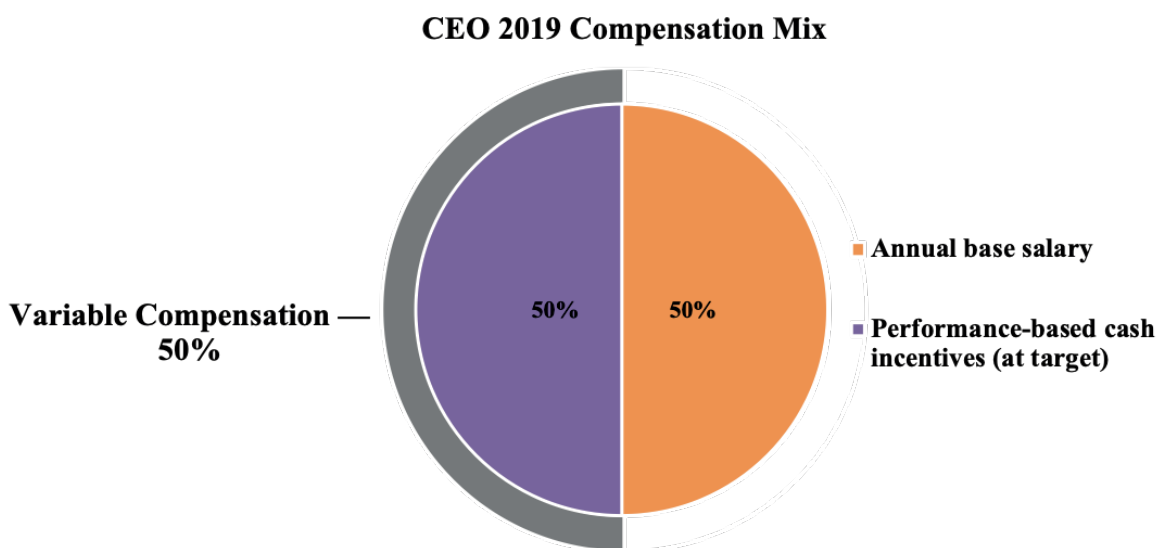
### ***Weighting of Elements in our Compensation Program***

The use and weight of each compensation element is based on a determination by our Compensation Committee of the importance of each element in meeting our overall corporate objectives for each year as well as our long-term business strategy. We also take into consideration assessments of our compensation program, including an assessment of compensation program risks and the recommendations of the Compensation Committee’s executive compensation advisor.

### ***Chief Executive Officer Compensation***

The compensation of Mr. Russo is annually reviewed by our Compensation Committee. In 2012, Mr. Russo’s base salary was set at \$500,000 per year with a cash incentive opportunity set at 100% of his annual base salary. For each year since 2012 through 2019, Mr. Russo’s base salary and cash incentive plan opportunity have remained as set in 2012. Mr. Russo, at his request, was not granted any equity awards during 2019, but continues to be a significant stockholder (with stock ownership of approximately 11.56% of common stock outstanding) with his personal wealth tied directly to sustained stock price appreciation and performance, which provides direct alignment with stockholder interests. Mr. Russo’s 2019 total target cash compensation is between the 25<sup>th</sup> and 50<sup>th</sup> percentile of our peer group of companies.

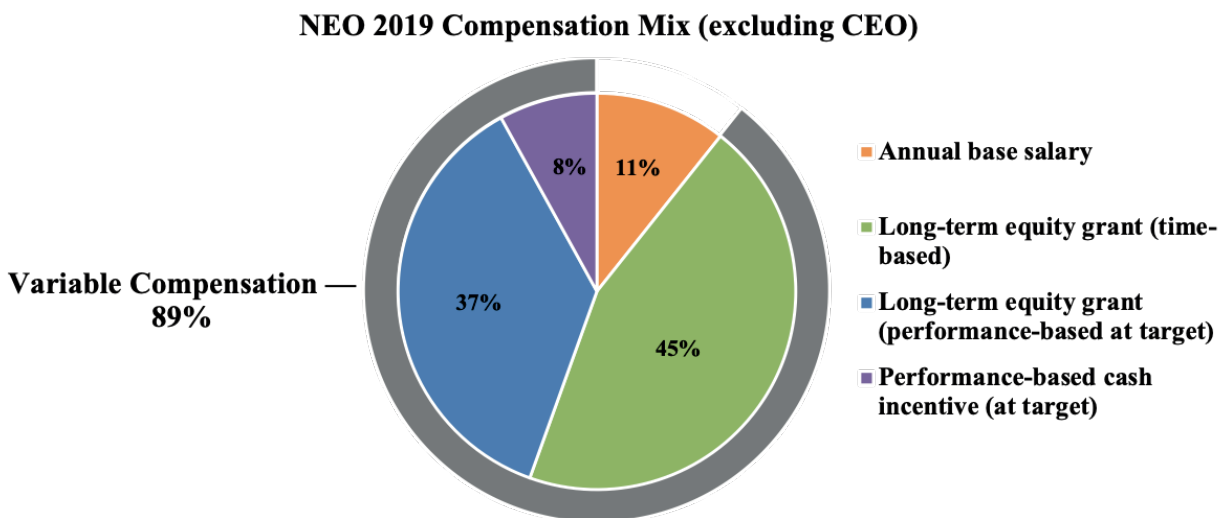
The weighting of compensation elements for Mr. Russo in 2019 is as follows:



### ***Other NEO Compensation***

As with our chief executive officer compensation, a significant amount of the total potential compensation of our other NEOs in 2019 is comprised of “at risk” variable compensation based on our achievements of corporate financial targets aligned with our financial objectives and our business strategy.

The weighting of compensation elements for our other NEOs in 2019 as a group is as follows:



For the purposes of the graphs above, the value of long-term equity is based on grant date fair value of the applicable equity award and, in the case of performance-based equity awards, adjusted to reflect the probability of achievement as of the date of grant. The graphs do not include time-based options to which Messrs. Sindelar and Weening became entitled, but will not be granted until the future, or the relocation bonuses payable to Mr. Weening in the future, in each case, as described below under “November 2019 Awards for Cory Sindelar and Michael Weening.”

**November 2019 Awards for Cory Sindelar and Michael Weening**

In November 2019, the Compensation Committee approved, and we entered into letter agreements with each of Mr. Sindelar and Mr. Weening (each, a “Letter Agreement”) that provide (1) each executive with current and future time-based stock option grants under the Company’s 2019 Equity Incentive Award Plan and (2) Mr. Weening with a relocation bonus. The Letter Agreements were entered into as an incentive for each executive to continue their employment with the Company. Among other considerations, the Committee placed significant importance on the focus areas for the next stage of the Company’s execution against its long-term strategy and growth as a cloud and software platform business and on our efforts to improve our financial performance over the long-term as we transform to a cloud and software platform company.

*Letter Agreement with Mr. Sindelar*

Pursuant to his Letter Agreement, in November 2019 Mr. Sindelar was granted an option to purchase 200,000 shares of the Company’s common stock and, subject to Mr. Sindelar’s continued employment with the Company, Mr. Sindelar will automatically be granted an additional option to purchase 150,000 shares of the Company’s common stock on the first anniversary of the initial grant date and an additional option to purchase 100,000 shares of the Company’s common stock on each of the second, third and fourth anniversaries of the initial grant date. Each such option has, or in the case of future grants will have, an exercise price per share equal to the closing trading price of the Company’s common stock on the date of grant, and will vest and become exercisable over four years, with 25% of the shares underlying each option vesting on the first anniversary of the grant date of such option, and the remainder vesting in equal quarterly installments over the next three years. Under Mr. Sindelar’s Letter Agreement, Mr. Sindelar will hold and may not transfer any shares issued upon exercise of the foregoing options until two years have lapsed from the vest date of such shares.

*Letter Agreement with Mr. Weening*

Pursuant to his Letter Agreement, in November 2019 Mr. Weening was granted an option to purchase 600,000 shares of the Company’s common stock and, subject to Mr. Weening’s continued employment with the Company, Mr. Weening will automatically be granted an additional option to purchase 300,000 shares of the Company’s common stock on the first anniversary of the initial grant date and an additional option to purchase 120,000 shares of the Company’s common stock on each of the second, third and fourth anniversaries of the initial grant date. Each such option has, or in the case of future grants will have, an exercise price per share equal to the closing trading price of the Company’s common stock on the date of grant, and will vest and become exercisable over four

years, with 25% of the shares underlying each option vesting on the first anniversary of the grant date of such option, and the remainder vesting in equal quarterly installments over the next three years. Under Mr. Weening’s Letter Agreement, Mr. Weening will hold and may not transfer any shares issued upon exercise of the foregoing options until two years have lapsed from the vest date of such shares.

In addition, Mr. Weening’s Letter Agreement provides for a relocation bonus (the “Relocation Bonus”) to be paid to Mr. Weening in quarterly installments of \$225,000, less deductions and withholdings, during the period commencing January 1, 2020 and ending December 31, 2024. The Relocation Bonus is subject to Mr. Weening’s relocation of his principal residence, currently in Canada, to the general vicinity of the Company’s San Jose, California offices on or prior to November 27, 2020 and Mr. Weening’s continued employment through each applicable payment date.

**Base Salary**

Base salary reflects the experience, skills, knowledge and responsibilities of each NEO as well as competitive market conditions. Base salary is one component of total cash compensation.

The table below sets forth the annual base salary as of December 31, 2019 for each NEO as set by our Compensation Committee:

<b><u>Name of Executive Officer</u></b>	<b><u>Annual Base Salary</u></b>
Carl Russo	\$ 500,000
Cory Sindelar	352,000
Michael Weening	352,000

The annual base salaries of our NEOs are reviewed at least once a year, and our Compensation Committee intends to make adjustments to reflect performance considerations as well as competitive conditions. For 2019, the Compensation Committee did not make any adjustments to our NEOs’ base salaries.

**Cash Incentive Compensation**

Our NEOs participate in our executive cash incentive plan. The executive cash incentive plan provides for funding of an executive’s cash incentive opportunity based on the Company’s achievement against preset quarterly corporate financial targets and an annual payout based on assessment of the NEO’s performance for the year. Our Compensation Committee sets target incentive opportunities for each NEO under the plan in an amount equal to a percentage of the NEO’s annual base salary. Our chief executive officer provides his assessment of individual NEO performance for our Compensation Committee determination of actual cash incentive payout of amounts funded under the plan. Our chief executive officer’s performance is evaluated and determined solely by our Compensation Committee. The cash incentive plan does not provide for any guaranteed payments. Further, our Compensation Committee retains discretion over funding of the cash incentive plan each quarter as well as the actual payout awarded to each executive.

In setting the performance targets for our cash incentive plan, our Compensation Committee seeks to align the performance targets to our key financial objectives and business strategy, which we believe best furthers the long-term interests of our stockholder. Our Compensation Committee establishes our quarterly corporate financial target based on the annual operating plan approved by our Board at the beginning of the year and based on quarterly financial information prepared by management. In general, the preset financial target needs to be achieved for that particular quarter in order for the cash incentive compensation pool to be funded for that quarter.

For 2019, our Compensation Committee set quarterly non-GAAP net income (loss) performance targets for the cash incentive plan. These performance targets were designed to incentivize specific desired financial growth and performance for the year as the Company continued to drive adoption of its cloud and software platforms while maintaining discipline over operating leverage. Non-GAAP net income (loss) for the purposes of the cash incentive plan is calculated as net income (loss) on a GAAP basis less certain items that are not considered indicative of our performance, consisting of: stock-based compensation, intangible asset amortization, U.S. tariff and tariff-related costs and loss on asset retirement.

Even though our Compensation Committee has established target cash incentive opportunities for each NEO, once our corporate performance goals are achieved and the cash incentive compensation pool is funded, our Compensation Committee retains further

discretion to adjust cash incentive compensation paid to each individual up or down, ranging from 0% to 125% of the individual's target cash incentive opportunity in 2019, based upon assessment of individual performance.

A summary of the total cash incentive compensation targets set by our Compensation Committee for our NEOs for 2019 is as follows:

**Total Target Cash Incentive Opportunity**

<b><u>Named Executive Officer</u></b>	<b><u>Target Cash Incentive Plan Opportunity</u></b>	<b><u>Target Cash Incentive Plan Opportunity as a Percentage of Base Salary</u></b>
Carl Russo	\$ 500,000	100%
Cory Sindelar	211,200	60%
Michael Weening	316,800	90%

**Achievement Against Quarterly Performance Targets**

For 2019, based on performance against the quarterly cash incentive plan performance target, our cash incentive plan was funded at 75% of the total annual cash incentive opportunity. The table below sets forth the quarterly financial targets under our cash incentive plan and the Compensation Committee's determination of our achievement for each fiscal quarter of 2019 for purposes of funding the cash incentive plan (in thousands, except for percentages).

<b><u>Fiscal Quarter</u></b>	<b><u>Non-GAAP Net Income (Loss) (1)</u></b>		<b><u>Compensation Committee Determination of Funding</u></b>
	<b><u>Target</u></b>	<b><u>Achievement</u></b>	
First quarter	\$ (2,000)	\$ (4,471)	0%
Second quarter	(1,300)	(621)	100%
Third quarter	2,200	3,306	100%
Fourth quarter	4,500	4,998	100%

- (1) Reconciliation of these non-GAAP amounts to GAAP is provided in Appendix C. First and second quarter amounts reflected the impact of delays in our supply chain realignment efforts to address U.S. tariffs on our products and weaker demand from certain incumbent local exchange carrier customers, as well as seasonally lower customer deployments in the first quarter.

**2019 Awarded Payout of Cash Incentive Compensation**

The table below summarizes the cash incentive payout awarded to each NEO under the cash incentive plan on amounts funded for 2019. The payout awards are determined by our Compensation Committee following assessment of performance and in consultation with Mr. Russo as to each NEO other than Mr. Russo. Each executive was awarded 100% of his funded opportunity under the cash incentive plan, which represented 75% of each executive's total annual cash incentive opportunity.

<b><u>Named Executive Officer</u></b>	<b><u>Target Cash Incentive Plan Opportunity</u></b>	<b><u>Amount Funded</u></b>	<b><u>Actual Award Payout</u></b>
Carl Russo	\$ 500,000	\$ 375,000	\$ 375,000
Cory Sindelar	211,200	158,400	158,400
Michael Weening	316,800	237,600	237,600

***Equity-Based Incentives***

Our 2019 Equity Incentive Award Plan provides our key employees, including our NEOs, with stock-based incentives to align their interests with the interests of our stockholders.

We believe that award of stock-based compensation to our key employees and executives encourages strong long-term financial and operational performance and provides them the opportunity to participate in the long-term appreciation of our stock value. Our Compensation Committee also annual reviews the equity plan “burn” rate metrics and related information, including benchmark data for peer companies and overall industry practices.

We generally provide grants of stock-based awards to our NEOs under our 2019 Equity Incentive Award Plan on an annual basis as determined by our Compensation Committee. Stock-based awards are generally in the form of stock option grants with either time-based vesting or performance-based vesting, with all awards subject to a minimum one-year vesting period from the date of grant. Awards with time-based vesting typically vest as to 25% of the shares subject to the award after the first twelve months of service and in equal quarterly installments thereafter with full vest in four years, subject to continued service through each vesting date. Awards with performance-based vesting, in addition to the one-year minimum vesting period from the date of grant, typically vest contingent on achievement of corporate goals or other financial targets set as of the grant date.

Initial awards at the time of hire generally vest solely based on the continued service of the NEO. The size and terms of the initial equity grant made to each new NEO upon joining the Company is primarily based on competitive conditions applicable to the NEO’s specific position and the value of unvested equity the executive is leaving at his or her prior company. In addition, we consider the number of shares of our common stock underlying stock-based awards granted to other executives in comparable positions within the Company.

Subsequent stock-based awards are granted at the discretion of the Compensation Committee, generally in recognition of a promotion or extraordinary performance, or as an annual refresh grants to continue to incentivize future performance. Annual refresh stock-based awards in recent years have generally included threshold financial performance criteria which are intended to reduce or eliminate the economic benefit of such awards in the event we do not achieve specified performance objectives. Because the performance-based awards are contingent upon the Company achieving financial targets as established by the Compensation Committee based on our business strategy and long-term growth initiatives, we believe the award to each NEO is closely aligned to the interests of our stockholders. If achieved, a portion of the shares underlying the performance-based awards vest immediately and a portion vests over time based on continuous service, generally over three years from the initial vesting upon achievement. We believe these awards provide an appropriate blend of performance-based incentive and executive-retention impact with a service-based vesting component. We believe that award size, performance target and vest terms are such that a significant portion of each NEO’s total compensation would be attained only if we achieved performance aligned with our growth initiatives and long-term stockholder value. We believe that our equity awards also provide an important retention tool for our NEOs, as they are typically subject to vesting over a longer service period based on the Compensation Committee’s assessment of the circumstances, such as timing of award, retention or other considerations.

Our Compensation Committee generally evaluates annual refresh grants of stock-based awards for our NEOs with any such equity awards expected to be tied to the following year’s financial performance and with vesting over a future service period, generally four years from the date of grant. In particular, the Company believes that the financial performance targets chosen for its equity awards to executives align with its objective of creating long-term stockholder value.

#### *Performance-Based Grant – 2019 Financial Performance*

In February 2019, the Compensation Committee granted an annual refresh grant of performance-based stock options for our executives tied to specific financial targets for 2019 (the “2019 Performance-Based Option”). Mr. Sindelar was granted a 2019 Performance-Based Option to purchase up to a maximum of 240,000 shares of common stock, and Mr. Weening was granted a 2019 Performance-Based Option to purchase up to a maximum of 300,000 shares of common stock, in each case with the actual number of shares of common stock awarded contingent on the Company’s achievement of both annual and quarterly corporate financial targets for revenue, non-GAAP gross margin and non-GAAP earnings per share for fiscal year 2019 (collectively, the “2019 Performance Targets”). At his request, Mr. Russo was not granted a 2019 Performance-Based Option. The terms of the grants for Messrs. Sindelar and Weening provide that the 2019 Performance-Based Option would vest, subject to the Compensation Committee’s certification of the achievement of the 2019 Performance Targets, as to 25% of the shares of common stock earned on the date of such certification, and as to the remaining 75% of the shares of common stock earned, in substantially equal quarterly installments over the subsequent three years. Under the terms of the grant, no shares will vest unless all of the 2019 Performance Targets are met. Furthermore, the terms of the 2019 Performance-Based Option provide that each NEO may receive a number of shares above their target shares for achievement of at least 125% above the non-GAAP earnings per share target, up to a maximum of 200% of the target shares based on actual achievement above 125% of the earnings per share target. See “*Grants of Plan-Based Awards in 2019*” for further information about the 2019 Performance-Based Option to each NEO.

In determining the 2019 Performance Targets, the Compensation Committee set the 2019 Performance Targets to align each NEO’s opportunity to earn the equity awards to the Company’s achievement against its quarterly and annual financial objectives

focused on gross margin expansion, disciplined operating expense investment, deliberate revenue growth and increased predictability. The Compensation Committee determined that these performance targets would align the NEO's execution against financial objectives that are aligned to stockholder interests and put the NEO equity awards "at risk" based on our performance in these areas.

In August 2019, the Compensation Committee exercised its discretion to amend the 2019 Performance Targets to provide for an NEO to receive up to 10% of the target shares for each quarter that the Company achieves revenue and earnings per share targets at or above the average of published analyst estimates of these metrics for the financial reporting quarter, up to a maximum of 40% of the target shares in the event both targets are achieved in each of the four quarters. The Compensation Committee made this amendment after consideration of several factors, primarily (1) the importance to long-term stockholder value of the Company's achievement against these metrics and the Company's focus on predictability of its quarterly financial results during its transformation to a cloud and software platform company, (2) recognition of certain unanticipated challenges that resulted in supply chain delays and product shortages in the first quarter of 2019 arising from the Company's significant efforts to transition manufacturing out of China in light of the U.S. federal government's imposition of tariffs on goods imported from China, (3) the executive team's significant efforts and execution to promptly mitigate supply chain delays and product shortages in order to meet customer requirements and achieve quarterly financial targets following the first quarter in face of continued uncertainty related to the U.S. tariffs and trade discussions between the U.S. and China, and (4) that the overall terms of the 2019 Performance-Based Options continued to place a significant portion of the target shares under the grant "at risk" dependent upon achievement against the remaining financial performance targets with a meaningful portion of the target shares under the grant forfeited based on non-achievement of the first quarter financial objectives. The Compensation Committee determined that the modified 2019 Performance Targets represented performance targets that continued to be challenging but attainable with concerted effort and execution, and therefore were consistent with the Company's compensation objective to incentivize strong executive performance toward the desired financial objectives. No other modifications were made to the terms of the 2019 Performance-Based Options.

In February 2020, following review of the Company's financial performance for 2019, the Compensation Committee certified that, based on the Company's reported annual and quarterly corporate financial targets for revenue, non-GAAP gross margin and non-GAAP earnings per share for fiscal year ending December 31, 2019, the 2019 Performance Targets (as modified) for the 2019 Performance-Based Options were partially met, resulting in an award to each NEO of 30% of their target shares. Specifically, the 2019 annual targets for revenue at \$475.0 million, non-GAAP gross margin at 47% and non-GAAP earnings per share of \$0.25 were not met, the quarterly revenue and non-GAAP earnings per share targets for the first quarter were not met, but the quarterly revenue and non-GAAP earnings per share targets for each of the second, third and fourth quarters were met as follows (in millions, except per share amounts):

<b>Fiscal Quarter</b>	<b>Revenue Target</b>	<b>Achievement</b>	<b>Non-GAAP EPS Target (1)</b>	<b>Non-GAAP EPS Achievement (1)</b>
First quarter	\$ 103.0	\$ 89.4	\$ (0.04)	\$ (0.08)
Second quarter	100.2	100.3	(0.04)	(0.01)
Third quarter	112.0	114.5	0.04	0.06
Fourth quarter	119.2	120.2	0.06	0.09

(1) Reconciliation of these non-GAAP amounts to GAAP is provided in Appendix C.

Based on the actual achievement against annual and quarterly financial targets, each Performance-Based Option became eligible to vest as to 30% of the target shares underlying 2019 Performance-Based Option, with 70% of the shares subject to the 2019 Performance-Based Options forfeited. Each 2019 Performance-Based Option immediately vested with respect to 25% of the shares eligible to vest thereto, with the remaining shares underlying the award to vest in substantially equal quarterly installments over the subsequent three years.

#### *2019 Time-Based Option Grant*

On November 27, 2019, the Company granted each of Messrs. Sindelar and Weening a stock option to purchase shares of the Company's common stock under the 2019 Equity Incentive Award Plan with Mr. Sindelar receiving a stock option to purchase 200,000 shares of common stock and Mr. Weening receiving a stock option to purchase 600,000 shares of common stock. Each stock option was granted at an exercise price of \$7.84 per share, equal to the closing trading price of the Company's common stock on the date of grant. Each stock option will vest and become exercisable over four years, with 25% of the shares underlying each option vesting on the first anniversary of the grant date of such option, and the remainder vesting in equal quarterly installments over the next three years. See discussion above under "November 2019 Awards for Cory Sindelar and Michael Weening."



### ***Change in Control and Severance Benefits***

We provide our NEOs with certain change in control and severance benefits under our Amended and Restated Executive Change in Control and Severance Plan (“CICSP”), which our Compensation Committee adopted in July 2010. In September 2017, our Compensation Committee amended the CICSP to expand eligibility to include additional members of senior management and to amend certain benefits in the event of a termination in connection with a change in control. Our Compensation Committee provides change in control and severance benefits to our senior management to, among other things, provide security to our NEOs including in the event of a change in control of the Company.

Under the CICSP, in the event an eligible NEO’s employment with us is terminated by us other than for Cause (as defined in the CICSP), death or disability and such termination is outside of the Change in Control Period (as defined below), he or she is eligible to receive (i) a cash severance payment in an amount equal to 12 months of base salary and a pro-rata portion of the eligible NEO’s annual bonus opportunity at target, (ii) 12 months accelerated vesting of equity awards and (iii) 12 months of health insurance benefit continuation, subject to certain exceptions.

In the event an eligible NEO’s employment with us is terminated by us other than for Cause, or the eligible NEO terminates his or her employment for Good Reason (as defined in the CICSP) during a period of time commencing 60 days prior to a change in control and ending 12 months following the change in control (the “Change in Control Period”), he or she is eligible to receive (i) a cash severance payment in an amount equal to: 24 months of base salary (in the case of Mr. Russo) or 12 months of base salary (in the case of Messrs. Sindelar and Weening); 200% of the annual bonus opportunity at target (in the case of Mr. Russo) or 100% of the annual bonus opportunity at target (in the case of Messrs. Sindelar and Weening); and a pro-rata portion the eligible NEO’s annual bonus opportunity at target, subject to attainment of the performance criteria with respect to the eligible NEO’s bonus opportunity, (ii) 100% acceleration of all equity awards and (iii) 24 months of health insurance benefit continuation (in the case of Mr. Russo) or 12 months of health insurance benefit continuation (in the case of Messrs. Sindelar and Weening), in each case subject to certain exceptions.

Our NEOs must execute, and not revoke during any applicable revocation period, a general release of claims against us in order to be eligible for any severance benefits. We do not provide for any tax gross-up payments under our CICSP or otherwise in connection with executive severance benefits.

### ***Benefits***

We provide the following benefits, as applicable to all employees, including our NEOs:

- medical, dental and vision insurance;
- life insurance, accidental death and dismemberment and business travel and accident insurance;
- employee assistance program;
- health and dependent care flexible spending accounts;
- transportation flexible spending accounts;
- employee stock purchase plans;
- short- and long-term disability;
- 401(k) plan for U.S. employees;
- Registered Retirement Savings Plan for Canadian employees, including for Mr. Weening, and a pension plan for employees in certain other countries outside of the U.S. and Canada; and
- health club membership reimbursement.

### ***Perquisites***

Our NEOs participate in the same benefit programs as other employees and do not receive any other perquisites.

### ***Tax and Accounting Considerations***

#### **Section 280G of the Internal Revenue Code**

Section 280G of the Internal Revenue Code disallows a tax deduction for “excess parachute payments” and Section 4999 of the Code imposes a 20% excise tax on any person who receives excess parachute payments. Our NEOs are not eligible to receive any tax

gross-up payments in the event any payments made or that may be made to them become subject to this excise tax. The Compensation Committee will take into account the implications of Section 280G in determining potential payments to be made to our executives in connection with a change in control. Nevertheless, to the extent that certain payments upon a change in control are classified as excess parachute payments, such payments may not be deductible under Section 280G.

### Section 409A of the Internal Revenue Code

Section 409A of the Internal Revenue Code, which governs the form and timing of payment of deferred compensation, imposes a 20% tax and an interest penalty on the recipient of deferred compensation that is subject to but does not comply with Section 409A. As a general matter, it is our intention to design and administer our compensation and benefits plans and arrangements for all of our employees and other service providers, including our NEOs, so that they are either exempt from, or satisfy the requirements of, Section 409A of the Code. The Compensation Committee will take into account the implications of Section 409A in determining the form and timing of compensation awarded to our executives and will strive to structure any nonqualified deferred compensation plans or arrangements to be exempt from or to comply with the requirements of Section 409A.

### Section 162(m) of the Internal Revenue Code

Section 162(m) disallows a tax deduction for any publicly-held corporation for individual compensation exceeding \$1 million in any taxable year for our CEO, our CFO, any employee who is one of the top three highest compensated executive officers for the tax year; or for any employee who was an NEO for any preceding taxable year beginning after December 31, 2016 referred to as “covered employees.” Further, since the enactment of tax reform legislation on December 22, 2017 (the “2017 Tax Reform Act”), “qualified performance-based compensation” is exempt from this \$1 million limitation only if payable pursuant to a written binding contract in effect on November 2, 2017 (and that has not subsequently been materially modified). The Compensation Committee has not previously taken the deductibility limit imposed by Section 162(m) into consideration in setting compensation and as a result of the 2017 Tax Reform Act, a deduction for any compensation paid to our NEOs in excess of \$1 million is disallowed.

### Accounting for Stock-Based Compensation

We follow Financial Accounting Standards Board Accounting Standards Codification Topic 718 (“ASC Topic 718”) for our stock-based compensation awards. ASC Topic 718 requires companies to calculate the grant date “fair value” of their stock-based awards using a variety of assumptions. ASC Topic 718 also requires companies to recognize the compensation cost of their stock-based awards in their income statements over the period that an employee is required to render service in exchange for the award. Grants of stock options, restricted stock, RSUs and other stock-based awards under our equity incentive award plans will be accounted for under ASC Topic 718. Our Compensation Committee will regularly consider the accounting implications of significant compensation decisions, especially in connection with decisions that relate to our equity incentive award plans and programs. As accounting standards change, we may revise certain programs to appropriately align accounting expenses of our equity awards with our overall executive compensation philosophy and objectives.

### Summary Compensation Table

The following table sets forth all of the compensation awarded to, earned by or paid to our NEOs during 2019, 2018 and 2017.

Name and Principal Position	Year	Salary (\$)	Bonus (\$)	Option Awards (\$) (1)	Non-Equity Incentive	All Other Compensation (\$) (2)	Total (\$)
					Plan Compensation (\$)		
Carl Russo President and Chief Executive Officer	2019	500,000	—	—	375,000	—	875,000
	2018	500,000	—	—	—	—	500,000
	2017	500,000	—	1,440,222	—	—	1,940,222
Cory Sindelar Chief Financial Officer	2019	352,000	—	1,808,261	158,400	8,400	2,327,061
	2018	336,000	—	383,670	86,800	6,979	813,449
	2017	73,846	—	1,026,959	—	102,215	1,203,020
Michael Weening Executive Vice President, Global Operations	2019	352,000	—	3,552,666	237,600	13,032	4,155,298
	2018	336,000	—	724,710	142,145	7,703	1,210,558
	2017	320,000	140,000	1,012,738	59,293	5,813	1,537,844

- (1) Amounts reported in 2019 for Messrs. Sindelar and Weening include (i) the value of the 2019 Performance-Based Option as granted in February 2019, (ii) the incremental value to the 2019 Performance-Based Option as a result of the August 2019

modification to such awards and (iii) the value of the November 2019 time-based option grants. The amounts as reported were calculated in accordance with ASC Topic 718, excludes the impact of estimated forfeitures related to service-based vesting conditions, assumes 100% performance and are not adjusted for subsequent changes in our stock performance or the level of ultimate vesting. For a further discussion of the 2019 Performance-Based Option, see above under “*Performance-Based Grant – 2019 Financial Performance.*” For a further discussion of the November 2019 time-based option grants, see above under “*2019 Time-Based Option Grant.*” For a discussion of the assumptions used in the valuations of the stock options, see Note 7 of the Notes to Consolidated Financial Statements included in our Annual Report on Form 10-K for the year ended December 31, 2019.

- (2) Amounts reported for 2019 represent (i) employer matching contributions of \$8,400 we made for Mr. Sindelar pursuant to our U.S. 401(k) Plan and (ii) employer matching contributions of \$13,032 we made for Mr. Weening to the Canadian Registered Retirement Savings Plan (“RRSP”), a tax-deferred capital accumulation plan in which our Canadian employees can participate. Payments under the RRSP are set in Canadian dollars and were converted to U.S. dollars using an average exchange rate of CAD1.00 to US\$0.7538. Amount reported for Mr. Sindelar in 2017 represent (i) compensation in the amount of \$100,000 we made to Mr. Sindelar under a consulting arrangement pursuant to which Mr. Sindelar served as our interim chief financial officer and principal financial officer and (ii) employer matching contributions of \$2,215 we made for Mr. Sindelar pursuant to our U.S. 401(k) Plan.

### Grants of Plan-Based Awards in 2019

The following table lists grants of plan-based awards to our NEOs in 2019 and their related fair value as of the respective grant date.

Name	Grant Date	Estimated Possible Payouts Under Non-Equity Incentive Plan Awards	Estimated Possible Payouts Under Equity Incentive Plan Awards (2)		All Other Option Awards: Number of Securities Underlying Options (4)	Exercise or Base Price of Option Awards (\$/Sh)	Grant Date Fair Value of Option and Stock Awards (\$ (5)
		Target (\$ (1)	Target (#)	Maximum (#)			
Carl Russo	—	500,000	—	—	—	—	—
Cory Sindelar	—	211,200	—	—	—	—	—
	11/27/2019	—	—	—	200,000	7.84	738,480
	08/15/2019(3)	—	120,000	240,000	—	8.03	136,181(3)
	02/14/2019	—	120,000	240,000	—	8.03	933,600
Michael Weening	—	316,800	—	—	—	—	—
	11/27/2019	—	—	—	600,000	7.84	2,215,440
	08/15/2019(3)	—	150,000	300,000	—	8.03	170,226(3)
	02/14/2019	—	150,000	300,000	—	8.03	1,167,000

- (1) These amounts represent possible payouts if the incentive plan performance goals are achieved at target level under our cash incentive plan for 2019, which do not provide for threshold or maximum levels. See discussion above under “*Summary of Payouts of Cash Incentive Compensation.*”
- (2) Amounts reported represent target and maximum shares underlying options that comprised the 2019 Performance-Based Options granted to Messrs. Sindelar and Weening. The number of shares subject to such stock option grants eligible to vest are contingent upon achievement of 2019 financial performance metrics, with 25% of the shares earned based on performance scheduled to vest on February 13, 2020 and the remaining 75% scheduled to vest in substantially equal installments over the subsequent 36 months. In February 2020, the Compensation Committee certified partial attainment of the 2019 performance metrics, resulting in an award of 30% of the shares subject to each stock option grant. See discussion above under “*Performance Based Grant – 2019 Financial Performance.*”
- (3) Amounts reported represent the incremental value to the 2019 Performance-Based Options granted to Messrs. Sindelar and Weening that was modified in August 2019 after originally being granted in February 2019. This incremental value was calculated in accordance with ASC Topic 718, excludes the impact of estimated forfeitures related to service-based vesting conditions, assumes 100% performance and are not adjusted for subsequent changes in our stock performance or the level of ultimate vesting. See discussion above under “*Performance Based Grant – 2019 Financial Performance.*”
- (4) Represents the November 2019 stock option awards granted to Messrs. Sindelar and Weening. Each stock option grant vests over four years, with 25% of the common stock subject to the grant vesting and becoming exercisable on the one-year anniversary of the grant date, and the remainder vesting and becoming exercisable quarterly thereafter in substantially equal installments over the next 36 months. No shares issued upon exercise of the grant may be transferred in any manner prior to the

second anniversary of the date such shares vested. For a further discussion of the November 2019 time-based option grants, see above under “2019 Time-Based Option Grant.”

- (5) Amounts reported represent the aggregate grant date fair value, calculated in accordance with ASC Topic 718, and exclude the impact of estimated forfeitures related to service-based vesting conditions. Grant date fair value of performance-based stock option awards were calculated assuming 100% performance.

### Outstanding Equity Awards at December 31, 2019

The following table lists all outstanding equity awards held by our NEOs as of December 31, 2019.

Name	Grant Date	Option Awards				
		Number of Securities Underlying Unexercised Options Exercisable (#)	Number of Securities Underlying Unexercised Options Unexercisable (#)	Equity Incentive Plan Awards: Number of Securities Underlying Unexercised Unearned Options (#)	Option Exercise Price (\$)	Option Expiration Date
Carl Russo	1/28/2014	120,000	—	—	8.18	1/28/2024
	2/21/2013	200,000	—	—	8.41	2/21/2023
	2/24/2011	100,000	—	—	19.75	2/24/2021
Cory Sindelar	11/27/2019	—	200,000 (1)	—	7.84	11/27/2029
	2/14/2019	—	—	240,000 (2)	8.03	2/14/2029
	12/29/2017	74,250	33,750 (3)	—	5.95	12/29/2027
	10/1/2017	150,000	150,000 (4)	—	5.05	10/1/2027
Michael Weening	11/27/2019	—	600,000 (1)	—	7.84	11/27/2029
	2/14/2019	—	—	300,000 (2)	8.03	2/14/2029
	12/29/2017	140,250	63,750 (3)	—	5.95	12/29/2027
	6/27/2016	332,500	47,500 (4)	—	6.38	6/27/2026

- (1) Represents the November 2019 stock option awards granted to Messrs. Sindelar and Weening. Each stock option grant vests over four years, with 25% of the common stock subject to the grant vesting and becoming exercisable on the one-year anniversary of the grant date, and the remainder vesting and becoming exercisable quarterly thereafter in substantially equal installments over the next 36 months. No shares issued upon exercise of the grant may be transferred in any manner prior to the second anniversary of the date such shares vested. For a further discussion of the November 2019 time-based option grants, see above under “2019 Time-Based Option Grant.”
- (2) Represents shares underlying 2019 Performance-Based Options granted to Messrs. Sindelar and Weening that were subsequently modified in August 2019. The number of shares subject to such stock option grants eligible to vest are contingent upon achievement of 2019 financial performance metrics, with 25% of the shares earned based on performance scheduled to vest on February 13, 2020 and the remaining 75% scheduled to vest in substantially equal installments over the subsequent 36 months. In February 2020, the Compensation Committee certified partial attainment of the 2019 performance metrics, resulting in 30% of the shares subject to each 2019 Performance-Based Option being eligible to vest. At his election, Mr. Russo did not receive a 2019 Performance-Based Equity Award. See discussion above under “Performance Based Grant – 2019 Financial Performance.”
- (3) Represents shares underlying options that comprised the 2018 performance-based equity awards earned by Messrs. Sindelar and Weening. In February 2019, the Compensation Committee certified attainment of the 2018 performance metric. Each stock option grant vests over three years, with 50% of the shares earned based on performance vesting on January 1, 2019 and the remaining 50% vesting quarterly in substantially equal installments over the subsequent 24 months. At his election, Mr. Russo did not receive a 2018 performance-based equity award.
- (4) Represents Messrs. Sindelar’s and Weening’s stock option grants pursuant to their offer letters. Each stock option grant vests over four years, with 25% of the common stock subject to the grant vesting and becoming exercisable on the one-year anniversary of the grant date, and the remainder vesting quarterly thereafter in substantially equal installments over the next 36 months.

### Option Exercises and Stock Vested in 2019

None of our NEOs exercised stock options or held stock awards that vested during 2019.

## Potential Payments Upon Termination or Change of Control

Each of our NEOs is entitled to severance upon a termination without cause or, only during a change in control, a resignation for good reason under our CICSP. See the section above entitled “*Change in Control and Severance Benefits*” for more information regarding the benefits provided under our CICSP.

The table below sets forth the estimated payments and benefits that would be provided to each of our NEOs upon a termination of employment without cause or, following a change in control, resignation for good reason if our NEO’s employment had terminated on December 31, 2019 or a change in control was consummated on December 31, 2019, as applicable, taking into account the NEO’s compensation as of that date.

Executive Benefits and Payments upon Termination	Involuntary Termination for Reasons Other Than Cause, Death or Disability, or Voluntary Termination for Good Reason Only During a Change in Control	
	Not in Connection with a Change in Control (\$)	60 Days Prior to or 12 Months Following a Change in Control (\$)
<b>Carl Russo</b>		
Cash severance (1)	\$ 1,000,000	\$ 2,500,000
Value of accelerated vesting of equity awards (2)	—	—
Health insurance benefit continuation (3)	18,957	37,914
<b>Total</b>	<b>\$ 1,018,957</b>	<b>\$ 2,537,914</b>
<b>Cory Sindelar</b>		
Cash severance (1)	\$ 563,200	\$ 774,400
Value of accelerated vesting of equity awards (2)	284,600	543,688
Health insurance benefit continuation (3)	19,187	19,187
<b>Total</b>	<b>\$ 866,987</b>	<b>\$ 1,337,275</b>
<b>Michael Weening</b>		
Cash severance (1)	\$ 668,800	\$ 985,600
Value of accelerated vesting of equity awards (2)	205,500	303,638
Health insurance benefit continuation (3)	530	530
<b>Total</b>	<b>\$ 874,830</b>	<b>\$ 1,289,768</b>

- (1) In the event of termination not in connection with a Change in Control, the NEO is eligible to receive a cash severance payment in an amount equal to the sum of 12 months of base salary and a pro-rata portion of the eligible NEO’s annual bonus opportunity at target. In the event of termination in connection with a Change in Control, the NEO is eligible to receive a cash severance payment in an amount equal to the sum of: 24 months of base salary (in the case of Mr. Russo) or 12 months of base salary (in the case of Messrs. Sindelar and Weening); 200% of the annual bonus opportunity at target (in the case of Mr. Russo) or 100% of the annual bonus opportunity at target (in the case of Messrs. Sindelar and Weening); and a pro-rata portion of the NEO’s annual bonus opportunity at target, subject to attainment of the performance criteria with respect to the NEO’s bonus opportunity.
- (2) In the event of termination not in connection with a Change in Control, the NEO is eligible to receive 12 months accelerated vesting of equity awards. In the event of termination in connection with a Change in Control, the NEO is eligible to receive 100% acceleration of all equity awards. The value of accelerated vesting of equity awards amounts was calculated based on a closing trading price of \$8.00 per share at December 31, 2019. The value associated with stock option grants for which the per share exercise price is higher than the closing trading price of \$8.00 per share is reflected as zero.
- (3) In the event of termination not in connection with a Change in Control, the NEO is eligible to receive 12 months of health insurance benefit continuation. In the event of termination in connection with a Change in Control, the NEO is eligible to receive 24 months of health insurance benefit continuation (in the case of Mr. Russo) or 12 months of health insurance benefit continuation (in the case of Messrs. Sindelar and Weening).

## Limitation of Liability and Indemnification

Calix's amended and restated certificate of incorporation contains provisions that limit the liability of Calix's directors for monetary damages to the fullest extent permitted by Delaware law. Consequently, Calix's directors will not be personally liable to Calix or Calix's stockholders for monetary damages for any breach of fiduciary duties as directors, except liability for:

- any breach of the director's duty of loyalty to Calix or Calix's stockholders;
- any act or omission not in good faith or that involves intentional misconduct or a knowing violation of law;
- unlawful payments of dividends or unlawful stock repurchases or redemptions as provided in Section 174 of the Delaware General Corporation Law; or
- any transaction from which the director derived an improper personal benefit.

Calix's amended and restated certificate of incorporation and amended and restated bylaws provide that Calix is required to indemnify Calix's directors and officers, in each case to the fullest extent permitted by Delaware law. Calix's amended and restated bylaws also provide that Calix is obligated to advance expenses incurred by a director or officer in advance of the final disposition of any action or proceeding, and permit Calix to secure insurance on behalf of any officer, director, employee or other agent for any liability arising out of his or her actions in that capacity regardless of whether Calix would otherwise be permitted to indemnify him or her under the provisions of Delaware law. Calix has entered into and expects to continue to enter into agreements to indemnify Calix's directors, executive officers and other employees as determined by the Board. With specified exceptions, these agreements provide for indemnification for related expenses including, among other things, attorneys' fees, judgments, fines and settlement amounts incurred by any of these individuals in any action or proceeding. Calix believes that these provisions and indemnification agreements are necessary to attract and retain qualified persons as directors and officers. Calix also maintains directors' and officers' liability insurance.

The limitation of liability and indemnification provisions in Calix's amended and restated certificate of incorporation and amended and restated bylaws may discourage stockholders from bringing a lawsuit against Calix's directors and officers for breach of their fiduciary duty. They may also reduce the likelihood of derivative litigation against Calix's directors and officers, even though an action, if successful, might benefit Calix and other stockholders. Further, a stockholder's investment may be adversely affected to the extent that Calix pays the costs of settlement and damage awards against directors and officers as required by these indemnification provisions. Insofar as indemnification for liabilities arising under the Securities Act may be permitted to Calix's directors, officers and controlling persons under the above provisions, or otherwise, Calix has been advised that, in the opinion of the SEC, such indemnification is against public policy as expressed in the Securities Act, and is, therefore, unenforceable. At present, there is no pending litigation or proceeding involving any of Calix's directors, officers or employees for which indemnification is sought, and Calix is not aware of any threatened litigation that may result in claims for indemnification.

## CEO PAY RATIO

As required by Section 953(b) of the Dodd-Frank Wall Street Reform and Consumer Protection Act and Item 402(u) of Regulation S-K, we are required to disclose the ratio of our principal executive officer's annual total compensation to the annual total compensation of our median employee.

During fiscal 2019, Mr. Russo was the principal executive officer of Calix. For 2019, the annual total compensation for Mr. Russo was \$875,000, as disclosed under the Summary Compensation Table above, and the annual total compensation for our median employee was \$150,529, calculated using the same methodology as applied for Mr. Russo in the Summary Compensation Table above, resulting in a pay ratio of approximately 6:1. Annual total compensation includes compensation awarded, earned or paid during 2019.

In accordance with Item 402(u) of Regulation S-K, and consistent with the process developed to identify the median employee for 2018, we identified the median employee for 2019 by (i) aggregating for each applicable employee, as of October 1, 2019 (the median employee determination date): (A) annual base salary for permanent salaried employees, or hourly rate multiplied by expected work schedule, for hourly employees and (B) the target incentive compensation for 2019, and (ii) ranking this compensation measure for our employees from lowest to highest. This calculation was performed for all employees, excluding Mr. Russo, whether employed on a full-time, part-time or seasonal basis.

We believe the pay ratio reported above is a reasonable estimate calculated in a manner consistent with SEC rules. Because the SEC rules allow companies to utilize different methodologies and companies have different employee populations and compensation practices, the pay ratio reported by other companies may not be comparable to the pay ratio reported above.

## DIRECTOR COMPENSATION

Our Compensation Committee reviews compensation for our non-employee directors on an annual basis, taking into consideration market data for our peer group, recommendations from its compensation advisor based on market data analysis and governance considerations issued by proxy advisory firms. Compensation for our non-employee directors consists of cash retainers for service on the Board and Board committees, with an initial equity award granted upon joining the Board and an annual equity award granted on the date of each annual meeting of stockholders. We do not provide for any per meeting fees for attendance at meetings. Members of the Board who are employees of Calix do not receive any compensation for their service as directors.

### Cash Compensation

Under Calix's Non-Employee Director Cash Compensation Policy, directors who were not employed by Calix or one of our affiliates received the following cash retainers for their service on the Board and committees of the Board during 2019:

	<u>Amount</u>
<b>Base Retainer</b>	\$ 45,000
<b>Board and Committee Chair Service</b> (in addition to Base Retainer)	
Board Chair	45,000
Audit Committee Chair	35,000
Compensation Committee Chair	20,000
Nominating and Corporate Governance Committee Chair	10,000
Cybersecurity Committee Chair	10,000
Strategic Committee Chair	10,000
<b>Non-Chair Committee Service</b> (in addition to Base Retainer)	
Audit Committee	10,000
Compensation Committee	7,500
Nominating and Corporate Governance Committee	5,000
Cybersecurity Committee	5,000
Strategic Committee	5,000

In May 2019, the Board approved an increase to the base and board chair retainers from \$40,000 to \$45,000. Prior to this increase, the cash retainers for Board and committee service had remained unchanged since 2014. The retainer for the Cybersecurity Committee was added upon the formation of that Committee in 2017 and the retainer for the Strategic Committee was added upon the formation of that Committee in 2018.

### Equity Compensation

Under our Non-Employee Director Equity Compensation Policy, non-employee directors will automatically be granted RSUs valued at \$200,000 (based on the per share closing price of our common stock on the date such director commences service) upon their election or appointment to the Board. The initial grant is prorated based on the non-employee director's start date through the applicable vesting date and will vest with respect to 100% of the RSUs on the earlier of the one-year anniversary of the date of grant or the day immediately preceding the date of the next annual meeting of stockholders following the year of grant.

Each director who is a non-employee director immediately following each annual meeting of stockholders, provided that such director has served as a director for at least six months prior to such date, will also automatically be granted RSUs valued at \$140,000 (based on the per share closing price of our common stock on the date of such annual meeting of stockholders). In May 2019, upon the recommendation of the Compensation Committee after its review of market data and the analysis and recommendation of its compensation advisor, the Board approved an increase to the value of such annual director RSU grant from \$120,000 to \$140,000. Prior to this increase, the value of the annual director RSU grant had remained unchanged since April 2014. The annual grant vests as to 100% of the RSUs on the day immediately prior to the date of the next annual meeting of stockholders following the date of grant, subject to continued Board service to Calix through the applicable vesting date.

Members of the Board who are Calix employees and who subsequently terminate employment with Calix and remain on the Board are not eligible for initial grants of RSUs but are eligible, after termination of employment with Calix, for annual grants of RSUs.

All options, RSUs and other equity awards held by a non-employee director, regardless of when granted, automatically accelerate in the event of a change in control of Calix.

### Limits on Non-Employee Director Equity Awards

Under our 2019 Plan, the grant date fair value of equity-based awards granted to a non-employee director during any calendar year shall not exceed \$750,000.

### Director Stock Ownership Guidelines

Under our director stock ownership guidelines, each director is expected to acquire and maintain ownership of Calix common stock having a value of no less than four (4) times the annual Board cash retainer, which achievement of the requisite stock ownership expected on or before the date five years after the initial appointment date of such director. If a director fails to meet these guidelines, shares from such director's annual equity grants will be held until the guidelines are met. Each of our directors is currently in compliance with our director stock ownership guidelines.

### Other Arrangements

We reimburse non-employee directors for travel, lodging and other expenses incurred in connection with their attendance at Board and committee meetings.

### Director Compensation Table

The following table sets forth information regarding compensation earned by our non-employee directors during the year ended December 31, 2019.

<u>Name</u>	<u>Fees Earned or Paid in Cash</u>	<u>Stock Awards (1)</u>	<u>Total</u>
Don Listwin	\$ 110,618	\$ 140,000	\$ 250,618
Christopher Bowick	63,118	140,000	203,118
Kathy Crusco	58,118	140,000	198,118
Kevin DeNuccio	55,618	140,000	195,618
Michael Everett	78,118	140,000	218,118
Kira Makagon	48,118	140,000	188,118
Michael Matthews	58,118	140,000	198,118
Kevin Peters	58,118	140,000	198,118
J. Daniel Plants	51,236	140,000	191,236

- (1) Amounts reflect the grant date fair value of RSUs granted in 2019 calculated in accordance with ASC Topic 718 for share-based payment transactions and exclude the impact of estimated forfeitures related to service-based vesting conditions. We value RSUs based on the closing trading price of our common stock on the date of grant.

As of December 31, 2019, outstanding options and RSUs held by our current non-employee directors were as follows:

<u>Name</u>	<u>Stock Options (#)</u>	<u>Restricted Stock Units (#)</u>
Don Listwin	7,500	21,148
Christopher Bowick	—	21,148
Kathy Crusco	—	21,148
Kevin DeNuccio	—	21,148
Michael Everett	10,000	21,148
Kira Makagon	—	21,148
Michael Matthews	12,500	21,148
Kevin Peters	—	21,148
J. Daniel Plants	—	21,148



## EQUITY COMPENSATION PLAN INFORMATION

The following table provides certain information as of December 31, 2019, with respect to all of our equity compensation plans in effect on that date.

Plan Category	Number of Securities to be Issued Upon Exercise of Outstanding Options and Restricted Stock Units (a)	Weighted-Average Exercise Price of Outstanding Options (b)	Number of Securities Remaining Available for Future Issuance Under Equity Compensation Plans (Excluding Securities Reflected in Column(a))
Equity Compensation Plans Approved by Stockholders (1)	6,910,822 (3)	\$ 7.78 (4)	7,233,459 (6)
Equity Compensation Plans Not Approved by Stockholders (2)	300,000	\$ 5.05	—
<b>Total</b>	<b>7,210,822</b>	<b>\$ 7.66 (4)(5)</b>	<b>7,233,459</b>

- (1) Includes our Amended and Restated 2002 Stock Plan, 2010 Equity Incentive Award Plan, 2019 Equity Incentive Award Plan, Amended and Restated Employee Stock Purchase Plan and Amended and Restated 2017 Nonqualified Employee Stock Purchase Plan. Also includes 639 stock options assumed through our acquisition of Occam Networks in 2011.
- (2) Consists of a Nonstatutory Inducement Stock Option Grant, which constitutes an employment inducement award for Mr. Sindelar under NYSE Listed Company Manual Rule 303A.08 that was approved by the Compensation Committee on September 28, 2017. The NYSE approved the Supplemental Listing Application for the Inducement Award on October 30, 2017. The Nonstatutory Inducement Stock Option Grant was awarded on October 1, 2017 and provides Mr. Sindelar the right to purchase up to 300,000 shares of our common stock for an exercise price of \$5.05 per share. The Nonstatutory Inducement Stock Option Grant has a term of 10 years and vests and becomes exercisable over four years from the date of grant. In the event of a termination of Mr. Sindelar's employment, the unvested portion of the Nonstatutory Inducement Stock Option Grant would be immediately forfeited and Mr. Sindelar would have three months, or 12 months in the case of death or disability, to exercise the vested portion of the option.
- (3) Includes 334,190 shares of common stock subject to RSUs that will entitle each holder the issuance of one share of common stock for each unit and 6,576,632 shares of common stock subject to stock options.
- (4) The weighted-average exercise price of outstanding options excludes RSUs, which do not have an exercise price.
- (5) The weighted-average remaining term for outstanding options is 5.4 years.
- (6) Includes 3,178,049 shares available for future issuance under the Amended and Restated Employee Stock Purchase Plan, 2,020,579 shares available for future issuance under the Amended and Restated 2017 Nonqualified Employee Stock Purchase Plan and 2,034,831 shares available for future issuance under the 2019 Equity Incentive Award Plan.

## COMPENSATION COMMITTEE REPORT

*The information contained in this report shall not be deemed to be “soliciting material,” to be “filed” with the SEC or be subject to Regulation 14A or Regulation 14C (other than as provided in Item 407 of Regulation S-K) or to the liabilities of Section 18 of the Securities Exchange Act of 1934, and shall not be deemed to be incorporated by reference in future filings with the SEC except to the extent that Calix specifically incorporates it by reference into a document filed under the Securities Act of 1933 or the Securities Exchange Act of 1934.*

The Compensation Committee of the Board has reviewed and discussed the Compensation Discussion and Analysis required by Item 402(b) of Regulation S-K with management and, based on such review and discussions, the Compensation Committee of the Board recommended to the Board that the Compensation Discussion and Analysis be included in this Proxy Statement.

### **Compensation Committee**

Christopher Bowick, Chair

Kevin DeNuccio

Don Listwin

## AUDIT COMMITTEE REPORT

*The information contained in this report shall not be deemed to be “soliciting material,” to be “filed” with the SEC or be subject to Regulation 14A or Regulation 14C (other than as provided in Item 407 of Regulation S-K) or to the liabilities of Section 18 of the Securities Exchange Act of 1934, and shall not be deemed to be incorporated by reference in future filings with the SEC except to the extent that Calix specifically incorporates it by reference into a document filed under the Securities Act of 1933 or the Securities Exchange Act of 1934.*

The Audit Committee has reviewed and discussed with Calix management and KPMG LLP the audited consolidated financial statements of Calix contained in the Calix Annual Report on Form 10-K for the year ended December 31, 2019. The Audit Committee has also discussed with KPMG LLP the matters required to be discussed by AS No. 1301, as amended, as adopted by the Public Company Accounting Oversight Board in Rule 3200T.

The Audit Committee has received the written disclosures and the letter from KPMG LLP required by the Public Company Accounting Oversight Board regarding the independent accountant’s communications with the Audit Committee concerning independence and has discussed with KPMG LLP its independence.

Based on the review and discussions referred to above, the Audit Committee recommended to the Board of Directors that the audited consolidated financial statements be included in Calix’s Annual Report on Form 10-K for its year ended December 31, 2019 for filing with the Securities and Exchange Commission.

### **Audit Committee**

Michael Everett, Chair  
Kathy Crusco  
Michael Matthews

## CERTAIN RELATIONSHIPS AND RELATED TRANSACTIONS

Calix's Board and Audit Committee have adopted a written related person transaction policy that sets forth the policies and procedures for the review and approval or ratification of related person transactions that may be deemed "related person transactions" under the rules of the SEC. This policy covers any transaction, arrangement or relationship, or any series of similar transactions, arrangements or relationships, in which Calix was or is to be a participant, the amount involved exceeds \$120,000 and a related person had or will have a direct or indirect material interest, including, without limitation, purchases of goods or services by or from the related person or entities in which the related person has a material interest, indebtedness, guarantees of indebtedness or employment by Calix of a related person. For purposes of the policy, a "related person" is a director, officer or greater than 5% beneficial owner of Calix's stock and their immediate family members.

Calix recognizes that related person transactions can present potential or actual conflicts of interest or create the appearance of a conflict of interest. Management presents to the Audit Committee each proposed related person transaction, including all relevant facts and circumstances, and the Audit Committee reviews the relevant facts and circumstances of each related person transaction, including if the transaction is on terms comparable to those that could be obtained in arm's length dealings with an unrelated third party and the extent of the related person's interest in the transaction, takes into account the conflicts of interest and corporate opportunity provisions of Calix's Code of Business Conduct and Ethics, and either approves or disapproves the related person transaction. Any related person transaction may be consummated and shall continue only if the Audit Committee has approved or ratified such transaction in accordance with the guidelines set forth in the policy. No director may participate in approval of a related person transaction for which he or she is a related person. As required under rules issued by the SEC, transactions that are determined to be directly or indirectly material to a related person are or will be disclosed in Calix's proxy statements.

During fiscal year 2019, Calix has not participated in any transactions, nor are there any currently proposed transactions in which Calix will participate, where the amount involved exceeds, or would exceed, \$120,000, and in which any related person had or will have a direct or indirect material interest.

## HOUSEHOLDING OF PROXY MATERIALS

The SEC has adopted rules that permit companies and intermediaries (*e.g.*, brokers) to satisfy the delivery requirements for Notices of Internet Availability of Proxy Materials, proxy statements and annual reports with respect to two or more stockholders sharing the same address by delivering a single Notice of Internet Availability of Proxy Materials, or proxy statement and annual report, as applicable, addressed to those stockholders. This process, which is commonly referred to as "householding," potentially means extra convenience for stockholders and cost savings for companies.

This year, a number of brokers with account holders who are Calix stockholders will be "householding" our proxy materials. A single Notice of Internet Availability of Proxy Materials may be delivered to multiple stockholders sharing an address unless contrary instructions have been received from the affected stockholders. Once you have received notice from your broker that it will be "householding" communications to your address, "householding" will continue until you are notified otherwise or until you notify your broker or Calix that you no longer wish to participate in "householding."

If, at any time, you no longer wish to participate in "householding" and would prefer to receive a separate Notice of Internet Availability of Proxy Materials, you may (1) notify your broker, (2) direct your written request to: Investor Relations, Calix, Inc., 2777 Orchard Parkway, San Jose, California 95134 or (3) contact our Investor Relations department by telephone at (408) 474-0080. Stockholders who currently receive multiple copies of the Notice of Internet Availability of Proxy Materials at their address and would like to request "householding" of their communications should contact their broker. In addition, Calix will promptly deliver, upon written or oral request to the address or telephone number above, a separate copy of the Notice of Internet Availability of Proxy Materials to a stockholder at a shared address to which a single copy of the documents was delivered.

## OTHER MATTERS

The Board knows of no other matters that will be presented for consideration at the Annual Meeting. If any other matters are properly brought before the Annual Meeting, it is the intention of the persons named in the proxy card to vote on such matters in accordance with their best judgment.

## ANNUAL REPORTS

The 2019 Annual Report to Stockholders, including our 2019 Annual Report on Form 10-K (which is not a part of our proxy soliciting materials), will be mailed with this Proxy Statement to those stockholders that request and receive a copy of the proxy materials in the mail. Stockholders that received the Notice of Internet Availability of Proxy Materials can access this Proxy Statement and our 2019 Annual Report at [www.proxyvote.com](http://www.proxyvote.com).

We have filed our Annual Report on Form 10-K for the year ended December 31, 2019 with the SEC. It is available free of charge in the “SEC Filings” section of our website at [investor-relations.calix.com](http://investor-relations.calix.com) or at the SEC’s website at [www.sec.gov](http://www.sec.gov). Upon written request by a Calix stockholder, we will mail without charge a copy of our Annual Report on Form 10-K, including the financial statements and financial statement schedules, but excluding exhibits to the Annual Report on Form 10-K. Exhibits to the Annual Report on Form 10-K are available upon payment of a reasonable fee, which is limited to our expenses in furnishing the requested exhibit. All requests should be directed to Investor Relations, Calix, Inc., 2777 Orchard Parkway, San Jose, California 95134.

### By Order of the Board of Directors

/s/ Suzanne Tom

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Suzanne Tom  
Corporate Secretary

April 1, 2020

**CALIX, INC.**  
**AMENDED AND RESTATED 2019 EQUITY INCENTIVE AWARD PLAN**

**ARTICLE 1.**

**PURPOSE**

The purpose of the Calix, Inc. Amended and Restated 2019 Equity Incentive Award Plan (as it may be amended or restated from time to time, the “Plan”) is to promote the success and enhance the value of Calix, Inc. (the “Company”) by linking the individual interests of the members of the Board, Employees and Consultants to those of Company stockholders and by providing such individuals with an incentive for outstanding performance to generate superior returns to Company stockholders. The Plan is further intended to provide flexibility to the Company in its ability to attract, incentivize and retain the services of members of the Board, Employees and Consultants upon whose judgment, interest and special effort the successful conduct of the Company’s operation is largely dependent. The Plan amends and restates the 2019 Equity Incentive Award Plan (the “Prior Plan”) in its entirety, subject to stockholder approval of this Plan at the annual meeting of the Company’s stockholders in 2020. In the event the Company’s stockholders fail to approve the Plan as set forth herein at the annual meeting of the Company’s stockholders in 2020, then this Plan shall be deemed *void ab initio* and the Prior Plan shall continue in effect in accordance with its terms.

**ARTICLE 2.**

**DEFINITIONS AND CONSTRUCTION**

Wherever the following terms are used in the Plan they shall have the meanings specified below, unless the context clearly indicates otherwise. The singular pronoun shall include the plural where the context so indicates.

2.1 “Administrator” shall mean the entity that conducts the general administration of the Plan as provided in Article 11. With reference to the duties of the Committee under the Plan which have been delegated to one or more persons pursuant to Section 11.6, or as to which the Board has assumed, the term “Administrator” shall refer to such person(s) unless the Committee or the Board has revoked such delegation or the Board has terminated the assumption of such duties.

2.2 “Applicable Accounting Standards” shall mean Generally Accepted Accounting Principles in the United States, International Financial Reporting Standards or such other accounting principles or standards as may apply to the Company’s financial statements under United States federal securities laws from time to time.

2.3 “Applicable Law” shall mean any applicable law, including without limitation: (a) provisions of the Code, the Securities Act, the Exchange Act and any rules or regulations thereunder; (b) corporate, securities, tax or other laws, statutes, rules, requirements or regulations, whether federal, state, local or foreign; and (c) rules of any securities exchange or automated quotation system on which the Shares are listed, quoted or traded.

2.4 Reserved.

2.5 “Award” shall mean an Option, a Stock Appreciation Right, a Restricted Stock award, a Restricted Stock Unit award, an Other Stock or Cash Based Award or a Dividend Equivalent award, which may be awarded or granted under the Plan.

2.6 “Award Agreement” shall mean any written notice, agreement, terms and conditions, contract or other instrument or document evidencing an Award, including through electronic medium, which shall contain such terms and conditions with respect to an Award as the Administrator shall determine consistent with the Plan.

2.7 “Board” shall mean the Board of Directors of the Company.

2.8 “Cause” shall mean (a) a Holder (i) has committed willful fraud, willful misconduct or gross negligence, (ii) has repeatedly failed to execute the duties and responsibilities of Holder’s service to the Company as reasonably requested by Company’s management, or (iii) has committed an incurable material breach of the Company’s Confidential Information and Invention Assignment Agreement, or (b) Holder has been convicted of, or has admitted culpability with respect to, a felony or a crime involving moral turpitude causing material harm to the standing or reputation of Company, in each case as determined in good faith by the Administrator.

2.9 “Change in Control” shall mean and includes each of the following:

(a) A transaction or series of transactions (other than an offering of Common Stock to the general public through a registration statement filed with the Securities and Exchange Commission) whereby any “person” or related “group” of “persons” (as such terms are used in Sections 13(d) and 14(d)(2) of the Exchange Act) (other than the Company, any of its parents or subsidiaries, an employee benefit plan maintained by the Company or any of its subsidiaries or a “person” that, prior to such transaction, directly or indirectly controls, is controlled by, or is under common control with, the Company) directly or indirectly acquires beneficial ownership (within the meaning of Rule 13d-3 under the Exchange Act) of securities of the Company possessing more than 50% of the total combined voting power of the Company’s securities outstanding immediately after such acquisition; or

(b) During any period of two consecutive years, individuals who, at the beginning of such period, constitute the Board together with any new director(s) (other than a director designated by a person who shall have entered into an agreement with the Company to effect a transaction described in Section 2.9(a) or Section 2.9(c)) whose election by the Board or nomination for election by the Company’s stockholders was approved by a vote of at least two-thirds of the directors then still in office who either were directors at the beginning of the two-year period or whose election or nomination for election was previously so approved, cease for any reason to constitute a majority thereof; or

(c) The consummation by the Company (whether directly involving the Company or indirectly involving the Company through one or more intermediaries) of (x) a merger, consolidation, reorganization, or business combination or (y) a sale or other disposition of all or substantially all of the Company’s assets in any single transaction or series of related transactions or (z) the acquisition of assets or stock of another entity, in each case other than a transaction:

(i) Which results in the Company’s voting securities outstanding immediately before the transaction continuing to represent (either by remaining outstanding or by being converted into voting securities of the Company or the person that, as a result of the transaction, controls, directly or indirectly, the Company or owns, directly or indirectly, all or substantially all of the Company’s assets or otherwise succeeds to the business of the Company (the Company or such person, the “Successor Entity”)) directly or indirectly, at least a majority of the combined voting power of the Successor Entity’s outstanding voting securities immediately after the transaction, and

(ii) After which no person or group beneficially owns voting securities representing 50% or more of the combined voting power of the Successor Entity; provided, however, that no person or group shall be treated for purposes of this Section 2.9(c)(ii) as beneficially owning 50% or more of combined voting power of the Successor Entity solely as a result of the voting power held in the Company prior to the consummation of the transaction; or

(d) The Company’s stockholders approve a liquidation or dissolution of the Company.

In addition, if a Change in Control constitutes a payment event with respect to any Award which provides for the deferral of compensation and is subject to Section 409A of the Code, the transaction or event described in subsection (a), (b), (c) or (d) with respect to such Award must also constitute a “change in control event,” as defined in Treasury Regulation §1.409A-3(i)(5) to the extent required by Section 409A.

The Committee shall have full and final authority, which shall be exercised in its discretion, to determine conclusively whether a Change in Control of the Company has occurred pursuant to the above definition, and the date of the occurrence of such Change in Control and any incidental matters relating thereto.

2.10 “Code” shall mean the Internal Revenue Code of 1986, as amended from time to time, together with the regulations and official guidance promulgated thereunder, whether issued prior or subsequent to the grant of any Award.

2.11 “Committee” shall mean the Compensation Committee of the Board, or another committee or subcommittee of the Board or the Compensation Committee of the Board described in Article 11 hereof.

2.12 “Common Stock” shall mean the common stock of the Company.

2.13 “Company” shall have the meaning set forth in Article 1.

2.14 “Constructive Termination” shall mean Holder’s resignation that constitutes a Termination of Service following (a) a material reduction (without Holder’s written consent) in Holder’s title, job duties, responsibilities and job requirements inconsistent with Holder’s position with Company and Holder’s prior duties, responsibilities and requirements taking into account the differences in job title and duties that are normally occasioned by reason of an acquisition of one company by another and that do not actually

result in a material change in duties, responsibilities and requirements; (b) a material reduction of a Holder's base compensation without the Holder's written consent (except an equal, across-the-board reduction in the compensation of all similarly-situated employees of Company or the surviving entity that is approved by the Board); or (c) the relocation of Holder's principal office that increases Holder's one way commute more than thirty-five (35) miles. Notwithstanding the foregoing, a resignation shall not constitute a "Constructive Termination" unless the event or condition giving rise to such resignation continues more than thirty (30) days following the Holder's written notice of such condition provided to the Company within ninety (90) days of the first occurrence of such event or condition and such resignation is effective within thirty (30) days following the end of such notice period.

2.15 "Consultant" shall mean any consultant or adviser engaged to provide services to the Company or any Subsidiary who qualifies as a consultant or advisor under the applicable rules of the Securities and Exchange Commission for registration of shares on a Form S-8 Registration Statement.

2.16 "Director" shall mean a member of the Board, as constituted from time to time.

2.17 "Director Limit" shall have the meaning set forth in Section 4.6.

2.18 "Dividend Equivalent" shall mean a right to receive the equivalent value (in cash or Shares) of dividends paid on Shares, awarded under Section 9.2.

2.19 "DRO" shall mean a "domestic relations order" as defined by the Code or Title I of the Employee Retirement Income Security Act of 1974, as amended from time to time, or the rules thereunder.

2.20 "Effective Date" shall mean the date the Plan is adopted by the Board, subject to approval of the Plan by the Company's stockholders.

2.21 "Eligible Individual" shall mean any person who is an Employee, a Consultant or a Non-Employee Director, as determined by the Administrator.

2.22 "Employee" shall mean any officer or other employee (as determined in accordance with Section 3401(c) of the Code and the Treasury Regulations thereunder) of the Company or of any Subsidiary.

2.23 "Equity Restructuring" shall mean a nonreciprocal transaction between the Company and its stockholders, such as a stock dividend, stock split, spin-off, rights offering or recapitalization through a large, nonrecurring cash dividend, that affects the number or kind of Shares (or other securities of the Company) or the share price of Common Stock (or other securities) and causes a change in the per-share value of the Common Stock underlying outstanding Awards.

2.24 "Exchange Act" shall mean the Securities Exchange Act of 1934, as amended from time to time.

2.25 "Expiration Date" shall have the meaning given to such term in Section 12.1(c).

2.26 "Fair Market Value" shall mean, as of any given date, the value of a Share determined as follows:

(a) If the Common Stock is (i) listed on any established securities exchange (such as the New York Stock Exchange, the NASDAQ Capital Market, the NASDAQ Global Market and the NASDAQ Global Select Market), (ii) listed on any national market system or (iii) quoted or traded on any automated quotation system, its Fair Market Value shall be the closing sales price for a Share as quoted on such exchange or system for such date or, if there is no closing sales price for a Share on the date in question, the closing sales price for a Share on the last preceding date for which such quotation exists, as reported in *The Wall Street Journal* or such other source as the Administrator deems reliable;

(b) If the Common Stock is not listed on an established securities exchange, national market system or automated quotation system, but the Common Stock is regularly quoted by a recognized securities dealer, its Fair Market Value shall be the mean of the high bid and low asked prices for such date or, if there are no high bid and low asked prices for a Share on such date, the high bid and low asked prices for a Share on the last preceding date for which such information exists, as reported in *The Wall Street Journal* or such other source as the Administrator deems reliable; or

(c) If the Common Stock is neither listed on an established securities exchange, national market system or automated quotation system nor regularly quoted by a recognized securities dealer, its Fair Market Value shall be established by the Administrator in good faith.



2.27 “Full-Value Award” shall mean any Award that is settled in Shares other than: (a) an Option, (b) a Stock Appreciation Right or (c) any other Award for which the Participant pays the intrinsic value existing as of the date of grant (whether directly or by forgoing a right to receive a payment from the Company or any Subsidiary).

2.28 “Greater Than 10% Stockholder” shall mean an individual then owning (within the meaning of Section 424(d) of the Code) more than 10% of the total combined voting power of all classes of stock of the Company or any subsidiary corporation (as defined in Section 424(f) of the Code) or parent corporation thereof (as defined in Section 424(e) of the Code).

2.29 “Holder” shall mean a person who has been granted an Award.

2.30 “Incentive Stock Option” shall mean an Option that is intended to qualify as an incentive stock option and conforms to the applicable provisions of Section 422 of the Code.

2.31 “Non-Employee Director” shall mean a Director of the Company who is not an Employee.

2.32 “Non-Employee Director Equity Compensation Policy” shall have the meaning set forth in Section 4.6.

2.33 “Non-Qualified Stock Option” shall mean an Option that is not an Incentive Stock Option or which is designated as an Incentive Stock Option but does not meet the applicable requirements of Section 422 of the Code.

2.34 “Option” shall mean a right to purchase Shares at a specified exercise price, granted under Article 5. An Option shall be either a Non-Qualified Stock Option or an Incentive Stock Option; provided, however, that Options granted to Non-Employee Directors and Consultants shall only be Non-Qualified Stock Options.

2.35 “Option Term” shall have the meaning set forth in Section 5.4.

2.36 “Organizational Documents” shall mean, collectively, (a) the Company’s articles of incorporation, certificate of incorporation, bylaws or other similar organizational documents relating to the creation and governance of the Company, and (b) the Committee’s charter or other similar organizational documentation relating to the creation and governance of the Committee.

2.37 “Other Stock or Cash Based Award” shall mean a cash payment, cash bonus award, stock payment, stock bonus award, performance award or incentive award that is paid in cash, Shares or a combination of both, awarded under Section 9.1, which may include, without limitation, deferred stock, deferred stock units, performance awards, retainers, committee fees and meeting-based fees.

2.38 “Permitted Transferee” shall mean, with respect to a Holder, any “family member” of the Holder, as defined in the General Instructions to Form S-8 Registration Statement under the Securities Act (or any successor form thereto), or any other transferee specifically approved by the Administrator after taking into account Applicable Law.

2.39 “Plan” shall have the meaning set forth in Article 1.

2.40 “Prior Plans” shall mean, collectively, the following plans of the Company: the Calix Networks, Inc. 2010 Equity Incentive Award Plan, the Calix Networks, Inc. 2000 Stock Plan and the Calix Networks, Inc. Amended and Restated 2002 Stock Plan, as each such plan may be amended from time to time.

2.41 “Program” shall mean any program adopted by the Administrator pursuant to the Plan containing the terms and conditions intended to govern a specified type of Award granted under the Plan and pursuant to which such type of Award may be granted under the Plan.

2.42 “Restricted Stock” shall mean Common Stock awarded under Article 7 that is subject to certain restrictions and may be subject to risk of forfeiture or repurchase.

2.43 “Restricted Stock Units” shall mean the right to receive Shares awarded under Article 8.

2.44 “Section 409A” shall mean Section 409A of the Code and the Department of Treasury regulations and other interpretive guidance issued thereunder, including, without limitation, any such regulations or other guidance that may be issued after the Effective Date.

2.45 “Securities Act” shall mean the Securities Act of 1933, as amended.

2.46 “Shares” shall mean shares of Common Stock.

2.47 “Stock Appreciation Right” shall mean an Award entitling the Holder (or other person entitled to exercise pursuant to the Plan) to exercise all or a specified portion thereof (to the extent then exercisable pursuant to its terms) and to receive from the Company an amount determined by multiplying the difference obtained by subtracting the exercise price per share of such Award from the Fair Market Value on the date of exercise of such Award by the number of Shares with respect to which such Award shall have been exercised, subject to any limitations the Administrator may impose.

2.48 “SAR Term” shall have the meaning set forth in Section 5.4.

2.49 “Subsidiary” shall mean any entity (other than the Company), whether domestic or foreign, in an unbroken chain of entities beginning with the Company if each of the entities other than the last entity in the unbroken chain beneficially owns, at the time of the determination, securities or interests representing at least fifty percent (50%) of the total combined voting power of all classes of securities or interests in one of the other entities in such chain.

2.50 “Substitute Award” shall mean an Award granted under the Plan in connection with a corporate transaction, such as a merger, combination, consolidation or acquisition of property or stock, in any case, upon the assumption of, or in substitution for, outstanding equity awards previously granted by a company or other entity; provided, however, that in no event shall the term “Substitute Award” be construed to refer to an award made in connection with the cancellation and repricing of an Option or Stock Appreciation Right.

2.51 “Termination of Service” shall mean:

(a) As to a Consultant, the time when the engagement of a Holder as a Consultant to the Company or a Subsidiary is terminated for any reason, with or without cause, including, without limitation, by resignation, discharge, death or retirement, but excluding terminations where the Consultant simultaneously commences or remains in employment or service with the Company or any Subsidiary.

(b) As to a Non-Employee Director, the time when a Holder who is a Non-Employee Director ceases to be a Director for any reason, including, without limitation, a termination by resignation, failure to be elected, death or retirement, but excluding terminations where the Holder simultaneously commences or remains in employment or service with the Company or any Subsidiary.

(c) As to an Employee, the time when the employee-employer relationship between a Holder and the Company or any Subsidiary is terminated for any reason, including, without limitation, a termination by resignation, discharge, death, disability or retirement; but excluding terminations where the Holder simultaneously commences or remains in employment or service with the Company or any Subsidiary.

The Administrator, in its sole discretion, shall determine the effect of all matters and questions relating to any Termination of Service, including, without limitation, whether a Termination of Service has occurred, whether a Termination of Service resulted from a discharge for cause and all questions of whether particular leaves of absence constitute a Termination of Service; provided, however, that, with respect to Incentive Stock Options, unless the Administrator otherwise provides in the terms of any Program, Award Agreement or otherwise, or as otherwise required by Applicable Law, a leave of absence, change in status from an employee to an independent contractor or other change in the employee-employer relationship shall constitute a Termination of Service only if, and to the extent that, such leave of absence, change in status or other change interrupts employment for the purposes of Section 422(a)(2) of the Code and the then-applicable regulations and revenue rulings under said Section. For purposes of the Plan, a Holder’s employee-employer relationship or consultancy relations shall be deemed to be terminated in the event that the Subsidiary employing or contracting with such Holder ceases to remain a Subsidiary following any merger, sale of stock or other corporate transaction or event (including, without limitation, a spin-off).

**ARTICLE 3.**  
**SHARES SUBJECT TO THE PLAN**

3.1 Number of Shares.

(a) Subject to Sections 3.1(b) and 12.2, the aggregate number of Shares which may be issued or transferred pursuant to Awards under the Plan is 6,629,039 Shares, provided that no more than 6,629,039 Shares may be issued upon the exercise of Incentive Stock Options. Any Shares distributed pursuant to an Award may consist, in whole or in part, of authorized and unissued Common Stock, treasury Common Stock or Common Stock purchased on the open market. Notwithstanding the foregoing, the aggregate number of Shares available for issuance shall be reduced by 1.5 Shares for each Share delivered in settlement of any Full-Value Award.

(b) To the extent all or a portion of an Award or Prior Plan award is forfeited, expires or such Award, Prior Plan award or portion thereof is settled for cash (in whole or in part), the Shares subject to such Award, Prior Plan award or portion thereof, shall, to the extent of such forfeiture, expiration or cash settlement, again be available for future grants of Awards under the Plan. To the extent that all or any part of a Full-Value Award is forfeited, expires or such Full-Value Award is settled for cash (in whole or in part), in each case, whether under the Plan or a Prior Plan, the Shares available under the Plan shall be increased by 1.5 Shares for each Share subject to such Full-Value Award (or applicable portion thereof). Notwithstanding anything to the contrary contained herein, the following Shares shall not be added to the Shares authorized for grant under Section 3.1(a) and shall not be available for future grants of Awards: (i) Shares tendered by a Holder or withheld by the Company in payment of the exercise price of an Option; (ii) Shares tendered by the Holder or withheld by the Company to satisfy any tax withholding obligation with respect to an Award; (iii) Shares subject to a Stock Appreciation Right or other stock-settled Award (including Awards that may be settled in cash or stock) that are not issued in connection with the settlement or exercise, as applicable, of the Stock Appreciation Right or other stock-settled Award; and (iv) Shares purchased on the open market by the Company with the cash proceeds received from the exercise of Options. Any Shares repurchased by the Company under Section 7.4 at the same price paid by the Holder so that such Shares are returned to the Company shall again be available for Awards. The payment of Dividend Equivalents in cash in conjunction with any outstanding Awards shall not be counted against the Shares available for issuance under the Plan. Notwithstanding the provisions of this Section 3.1(b), no Shares may again be optioned, granted or awarded if such action would cause an Incentive Stock Option to fail to qualify as an incentive stock option under Section 422 of the Code.

(c) Substitute Awards shall not reduce the Shares authorized for grant under the Plan, except as may be required by reason of Section 422 of the Code. Additionally, in the event that a company acquired by the Company or any Subsidiary or with which the Company or any Subsidiary combines has shares available under a pre-existing plan approved by its stockholders and not adopted in contemplation of such acquisition or combination, the shares available for grant pursuant to the terms of such pre-existing plan (as adjusted, to the extent appropriate, using the exchange ratio or other adjustment or valuation ratio or formula used in such acquisition or combination to determine the consideration payable to the holders of common stock of the entities party to such acquisition or combination) may be used for Awards under the Plan and shall not reduce the Shares authorized for grant under the Plan; provided that Awards using such available Shares shall not be made after the date awards or grants could have been made under the terms of the pre-existing plan, absent the acquisition or combination, and shall only be made to individuals who were not employed by or providing services to the Company or its Subsidiaries immediately prior to such acquisition or combination.

3.2 Award Vesting Limitations. Notwithstanding any other provision of the Plan to the contrary, but subject to Section 12.2 of the Plan, Awards granted under the Plan shall vest no earlier than the first anniversary of the date the Award is granted and no Award Agreement shall reduce or eliminate such minimum vesting requirement; provided, however, that, notwithstanding the foregoing, (i) an Award may provide that such minimum vesting restrictions may lapse or be waived upon the Holder's Termination of Service, (ii) Awards that result in the issuance of an aggregate of up to 5% of the shares of Common Stock available pursuant to Section 3.1(a) may be granted to any one or more Eligible Individuals without respect to such minimum vesting provisions, and (iii) for purposes of Awards granted to Non-Employee Directors, a vesting period shall be deemed to be one year if it runs from the date of one annual meeting of the Company's stockholders to the next annual meeting of the Company's stockholders, so long as the period between such meetings is not less than 50 weeks.

## ARTICLE 4. GRANTING OF AWARDS

4.1 Participation. The Administrator may, from time to time, select from among all Eligible Individuals, those to whom an Award shall be granted and shall determine the nature and amount of each Award, which shall not be inconsistent with the requirements of the Plan. Except for any Non-Employee Director's right to Awards that may be required pursuant to the Non-Employee Director Equity Compensation Policy as described in Section 4.6, no Eligible Individual or other Person shall have any right to be granted an Award pursuant to the Plan and neither the Company nor the Administrator is obligated to treat Eligible Individuals, Holders or any other persons uniformly. Participation by each Holder in the Plan shall be voluntary and nothing in the Plan or any Program shall be construed as mandating that any Eligible Individual or other Person shall participate in the Plan.

4.2 Award Agreement. Each Award shall be evidenced by an Award Agreement that sets forth the terms, conditions and limitations for such Award as determined by the Administrator in its sole discretion (consistent with the requirements of the Plan and any applicable Program). Award Agreements evidencing Incentive Stock Options shall contain such terms and conditions as may be necessary to meet the applicable provisions of Section 422 of the Code.

4.3 Limitations Applicable to Section 16 Persons. Notwithstanding any other provision of the Plan, the Plan, and any Award granted or awarded to any individual who is then subject to Section 16 of the Exchange Act, shall be subject to any additional limitations set forth in any applicable exemptive rule under Section 16 of the Exchange Act (including Rule 16b-3 of the Exchange Act and any amendments thereto) that are requirements for the application of such exemptive rule. To the extent permitted by Applicable Law, the Plan and Awards granted or awarded hereunder shall be deemed amended to the extent necessary to conform to such applicable exemptive rule.

4.4 At-Will Service. Nothing in the Plan or in any Program or Award Agreement hereunder shall confer upon any Holder any right to continue in the employ of, or as a Director or Consultant for, the Company or any Subsidiary, or shall interfere with or restrict in any way the rights of the Company and any Subsidiary, which rights are hereby expressly reserved, to discharge any Holder at any time for any reason whatsoever, with or without cause, and with or without notice, or to terminate or change all other terms and conditions of employment or engagement, except to the extent expressly provided otherwise in a written agreement between the Holder and the Company or any Subsidiary.

4.5 Foreign Holders. Notwithstanding any provision of the Plan or applicable Program to the contrary, in order to comply with the laws in countries other than the United States in which the Company and its Subsidiaries operate or have Employees, Non-Employee Directors or Consultants, or in order to comply with the requirements of any foreign securities exchange or other Applicable Law, the Administrator, in its sole discretion, shall have the power and authority to: (a) determine which Subsidiaries shall be covered by the Plan; (b) determine which Eligible Individuals outside the United States are eligible to participate in the Plan; (c) modify the terms and conditions of any Award granted to Eligible Individuals outside the United States to comply with Applicable Law (including, without limitation, applicable foreign laws or listing requirements of any foreign securities exchange); (d) establish subplans and modify exercise procedures and other terms and procedures, to the extent such actions may be necessary or advisable; provided, however, that no such subplans and/or modifications shall increase the share limitation contained in Section 3.1 or the Director Limit; and (e) take any action, before or after an Award is made, that it deems advisable to obtain approval or comply with any necessary local governmental regulatory exemptions or approvals or listing requirements of any foreign securities exchange.

### 4.6 Non-Employee Director Awards.

(a) Non-Employee Director Equity Compensation Policy. The Administrator, in its sole discretion, may provide that Awards granted to Non-Employee Directors shall be granted pursuant to a written nondiscretionary formula established by the Administrator (the "Non-Employee Director Equity Compensation Policy"), subject to the limitations of the Plan. The Non-Employee Director Equity Compensation Policy shall set forth the type of Award(s) to be granted to Non-Employee Directors, the number of Shares to be subject to Non-Employee Director Awards, the conditions on which such Awards shall be granted, become exercisable and/or payable and expire, and such other terms and conditions as the Administrator shall determine in its sole discretion. The Non-Employee Director Equity Compensation Policy may be modified by the Administrator from time to time in its sole discretion, and pursuant to the exercise of its business judgment, taking into account such factors, circumstances and considerations as it shall deem relevant from time to time.

(b) Director Limit. Notwithstanding any provision to the contrary in the Plan or in the Non-Employee Director Equity Compensation Policy, the grant date fair value of equity-based Awards granted to a Non-Employee Director during any calendar year shall not exceed \$750,000 (the "Director Limit").

## ARTICLE 5.

### GRANTING OF OPTIONS AND STOCK APPRECIATION RIGHTS

5.1 Granting of Options and Stock Appreciation Rights to Eligible Individuals. The Administrator is authorized to grant Options and Stock Appreciation Rights to Eligible Individuals from time to time, in its sole discretion, on such terms and conditions as it may determine, which shall not be inconsistent with the Plan.

5.2 Qualification of Incentive Stock Options. The Administrator may grant Options intended to qualify as Incentive Stock Options only to employees of the Company, any of the Company's present or future "parent corporations" or "subsidiary corporations" as defined in Sections 424(e) or (f) of the Code, respectively, and any other entities the employees of which are eligible to receive Incentive Stock Options under the Code. No person who qualifies as a Greater Than 10% Stockholder may be granted an Incentive Stock Option unless such Incentive Stock Option conforms to the applicable provisions of Section 422 of the Code. To the extent that the aggregate fair market value of stock with respect to which "incentive stock options" (within the meaning of Section 422 of the Code, but without regard to Section 422(d) of the Code) are exercisable for the first time by a Holder during any calendar year under the Plan, and all other plans of the Company and any parent corporation or subsidiary corporation thereof (as defined in Section 424(e) and 424(f) of the Code, respectively), exceeds \$100,000, the Options shall be treated as Non-Qualified Stock Options to the extent required by Section 422 of the Code. The rule set forth in the immediately preceding sentence shall be applied by taking Options and other "incentive stock options" into account in the order in which they were granted and the fair market value of stock shall be determined as of the time the respective options were granted. Any interpretations and rules under the Plan with respect to Incentive Stock Options shall be consistent with the provisions of Section 422 of the Code. Neither the Company nor the Administrator shall have any liability to a Holder, or any other Person, (a) if an Option (or any part thereof) which is intended to qualify as an Incentive Stock Option fails to qualify as an Incentive Stock Option or (b) for any action or omission by the Company or the Administrator that causes an Option not to qualify as an Incentive Stock Option, including without limitation, the conversion of an Incentive Stock Option to a Non-Qualified Stock Option or the grant of an Option intended as an Incentive Stock Option that fails to satisfy the requirements under the Code applicable to an Incentive Stock Option.

5.3 Option and Stock Appreciation Right Exercise Price. The exercise price per Share subject to each Option and Stock Appreciation Right shall be set by the Administrator, but shall not be less than 100% of the Fair Market Value of a Share on the date the Option or Stock Appreciation Right, as applicable, is granted (or, as to Incentive Stock Options, on the date the Option is modified, extended or renewed for purposes of Section 424(h) of the Code). In addition, in the case of Incentive Stock Options granted to a Greater Than 10% Stockholder, such price shall not be less than 110% of the Fair Market Value of a Share on the date the Option is granted (or the date the Option is modified, extended or renewed for purposes of Section 424(h) of the Code). Notwithstanding the foregoing, in the case of an Option or Stock Appreciation Right that is a Substitute Award, the exercise price per share of the Shares subject to such Option or Stock Appreciation Right, as applicable, may be less than the Fair Market Value per share on the date of grant; provided that the exercise price of any Substitute Award shall be determined in accordance with the applicable requirements of Section 424 and 409A of the Code.

5.4 Option and SAR Term. The term of each Option (the "Option Term") and the term of each Stock Appreciation Right (the "SAR Term") shall be set by the Administrator in its sole discretion; provided, however, that the Option Term or SAR Term, as applicable, shall not be more than (a) ten (10) years from the date the Option or Stock Appreciation Right, as applicable, is granted to an Eligible Individual (other than a Greater Than 10% Stockholder), or (b) five (5) years from the date an Incentive Stock Option is granted to a Greater Than 10% Stockholder. Except as limited by the requirements of Section 409A or Section 422 of the Code and regulations and rulings thereunder or the first sentence of this Section 5.4 and without limiting the Company's rights under Section 10.7, the Administrator may extend the Option Term of any outstanding Option or the SAR Term of any outstanding Stock Appreciation Right, and may extend the time period during which vested Options or Stock Appreciation Rights may be exercised, in connection with any Termination of Service of the Holder or otherwise, and may amend, subject to Section 10.7 and 12.1, any other term or condition of such Option or Stock Appreciation Right relating to such Termination of Service of the Holder or otherwise.

5.5 Option and SAR Vesting. The period during which the right to exercise, in whole or in part, an Option or Stock Appreciation Right vests in the Holder shall be set by the Administrator and set forth in the applicable Award Agreement, subject to Section 3.2. Unless otherwise determined by the Administrator in the Award Agreement, the applicable Program or by action of the Administrator following the grant of the Option or Stock Appreciation Right, (a) no portion of an Option or Stock Appreciation Right which is unexercisable at a Holder's Termination of Service shall thereafter become exercisable and (b) the portion of an Option or Stock Appreciation Right that is unexercisable at a Holder's Termination of Service shall automatically expire on the date of such Termination of Service.

## ARTICLE 6.

### EXERCISE OF OPTIONS AND STOCK APPRECIATION RIGHTS

6.1 Exercise and Payment. An exercisable Option or Stock Appreciation Right may be exercised in whole or in part. However, an Option or Stock Appreciation Right shall not be exercisable with respect to fractional Shares and the Administrator may require that, by the terms of the Option or Stock Appreciation Right, a partial exercise must be with respect to a minimum number of Shares. Payment of the amounts payable with respect to Stock Appreciation Rights pursuant to this Article 6 shall be in cash, Shares (based on its Fair Market Value as of the date the Stock Appreciation Right is exercised), or a combination of both, as determined by the Administrator.

6.2 Manner of Exercise. All or a portion of an exercisable Option or Stock Appreciation Right shall be deemed exercised upon delivery of all of the following to the Secretary of the Company, the stock plan administrator of the Company or such other person or entity designated by the Administrator, or his, her or its office, as applicable:

(a) A written or electronic notice complying with the applicable rules established by the Administrator stating that the Option or Stock Appreciation Right, or a portion thereof, is exercised. The notice shall be signed or otherwise acknowledge electronically by the Holder or other person then entitled to exercise the Option or Stock Appreciation Right or such portion thereof;

(b) Such representations and documents as the Administrator, in its sole discretion, deems necessary or advisable to effect compliance with Applicable Law.

(c) In the event that the Option shall be exercised pursuant to Section 10.3 by any person or persons other than the Holder, appropriate proof of the right of such person or persons to exercise the Option or Stock Appreciation Right, as determined in the sole discretion of the Administrator; and

(d) Full payment of the exercise price and applicable withholding taxes for the Shares with respect to which the Option or Stock Appreciation Right, or portion thereof, is exercised, in a manner permitted by the Administrator in accordance with Sections 10.1 and 10.2.

6.3 Notification Regarding Disposition. The Holder shall give the Company prompt written or electronic notice of any disposition of Shares acquired by exercise of an Incentive Stock Option which occurs within (a) two years from the date of granting (including the date the Option is modified, extended or renewed for purposes of Section 424(h) of the Code) such Option to such Holder, or (b) one year after the date of transfer of such Shares to such Holder. Such notice shall specify the date of such disposition or other transfer and the amount realized, in cash, other property, assumption of indebtedness or other consideration, by the Holder in such disposition or other transfer.

## ARTICLE 7.

### AWARD OF RESTRICTED STOCK

7.1 Award of Restricted Stock. The Administrator is authorized to grant Restricted Stock to Eligible Individuals, and shall determine the terms and conditions, including the restrictions applicable to each award of Restricted Stock, which terms and conditions shall not be inconsistent with the Plan or any applicable Program, and may impose such conditions on the issuance of such Restricted Stock as it deems appropriate. The Administrator shall establish the purchase price, if any, and form of payment for Restricted Stock; provided, however, that if a purchase price is charged, such purchase price shall be no less than the par value, if any, of the Shares to be purchased, unless otherwise permitted by Applicable Law. In all cases, legal consideration shall be required for each issuance of Restricted Stock to the extent required by Applicable Law.

7.2 Rights as Stockholders. Subject to Section 7.4, upon issuance of Restricted Stock, the Holder shall have, unless otherwise provided by the Administrator, all the rights of a stockholder with respect to said Shares, subject to the restrictions in the Plan, any applicable Program and/or the applicable Award Agreement, including the right to receive all dividends and other distributions paid or made with respect to the Shares to the extent such dividends and other distributions have a record date that is on or after the date on which the Holder to whom such Restricted Stock are granted becomes the record holder of such Restricted Stock; provided, however, that, in the sole discretion of the Administrator, any extraordinary distributions with respect to the Shares may be subject to the restrictions set forth in Section 7.3. In addition, dividends payable in respect to Restricted Stock prior to vesting shall only be paid out to the Holder to the extent that the vesting conditions are subsequently satisfied and the share of Restricted Stock vests.

7.3 Restrictions. All shares of Restricted Stock (including any shares received by Holders thereof with respect to shares of Restricted Stock as a result of stock dividends, stock splits or any other form of recapitalization) shall be subject to such restrictions and vesting requirements as the Administrator shall provide in the applicable Program or Award Agreement, subject to Section 3.2. By action taken after the Restricted Stock is issued, the Administrator may, on such terms and conditions as it may determine to be appropriate, accelerate the vesting of such Restricted Stock by removing any or all of the restrictions imposed by the terms of the applicable Program or Award Agreement.

7.4 Repurchase or Forfeiture of Restricted Stock. Except as otherwise determined by the Administrator, if no price was paid by the Holder for the Restricted Stock, upon a Termination of Service during the applicable restriction period, the Holder's rights in unvested Restricted Stock then subject to restrictions shall lapse, and such Restricted Stock shall be surrendered to the Company and cancelled without consideration on the date of such Termination of Service. If a price was paid by the Holder for the Restricted Stock, upon a Termination of Service during the applicable restriction period, the Company shall have the right to repurchase from the Holder the unvested Restricted Stock then subject to restrictions at a cash price per share equal to the price paid by the Holder for such Restricted Stock or such other amount as may be specified in the applicable Program or Award Agreement. Notwithstanding the foregoing, except as otherwise provided by Section 3.2, the Administrator, in its sole discretion, may provide that upon certain events, including, without limitation, a Change in Control, the Holder's death, retirement or disability or any other specified Termination of Service or any other event, the Holder's rights in unvested Restricted Stock then subject to restrictions shall not lapse, such Restricted Stock shall vest and cease to be forfeitable and, if applicable, the Company shall cease to have a right of repurchase.

7.5 Section 83(b) Election. If a Holder makes an election under Section 83(b) of the Code to be taxed with respect to the Restricted Stock as of the date of transfer of the Restricted Stock rather than as of the date or dates upon which the Holder would otherwise be taxable under Section 83(a) of the Code, the Holder shall be required to deliver a copy of such election to the Company promptly after filing such election with the Internal Revenue Service along with proof of the timely filing thereof with the Internal Revenue Service.

## ARTICLE 8.

### AWARD OF RESTRICTED STOCK UNITS

8.1 Grant of Restricted Stock Units. The Administrator is authorized to grant Awards of Restricted Stock Units to any Eligible Individual selected by the Administrator in such amounts and subject to such terms and conditions as determined by the Administrator.

8.2 Term. Except as otherwise provided herein, the term of a Restricted Stock Unit award shall be set by the Administrator in its sole discretion.

8.3 Purchase Price. The Administrator shall specify the purchase price, if any, to be paid by the Holder to the Company with respect to any Restricted Stock Unit award; provided, however, that value of the consideration shall not be less than the par value of a Share, unless otherwise permitted by Applicable Law.

8.4 Vesting of Restricted Stock Units. At the time of grant, the Administrator shall specify the date or dates on which the Restricted Stock Units shall become fully vested and nonforfeitable, and may specify such conditions to vesting as it deems appropriate, including, without limitation, vesting based upon the Holder's duration of service to the Company or any Subsidiary, one or more performance criteria, Company performance, individual performance or other specific criteria, in each case on a specified date or dates or over any period or periods, as determined by the Administrator, subject to Section 3.2.

8.5 Maturity and Payment. At the time of grant, the Administrator shall specify the maturity date applicable to each grant of Restricted Stock Units, which shall be no earlier than the vesting date or dates of the Award and may be determined at the election of the Holder (if permitted by the applicable Award Agreement); provided that, except as otherwise determined by the Administrator, and subject to compliance with Section 409A, in no event shall the maturity date relating to each Restricted Stock Unit occur following the later of (a) the 15<sup>th</sup> day of the third month following the end of the calendar year in which the applicable portion of the Restricted Stock Unit vests; or (b) the 15<sup>th</sup> day of the third month following the end of the Company's fiscal year in which the applicable portion of the Restricted Stock Unit vests. On the maturity date, the Company shall, in accordance with the applicable Award Agreement and subject to Section 10.4(f), transfer to the Holder one unrestricted, fully transferable Share for each Restricted Stock Unit scheduled to be paid out on such date and not previously forfeited, or in the sole discretion of the Administrator, an amount in cash equal to the Fair Market Value of such Shares on the maturity date or a combination of cash and Common Stock as determined by the Administrator.

8.6 Payment upon Termination of Service. An Award of Restricted Stock Units shall only be payable while the Holder is an Employee, a Consultant or a member of the Board, as applicable; provided, however, that the Administrator, in its sole discretion, may provide (in an Award Agreement or otherwise) that a Restricted Stock Unit award may be paid subsequent to a Termination of Service in certain events, including a Change in Control, the Holder's death, retirement or disability or any other specified Termination of Service.

## ARTICLE 9.

### AWARD OF OTHER STOCK OR CASH BASED AWARDS AND DIVIDEND EQUIVALENTS

9.1 Other Stock or Cash Based Awards. The Administrator is authorized to grant Other Stock or Cash Based Awards, including awards entitling a Holder to receive Shares or cash to be delivered immediately or in the future, to any Eligible Individual. Subject to the provisions of the Plan and any applicable Program, the Administrator shall determine the terms and conditions of each Other Stock or Cash Based Award, including the term of the Award, any exercise or purchase price, performance goals, transfer restrictions, vesting conditions and other terms and conditions applicable thereto, which shall be set forth in the applicable Award Agreement, subject to Section 3.2. Other Stock or Cash Based Awards may be paid in cash, Shares, or a combination of cash and Shares, as determined by the Administrator, and may be available as a form of payment in the settlement of other Awards granted under the Plan, as stand-alone payments, as a part of a bonus, deferred bonus, deferred compensation or other arrangement, and/or as payment in lieu of compensation to which an Eligible Individual is otherwise entitled.

9.2 Dividend Equivalents. Dividend Equivalents may be granted by the Administrator, either alone or in tandem with another Award, based on dividends declared on the Common Stock, to be credited as of dividend payment dates during the period between the date the Dividend Equivalents are granted to a Holder and the date such Dividend Equivalents terminate or expire, as determined by the Administrator. Such Dividend Equivalents shall be converted to cash or additional Shares by such formula and at such time and subject to such restrictions and limitations as may be determined by the Administrator. In addition, Dividend Equivalents with respect to an Award that are based on dividends paid prior to the vesting of such Award shall only be paid out to the Holder to the extent that the vesting conditions are subsequently satisfied and the Award vests. Notwithstanding the foregoing, no Dividend Equivalents shall be payable with respect to Options or Stock Appreciation Rights.

## ARTICLE 10.

### ADDITIONAL TERMS OF AWARDS

10.1 Payment. The Administrator shall determine the method or methods by which payments by any Holder with respect to any Awards granted under the Plan shall be made, including, without limitation: (a) cash or check, (b) Shares (including, in the case of payment of the exercise price of an Award, Shares issuable pursuant to the exercise of the Award) or Shares held for such minimum period of time as may be established by the Administrator, in each case, having a Fair Market Value on the date of delivery equal to the aggregate payments required, (c) delivery of a written or electronic notice that the Holder has placed a market sell order with a broker acceptable to the Company with respect to Shares then issuable upon exercise or vesting of an Award, and that the broker has been directed to pay a sufficient portion of the net proceeds of the sale to the Company in satisfaction of the aggregate payments required; provided that payment of such proceeds is then made to the Company upon settlement of such sale, (d) other form of legal consideration acceptable to the Administrator in its sole discretion, or (e) any combination of the above permitted forms of payment. Notwithstanding any other provision of the Plan to the contrary, no Holder who is a Director or an "executive officer" of the Company within the meaning of Section 13(k) of the Exchange Act shall be permitted to make payment with respect to any Awards granted under the Plan, or continue any extension of credit with respect to such payment, with a loan from the Company or a loan arranged by the Company in violation of Section 13(k) of the Exchange Act.

10.2 Tax Withholding. The Company or any Subsidiary shall have the authority and the right to deduct or withhold, or require a Holder to remit to the Company, an amount sufficient to satisfy federal, state, local and foreign taxes (including the Holder's FICA, employment tax or other social security contribution obligation) required by law to be withheld with respect to any taxable event concerning a Holder arising as a result of the Plan or any Award. The Administrator may, in its sole discretion and in satisfaction of the foregoing requirement, allow a Holder to satisfy such obligations by any payment means described in Section 10.1 hereof, including without limitation, by allowing such Holder to have the Company or any Subsidiary withhold Shares otherwise issuable under an Award (or allow the surrender of Shares). The number of Shares which may be so withheld or surrendered shall be limited to the number of Shares which have a fair market value on the date of withholding or repurchase no greater than the aggregate amount of such liabilities based on the maximum statutory withholding rates for federal, state, local and foreign income tax and payroll tax purposes that are applicable to such supplemental taxable income (or such other number as would not result in adverse financial accounting consequences for the Company or any of its Subsidiaries). The Administrator shall determine the fair market value of the



Shares, consistent with applicable provisions of the Code, for tax withholding obligations due in connection with a broker-assisted cashless Option or Stock Appreciation Right exercise involving the sale of Shares to pay the Option or Stock Appreciation Right exercise price or any tax withholding obligation.

### 10.3 Transferability of Awards.

(a) Except as otherwise provided in Sections 10.3(b) and 10.3(c):

(i) No Award under the Plan may be sold, pledged, assigned or transferred in any manner other than (A) by will or the laws of descent and distribution or (B) subject to the consent of the Administrator, pursuant to a DRO, unless and until such Award has been exercised or the Shares underlying such Award have been issued, and all restrictions applicable to such Shares have lapsed;

(ii) No Award or interest or right therein shall be liable for or otherwise subject to the debts, contracts or engagements of the Holder or the Holder's successors in interest or shall be subject to disposition by transfer, alienation, anticipation, pledge, hypothecation, encumbrance, assignment or any other means whether such disposition be voluntary or involuntary or by operation of law by judgment, levy, attachment, garnishment or any other legal or equitable proceedings (including bankruptcy) unless and until such Award has been exercised, or the Shares underlying such Award have been issued, and all restrictions applicable to such Shares have lapsed, and any attempted disposition of an Award prior to satisfaction of these conditions shall be null and void and of no effect, except to the extent that such disposition is permitted by Section 10.3(a)(i); and

(iii) During the lifetime of the Holder, only the Holder may exercise any exercisable portion of an Award granted to such Holder under the Plan, unless it has been disposed of pursuant to a DRO. After the death of the Holder, any exercisable portion of an Award may, prior to the time when such portion becomes unexercisable under the Plan or the applicable Program or Award Agreement, be exercised by the Holder's personal representative or by any person empowered to do so under the deceased Holder's will or under the then-applicable laws of descent and distribution.

(b) Notwithstanding Section 10.3(a), the Administrator, in its sole discretion, may determine to permit a Holder or a Permitted Transferee of such Holder to transfer an Award other than an Incentive Stock Option (unless such Incentive Stock Option is intended to become a Nonqualified Stock Option) to any one or more Permitted Transferees of such Holder, subject to the following terms and conditions: (i) an Award transferred to a Permitted Transferee shall not be assignable or transferable by the Permitted Transferee other than (A) to another Permitted Transferee of the applicable Holder or (B) by will or the laws of descent and distribution or, subject to the consent of the Administrator, pursuant to a DRO; (ii) an Award transferred to a Permitted Transferee shall continue to be subject to all the terms and conditions of the Award as applicable to the original Holder (other than the ability to further transfer the Award to any Person other than another Permitted Transferee of the applicable Holder); and (iii) the Holder (or transferring Permitted Transferee) and the receiving Permitted Transferee shall execute any and all documents requested by the Administrator, including, without limitation documents to (A) confirm the status of the transferee as a Permitted Transferee, (B) satisfy any requirements for an exemption for the transfer under Applicable Law and (C) evidence the transfer. In addition, and further notwithstanding Section 10.3(a), hereof, the Administrator, in its sole discretion, may determine to permit a Holder to transfer Incentive Stock Options to a trust that constitutes a Permitted Transferee if, under Section 671 of the Code and other Applicable Law, the Holder is considered the sole beneficial owner of the Incentive Stock Option while it is held in the trust.

(c) Notwithstanding Section 10.3(a), a Holder may, in the manner determined by the Administrator, designate a beneficiary to exercise the rights of the Holder and to receive any distribution with respect to any Award upon the Holder's death. A beneficiary, legal guardian, legal representative, or other person claiming any rights pursuant to the Plan is subject to all terms and conditions of the Plan and any Program or Award Agreement applicable to the Holder and any additional restrictions deemed necessary or appropriate by the Administrator. If the Holder is married or a domestic partner in a domestic partnership qualified under Applicable Law and resides in a community property state, a designation of a person other than the Holder's spouse or domestic partner, as applicable, as the Holder's beneficiary with respect to more than 50% of the Holder's interest in the Award shall not be effective without the prior written or electronic consent of the Holder's spouse or domestic partner. If no beneficiary has been designated or survives the Holder, payment shall be made to the person entitled thereto pursuant to the Holder's will or the laws of descent and distribution. Subject to the foregoing, a beneficiary designation may be changed or revoked by a Holder at any time; provided that the change or revocation is delivered in writing to the Administrator prior to the Holder's death.

### 10.4 Conditions to Issuance of Shares.

(a) The Administrator shall determine the methods by which Shares shall be delivered or deemed to be delivered to Holders. Notwithstanding anything herein to the contrary, the Company shall not be required to issue or deliver any certificates or

make any book entries evidencing Shares pursuant to the exercise of any Award, unless and until the Administrator has determined, with advice of counsel, that the issuance of such Shares is in compliance with Applicable Law and the Shares are covered by an effective registration statement or applicable exemption from registration. In addition to the terms and conditions provided herein, the Administrator may require that a Holder make such reasonable covenants, agreements and representations as the Administrator, in its sole discretion, deems advisable in order to comply with Applicable Law.

(b) All share certificates delivered pursuant to the Plan and all Shares issued pursuant to book entry procedures are subject to any stop-transfer orders and other restrictions as the Administrator deems necessary or advisable to comply with Applicable Law. The Administrator may place legends on any share certificate or book entry to reference restrictions applicable to the Shares (including, without limitation, restrictions applicable to Restricted Stock).

(c) The Administrator shall have the right to require any Holder to comply with any timing or other restrictions with respect to the settlement, distribution or exercise of any Award, including a window-period limitation, as may be imposed in the sole discretion of the Administrator.

(d) No fractional Shares shall be issued and the Administrator, in its sole discretion, shall determine whether cash shall be given in lieu of fractional Shares or whether such fractional Shares shall be eliminated by rounding down.

(e) The Company, in its sole discretion, may (i) retain physical possession of any stock certificate evidencing Shares until any restrictions thereon shall have lapsed and/or (ii) require that the stock certificates evidencing such Shares be held in custody by a designated escrow agent (which may but need not be the Company) until the restrictions thereon shall have lapsed, and that the Holder deliver a stock power, endorsed in blank, relating to such Shares.

(f) Notwithstanding any other provision of the Plan, unless otherwise determined by the Administrator or required by Applicable Law, the Company shall not deliver to any Holder certificates evidencing Shares issued in connection with any Award and instead such Shares shall be recorded in the books of the Company (or, as applicable, its transfer agent or stock plan administrator).

10.5 Forfeiture and Clawback Provisions. All Awards (including any proceeds, gains or other economic benefit actually or constructively received by a Holder upon any receipt or exercise of any Award or upon the receipt or resale of any Shares underlying the Award and any payments of a portion of an incentive-based bonus pool allocated to a Holder) shall be subject to the provisions of any clawback policy implemented by the Company, including, without limitation, any clawback policy adopted to comply with the requirements of Applicable Law, including, without limitation, the Dodd-Frank Wall Street Reform and Consumer Protection Act and any rules or regulations promulgated thereunder, whether or not such clawback policy was in place at the time of grant of an Award, to the extent set forth in such clawback policy and/or in the applicable Award Agreement.

10.6 Prohibition on Repricing. Subject to Section 12.2, the Administrator shall not, without the approval of the stockholders of the Company, (a) authorize the amendment of any outstanding Option or Stock Appreciation Right to reduce its price per Share, or (b) cancel any Option or Stock Appreciation Right in exchange for cash or another Award when the Option or Stock Appreciation Right price per Share exceeds the Fair Market Value of the underlying Shares. Furthermore, for purposes of this Section 10.6, except in connection with a corporate transaction involving the Company (including, without limitation, any stock dividend, stock split, extraordinary cash dividend, recapitalization, reorganization, merger, consolidation, split-up, spin-off, combination or exchange of shares), the terms of outstanding Awards may not be amended to reduce the exercise price per Share of outstanding Options or Stock Appreciation Rights or cancel outstanding Options or Stock Appreciation Rights in exchange for cash, other Awards or Options or Stock Appreciation Rights with an exercise price per Share that is less than the exercise price per Share of the original Options or Stock Appreciation Rights without the approval of the stockholders of the Company.

10.7 Amendment of Awards. Subject to Applicable Law, the Administrator may amend, modify or terminate any outstanding Award, including but not limited to, substituting therefor another Award of the same or a different type, changing the date of exercise or settlement, and converting an Incentive Stock Option to a Non-Qualified Stock Option. The Holder's consent to such action shall be required unless (a) the Administrator determines that the action, taking into account any related action, would not materially and adversely affect the Holder, or (b) the change is otherwise permitted under the Plan (including, without limitation, under Section 12.2 or 12.10).

10.8 Data Privacy. As a condition of receipt of any Award, each Holder explicitly and unambiguously consents to the collection, use and transfer, in electronic or other form, of personal data as described in this Section 10.8 by and among, as applicable, the Company and its Subsidiaries for the exclusive purpose of implementing, administering and managing the Holder's participation in the Plan. The Company and its Subsidiaries may hold certain personal information about a Holder, including but not limited to, the Holder's name, home address and telephone number, date of birth, social security or insurance number or other identification number, salary, nationality, job title(s), any shares of stock held in the Company or any of its Subsidiaries, details of all Awards, in each case,

for the purpose of implementing, managing and administering the Plan and Awards (the “Data”). The Company and its Subsidiaries may transfer the Data amongst themselves as necessary for the purpose of implementation, administration and management of a Holder’s participation in the Plan, and the Company and its Subsidiaries may each further transfer the Data to any third parties assisting the Company and its Subsidiaries in the implementation, administration and management of the Plan. These recipients may be located in the Holder’s country, or elsewhere, and the Holder’s country may have different data privacy laws and protections than the recipients’ country. Through acceptance of an Award, each Holder authorizes such recipients to receive, possess, use, retain and transfer the Data, in electronic or other form, for the purposes of implementing, administering and managing the Holder’s participation in the Plan, including any requisite transfer of such Data as may be required to a broker or other third party with whom the Company or any of its Subsidiaries or the Holder may elect to deposit any Shares. The Data related to a Holder will be held only as long as is necessary to implement, administer, and manage the Holder’s participation in the Plan. A Holder may, at any time, view the Data held by the Company with respect to such Holder, request additional information about the storage and processing of the Data with respect to such Holder, recommend any necessary corrections to the Data with respect to the Holder or refuse or withdraw the consents herein in writing, in any case without cost, by contacting his or her local human resources representative. The Company may cancel Holder’s ability to participate in the Plan and, in the Administrator’s discretion, the Holder may forfeit any outstanding Awards if the Holder refuses or withdraws his or her consents as described herein. For more information on the consequences of refusal to consent or withdrawal of consent, Holders may contact their local human resources representative.

## ARTICLE 11.

### ADMINISTRATION

11.1 Administrator. The Committee shall administer the Plan (except as otherwise permitted herein). To the extent necessary to comply with Rule 16b-3 of the Exchange Act, the Committee shall take all action with respect to such Awards, and the individuals taking such action shall consist solely of two or more Non-Employee Directors, each of whom is intended to qualify as a “non-employee director” as defined by Rule 16b-3 of the Exchange Act or any successor rule. Additionally, to the extent required by Applicable Law, each of the individuals constituting the Committee shall be an “independent director” under the rules of any securities exchange or automated quotation system on which the Shares are listed, quoted or traded. Notwithstanding the foregoing, any action taken by the Committee shall be valid and effective, whether or not members of the Committee at the time of such action are later determined not to have satisfied the requirements for membership set forth in this Section 11.1 or the Organizational Documents. Except as may otherwise be provided in the Organizational Documents or as otherwise required by Applicable Law, (a) appointment of Committee members shall be effective upon acceptance of appointment, (b) Committee members may resign at any time by delivering written or electronic notice to the Board and (c) vacancies in the Committee may only be filled by the Board. Notwithstanding the foregoing, (i) the full Board, acting by a majority of its members in office, shall conduct the general administration of the Plan with respect to Awards granted to Non-Employee Directors and, with respect to such Awards, the terms “Administrator” as used in the Plan shall be deemed to refer to the Board and (ii) the Board or Committee may delegate its authority hereunder to the extent permitted by Section 11.6.

11.2 Duties and Powers of Administrator. It shall be the duty of the Administrator to conduct the general administration of the Plan in accordance with its provisions. The Administrator shall have the power to interpret the Plan, all Programs and Award Agreements, and to adopt such rules for the administration, interpretation and application of the Plan and any Program as are not inconsistent with the Plan, to interpret, amend or revoke any such rules and to amend the Plan or any Program or Award Agreement; provided that the rights or obligations of the Holder of the Award that is the subject of any such Program or Award Agreement are not materially and adversely affected by such amendment, unless the consent of the Holder is obtained or such amendment is otherwise permitted under Section 10.7 or Section 12.10. In its sole discretion, the Board may at any time and from time to time exercise any and all rights and duties of the Committee in its capacity as the Administrator under the Plan except with respect to matters which under Rule 16b-3 under the Exchange Act or any successor rule, or the rules of any securities exchange or automated quotation system on which the Shares are listed, quoted or traded are required to be determined in the sole discretion of the Committee.

11.3 Action by the Administrator. Unless otherwise established by the Board, set forth in any Organizational Documents or as required by Applicable Law, a majority of the Administrator shall constitute a quorum and the acts of a majority of the members present at any meeting at which a quorum is present, and acts approved in writing by all members of the Administrator in lieu of a meeting, shall be deemed the acts of the Administrator. Each member of the Administrator is entitled to, in good faith, rely or act upon any report or other information furnished to that member by any officer or other employee of the Company or any Subsidiary, the Company’s independent certified public accountants, or any executive compensation consultant or other professional retained by the Company to assist in the administration of the Plan.

11.4 Authority of Administrator. Subject to the Organizational Documents, any specific designation in the Plan and Applicable Law, the Administrator has the exclusive power, authority and sole discretion to:

- (a) Designate Eligible Individuals to receive Awards;
- (b) Determine the type or types of Awards to be granted to each Eligible Individual (including, without limitation, any Awards granted in tandem with another Award granted pursuant to the Plan);
- (c) Determine the number of Awards to be granted and the number of Shares to which an Award will relate;
- (d) Determine the terms and conditions of any Award granted pursuant to the Plan, including, but not limited to, the exercise price, grant price, purchase price, any performance criteria, any restrictions or limitations on the Award, any schedule for vesting, lapse of forfeiture restrictions or restrictions on the exercisability of an Award, and accelerations or waivers thereof, and any provisions related to non-competition and clawback and recapture of gain on an Award, based in each case on such considerations as the Administrator in its sole discretion determines;
- (e) Determine whether, to what extent, and under what circumstances an Award may be settled in, or the exercise price of an Award may be paid in cash, Shares, other Awards, or other property, or an Award may be canceled, forfeited, or surrendered;
- (f) Prescribe the form of each Award Agreement, which need not be identical for each Holder;
- (g) Decide all other matters that must be determined in connection with an Award;
- (h) Establish, adopt, or revise any Programs, rules and regulations as it may deem necessary or advisable to administer the Plan;
- (i) Interpret the terms of, and any matter arising pursuant to, the Plan, any Program or any Award Agreement;
- (j) Make all other decisions and determinations that may be required pursuant to the Plan or as the Administrator deems necessary or advisable to administer the Plan; and
- (k) Accelerate wholly or partially the vesting or lapse of restrictions of any Award or portion thereof at any time after the grant of an Award, subject to whatever terms and conditions it selects Section 3.2 and Section 12.2.

11.5 Decisions Binding. The Administrator's interpretation of the Plan, any Awards granted pursuant to the Plan, any Program or any Award Agreement and all decisions and determinations by the Administrator with respect to the Plan are final, binding and conclusive on all Persons.

11.6 Delegation of Authority. The Board or Committee may from time to time delegate to a committee of one or more members of the Board or one or more officers of the Company the authority to grant or amend Awards or to take other administrative actions pursuant to this Article 11; provided, however, that in no event shall an officer of the Company be delegated the authority to grant Awards to, or amend Awards held by, the following individuals: (a) individuals who are subject to Section 16 of the Exchange Act or (b) officers of the Company (or Directors) to whom authority to grant or amend Awards has been delegated hereunder; provided, further, that any delegation of administrative authority shall only be permitted to the extent it is permissible under any Organizational Documents and Applicable Law. Any delegation hereunder shall be subject to the restrictions and limits that the Board or Committee specifies at the time of such delegation or that are otherwise included in the applicable Organizational Documents, and the Board or Committee, as applicable, may at any time rescind the authority so delegated or appoint a new delegatee. At all times, the delegatee appointed under this Section 11.6 shall serve in such capacity at the pleasure of the Board or the Committee, as applicable, and the Board or the Committee may abolish any committee at any time and re-vest in itself any previously delegated authority.

## ARTICLE 12.

### MISCELLANEOUS PROVISIONS

#### 12.1 Amendment, Suspension or Termination of the Plan.

(a) Except as otherwise provided in Section 12.1(b), the Plan may be wholly or partially amended or otherwise modified, suspended or terminated at any time or from time to time by the Board; provided that, except as provided in Section 10.7 and Section 12.10, no amendment, suspension or termination of the Plan shall, without the consent of the Holder, materially and adversely affect any rights or obligations under any Award theretofore granted or awarded, unless the Award itself otherwise expressly so provides.

(b) Notwithstanding Section 12.1(a), the Board may not, except as provided in Section 12.2, take any of the following actions without approval of the Company's stockholders given within twelve (12) months before or after such action: (i) increase the limit imposed in Section 3.1 on the maximum number of Shares which may be issued under the Plan or the Director Limit, (ii) reduce the price per share of any outstanding Option or Stock Appreciation Right granted under the Plan or take any action prohibited under Section 10.6, or (iii) cancel any Option or Stock Appreciation Right in exchange for cash or another Award in violation of Section 10.6.

(c) No Awards may be granted or awarded during any period of suspension or after termination of the Plan, and notwithstanding anything herein to the contrary, in no event may any Award be granted under the Plan after the tenth (10<sup>th</sup>) anniversary of the earlier of (i) the date on which the Plan was adopted by the Board or (ii) the date the Plan was approved by the Company's stockholders (such anniversary, the "Expiration Date"). Any Awards that are outstanding on the Expiration Date shall remain in force according to the terms of the Plan, the applicable Program and the applicable Award Agreement.

#### 12.2 Changes in Common Stock or Assets of the Company, Acquisition or Liquidation of the Company and Other Corporate Events.

(a) In the event of any stock dividend, stock split, combination or exchange of shares, merger, consolidation or other distribution (other than normal cash dividends) of Company assets to stockholders, or any other change affecting the shares of the Company's stock or the share price of the Company's stock other than an Equity Restructuring, the Administrator may make equitable adjustments, if any, to reflect such change with respect to: (i) the aggregate number and kind of Shares that may be issued under the Plan (including, but not limited to, adjustments of the limitations in Section 3.1 on the maximum number and kind of Shares which may be issued under the Plan); (ii) the number and kind of Shares (or other securities or property) subject to outstanding Awards; (iii) the terms and conditions of any outstanding Awards (including, without limitation, any applicable performance targets or criteria with respect thereto); (iv) the grant or exercise price per share for any outstanding Awards under the Plan; and (v) the number and kind of Shares (or other securities or property) for which automatic grants are subsequently to be made to new and continuing Non-Employee Directors pursuant to Section 4.6.

(b) In the event of any transaction or event described in Section 12.2(a) or any unusual or nonrecurring transactions or events affecting the Company, any Subsidiary of the Company, or the financial statements of the Company or any Subsidiary, or of changes in Applicable Law or Applicable Accounting Standards, the Administrator, in its sole discretion, and on such terms and conditions as it deems appropriate, either by the terms of the Award or by action taken prior to the occurrence of such transaction or event, is hereby authorized to take any one or more of the following actions whenever the Administrator determines that such action is appropriate in order to prevent dilution or enlargement of the benefits or potential benefits intended to be made available under the Plan or with respect to any Award under the Plan, to facilitate such transactions or events or to give effect to such changes in Applicable Law or Applicable Accounting Standards:

(i) To provide for the termination of any such Award in exchange for an amount of cash and/or other property with a value equal to the amount that would have been attained upon the exercise of such Award or realization of the Holder's rights (and, for the avoidance of doubt, if as of the date of the occurrence of the transaction or event described in this Section 12.2 the Administrator determines in good faith that no amount would have been attained upon the exercise of such Award or realization of the Holder's rights, then such Award may be terminated by the Company without payment);

(ii) To provide that such Award be assumed by the successor or survivor corporation, or a parent or subsidiary thereof, or shall be substituted for by similar options, rights or awards covering the stock of the successor or survivor corporation, or a parent or subsidiary thereof, with appropriate adjustments as to the number and kind of shares and applicable exercise or purchase price, in all cases, as determined by the Administrator;

(iii) To make adjustments in the number and type of Shares of the Company's stock (or other securities or property) subject to outstanding Awards, and/or in the terms and conditions of (including the grant or exercise price), and the criteria included in, outstanding Awards and Awards which may be granted in the future;

(iv) To provide that such Award shall be exercisable or payable or fully vested with respect to all Shares covered thereby, notwithstanding anything to the contrary in the Plan or the applicable Program or Award Agreement;

(v) To replace such Award with other rights or property selected by the Administrator; and/or

(vi) To provide that the Award cannot vest, be exercised or become payable after such event.

(c) In connection with the occurrence of any Equity Restructuring, and notwithstanding anything to the contrary in Sections 12.2(a) and 12.2(b):

(i) The number and type of securities subject to each outstanding Award and the exercise price or grant price thereof, if applicable, shall be equitably adjusted (and the adjustments provided under this Section 12.2(c)(i) shall be nondiscretionary and shall be final and binding on the affected Holder and the Company); and/or

(ii) The Administrator shall make such equitable adjustments, if any, as the Administrator, in its sole discretion, may deem appropriate to reflect such Equity Restructuring with respect to the aggregate number and kind of Shares that may be issued under the Plan (including, but not limited to, adjustments of the limitation in Section 3.1 on the maximum number and kind of Shares which may be issued under the Plan).

(d) Notwithstanding any other provision of the Plan but subject to Section 12.2(e), in the event of a Change in Control, each outstanding Award shall be assumed or an equivalent Award substituted by the successor corporation or a parent or subsidiary of the successor corporation. In the event a Holder experiences a Termination of Service by the Company without Cause or Constructive Termination within the twelve (12) month period commencing upon a Change in Control, each Award held by such Holder shall become fully vested and, if applicable, exercisable and all forfeiture restrictions on such Award shall lapse, in each case, as of immediately prior to such Termination of Service or Constructive Termination.

(e) In the event that the successor corporation in a Change in Control refuses to assume or substitute for an Award upon a Change in Control, such Award shall become fully vested and, if applicable, exercisable and all forfeiture restrictions on such Award shall lapse, in each case, as of immediately prior to the consummation of such Change in Control. If an Award is exercisable in lieu of assumption or substitution in the event of a Change in Control, the Administrator shall notify the Holder that the Award shall be fully exercisable for a period of fifteen (15) days from the date of such notice, contingent upon the occurrence of the Change in Control, and the Award shall terminate upon the expiration of such period.

(f) For the purposes of this Section 12.2, an Award shall be considered assumed if, following the Change in Control, the Award confers the right to purchase or receive, for each Share subject to the Award immediately prior to the Change in Control, the consideration (whether stock, cash, or other securities or property) received in the Change in Control by holders of Common Stock for each Share held on the effective date of the transaction (and if holders were offered a choice of consideration, the type of consideration chosen by the holders of a majority of the outstanding Shares); provided, however, that if such consideration received in the Change in Control was not solely common stock of the successor corporation or its parent, the Administrator may, with the consent of the successor corporation, provide for the consideration to be received upon the exercise of the Award, for each Share subject to an Award, to be solely common stock of the successor corporation or its parent equal in fair market value to the per-share consideration received by holders of Common Stock in the Change in Control

(g) The Administrator, in its sole discretion, may include such further provisions and limitations in any Award, agreement or certificate, as it may deem equitable and in the best interests of the Company that are not inconsistent with the provisions of the Plan.

(h) Unless otherwise determined by the Administrator, no adjustment or action described in this Section 12.2 or in any other provision of the Plan shall be authorized to the extent it would (i) cause the Plan to violate Section 422(b)(1) of the Code, (ii) result in short-swing profits liability under Section 16 of the Exchange Act or violate the exemptive conditions of Rule 16b-3 of the Exchange Act, or (iii) cause an Award to fail to be exempt from or comply with Section 409A.

(i) The existence of the Plan, any Program, any Award Agreement and/or the Awards granted hereunder shall not affect or restrict in any way the right or power of the Company or the stockholders of the Company to make or authorize any adjustment, recapitalization, reorganization or other change in the Company's capital structure or its business, any merger or consolidation of the

Company, any issue of stock or of options, warrants or rights to purchase stock or of bonds, debentures, preferred or prior preference stocks whose rights are superior to or affect the Common Stock or the rights thereof or which are convertible into or exchangeable for Common Stock, or the dissolution or liquidation of the Company, or any sale or transfer of all or any part of its assets or business, or any other corporate act or proceeding, whether of a similar character or otherwise.

(j) In the event of any pending stock dividend, stock split, combination or exchange of shares, merger, consolidation or other distribution (other than normal cash dividends) of Company assets to stockholders, or any other change affecting the Shares or the share price of the Common Stock including any Equity Restructuring, for reasons of administrative convenience, the Administrator, in its sole discretion, may refuse to permit the exercise of any Award during a period of up to thirty (30) days prior to the consummation of any such transaction.

12.3 Approval of Plan by Stockholders. The Plan shall be submitted for the approval of the Company's stockholders within twelve (12) months after the date of the Board's initial adoption of the Plan.

12.4 No Stockholders Rights. Except as otherwise provided herein or in an applicable Program or Award Agreement, a Holder shall have none of the rights of a stockholder with respect to Shares covered by any Award until the Holder becomes the record owner of such Shares.

12.5 Paperless Administration. In the event that the Company establishes, for itself or using the services of a third party, an automated system for the documentation, granting or exercise of Awards, such as a system using an internet website or interactive voice response, then the paperless documentation, granting or exercise of Awards by a Holder may be permitted through the use of such an automated system.

12.6 Effect of Plan upon Other Compensation Plans. The adoption of the Plan shall not affect any other compensation or incentive plans in effect for the Company or any Subsidiary. Nothing in the Plan shall be construed to limit the right of the Company or any Subsidiary: (a) to establish any other forms of incentives or compensation for Employees, Directors or Consultants of the Company or any Subsidiary, or (b) to grant or assume options or other rights or awards otherwise than under the Plan in connection with any proper corporate purpose including without limitation, the grant or assumption of options in connection with the acquisition by purchase, lease, merger, consolidation or otherwise, of the business, stock or assets of any corporation, partnership, limited liability company, firm or association.

12.7 Compliance with Laws. The Plan, the granting and vesting of Awards under the Plan and the issuance and delivery of Shares and the payment of money under the Plan or under Awards granted or awarded hereunder are subject to compliance with all Applicable Law (including but not limited to state, federal and foreign securities law and margin requirements), and to such approvals by any listing, regulatory or governmental authority as may, in the opinion of counsel for the Company, be necessary or advisable in connection therewith. Any securities delivered under the Plan shall be subject to such restrictions, and the person acquiring such securities shall, if requested by the Company, provide such assurances and representations to the Company as the Company may deem necessary or desirable to assure compliance with all Applicable Law. The Administrator, in its sole discretion, may take whatever actions it deems necessary or appropriate to effect compliance with Applicable Law, including, without limitation, placing legends on share certificates and issuing stop-transfer notices to agents and registrars. Notwithstanding anything to the contrary herein, the Administrator may not take any actions hereunder, and no Awards shall be granted, that would violate Applicable Law. To the extent permitted by Applicable Law, the Plan and Awards granted or awarded hereunder shall be deemed amended to the extent necessary to conform to Applicable Law.

12.8 Titles and Headings, References to Sections of the Code or Exchange Act. The titles and headings of the Sections in the Plan are for convenience of reference only and, in the event of any conflict, the text of the Plan, rather than such titles or headings, shall control. References to sections of the Code or the Exchange Act shall include any amendment or successor thereto.

12.9 Governing Law. The Plan and any Programs and Award Agreements hereunder shall be administered, interpreted and enforced under the internal laws of the State of Delaware without regard to conflicts of laws thereof or of any other jurisdiction.

12.10 Section 409A. To the extent that the Administrator determines that any Award granted under the Plan is subject to Section 409A, the Plan, the Program pursuant to which such Award is granted and the Award Agreement evidencing such Award shall incorporate the terms and conditions required by Section 409A. In that regard, to the extent any Award under the Plan or any other compensatory plan or arrangement of the Company or any of its Subsidiaries is subject to Section 409A, and such Award or other amount is payable on account of a Holder's Termination of Service (or any similarly defined term), then (a) such Award or amount shall only be paid to the extent such Termination of Service qualifies as a "separation from service" as defined in Section 409A, and (b) if such Award or amount is payable to a "specified employee" as defined in Section 409A then to the extent required in order to avoid a prohibited distribution under Section 409A, such Award or other compensatory payment shall not be payable prior to the

earlier of (i) the expiration of the six-month period measured from the date of the Holder's Termination of Service, or (ii) the date of the Holder's death. To the extent applicable, the Plan, the Program and any Award Agreements shall be interpreted in accordance with Section 409A. Notwithstanding any provision of the Plan to the contrary, in the event that following the Effective Date the Administrator determines that any Award may be subject to Section 409A, the Administrator may (but is not obligated to), without a Holder's consent, adopt such amendments to the Plan and the applicable Program and Award Agreement or adopt other policies and procedures (including amendments, policies and procedures with retroactive effect), or take any other actions, that the Administrator determines are necessary or appropriate to (A) exempt the Award from Section 409A and/or preserve the intended tax treatment of the benefits provided with respect to the Award, or (B) comply with the requirements of Section 409A and thereby avoid the application of any penalty taxes under Section 409A. The Company makes no representations or warranties as to the tax treatment of any Award under Section 409A or otherwise. The Company shall have no obligation under this Section 12.10 or otherwise to take any action (whether or not described herein) to avoid the imposition of taxes, penalties or interest under Section 409A with respect to any Award and shall have no liability to any Holder or any other person if any Award, compensation or other benefits under the Plan are determined to constitute non-compliant, "nonqualified deferred compensation" subject to the imposition of taxes, penalties and/or interest under Section 409A.

12.11 Unfunded Status of Awards. The Plan is intended to be an "unfunded" plan for incentive compensation. With respect to any payments not yet made to a Holder pursuant to an Award, nothing contained in the Plan or any Program or Award Agreement shall give the Holder any rights that are greater than those of a general creditor of the Company or any Subsidiary.

12.12 Indemnification. To the extent permitted under Applicable Law and the Organizational Documents, each member of the Administrator shall be indemnified and held harmless by the Company from any loss, cost, liability, or expense that may be imposed upon or reasonably incurred by such member in connection with or resulting from any claim, action, suit, or proceeding to which he or she may be a party or in which he or she may be involved by reason of any action or failure to act pursuant to the Plan and against and from any and all amounts paid by him or her in satisfaction of judgment in such action, suit, or proceeding against him or her; provided he or she gives the Company an opportunity, at its own expense, to handle and defend the same before he or she undertakes to handle and defend it on his or her own behalf. The foregoing right of indemnification shall not be exclusive of any other rights of indemnification to which such persons may be entitled pursuant to the Organizational Documents, as a matter of law, or otherwise, or any power that the Company may have to indemnify them or hold them harmless.

12.13 Relationship to other Benefits. No payment pursuant to the Plan shall be taken into account in determining any benefits under any pension, retirement, savings, profit sharing, group insurance, welfare or other benefit plan of the Company or any Subsidiary except to the extent otherwise expressly provided in writing in such other plan or an agreement thereunder.

12.14 Expenses. The expenses of administering the Plan shall be borne by the Company and its Subsidiaries.

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**CALIX, INC.**  
**AMENDED AND RESTATED 2017 NONQUALIFIED EMPLOYEE STOCK PURCHASE PLAN**

**ARTICLE I.**  
**PURPOSE, SCOPE AND ADMINISTRATION OF THE PLAN**

1.1. **Purpose and Scope.** The purpose of the Calix, Inc. Amended and Restated 2017 Nonqualified Employee Stock Purchase Plan (as amended from time to time, the “Plan”) is to assist employees of Calix, Inc., a Delaware corporation (the “Company”) and its Participating Subsidiaries in acquiring a stock ownership interest in the Company pursuant to a plan which is intended to help such employees provide for their future security and to encourage them to remain in the employment of the Company and its Subsidiaries. The Plan is not intended to qualify as an “employee stock purchase plan” under Section 423 of the Code. The Plan amends and restates the Amended and Restated 2017 Nonqualified Employee Stock Purchase Plan approved by our stockholders in May 2018 (the “Prior Plan”) in its entirety, subject to stockholder approval of this Plan at the annual meeting of the Company’s stockholders in 2020. In the event the Company’s stockholders fail to approve the Plan as set forth herein at the annual meeting of the Company’s stockholders in 2020, then this Plan shall be deemed *void ab initio* and the Prior Plan shall continue in effect in accordance with its terms.

**ARTICLE II.**  
**DEFINITIONS**

2.1 “Agent” means the brokerage firm, bank or other financial institution, entity or person(s), if any, engaged, retained, appointed or authorized to act as the agent of the Company or an Employee with regard to the Plan.

2.2 “Administrator” shall mean the Committee, or such individuals to which authority to administer the Plan has been delegated under Section 7.1 hereof.

2.3 “Affiliate” shall mean the Company and any Parent or Subsidiary.

2.4 “Code” shall mean the Internal Revenue Code of 1986, as amended.

2.5 “Committee” shall mean the Compensation Committee of the Board, or another committee or subcommittee of the Board or the Compensation Committee described in Article 7 hereof.

2.6 “Common Stock” shall mean common stock, par value \$0.025, of the Company.

2.7 “Compensation” of an Employee shall mean the regular straight-time earnings, base salary, cash incentive compensation, cash bonuses (e.g., quarterly or annual bonuses or other corporate bonuses), one-time bonuses (e.g., retention or sign-on bonuses), taxable profit sharing payments, commissions, vacation pay, holiday pay, jury duty pay, funeral leave pay or military pay paid to the Employee from the Company or any Participating Subsidiary or any Affiliate on each Payday as compensation for services to the Company or any Participating Subsidiary or any Affiliate before deduction for any salary deferral contributions made by the Employee to any tax-qualified or nonqualified deferred compensation plan of the Company, any Participating Subsidiary or any Affiliate, but excluding overtime, shift differential payments, fringe benefits (including, without limitation, employer gifts), education or tuition reimbursements, imputed income arising under any Company, Participating Subsidiary or Affiliate group insurance or benefit program, travel expenses, business and moving reimbursements, income received in connection with any stock options, stock appreciation rights, restricted stock, restricted stock units or other compensatory equity awards and all contributions made by the Company, any Participating Subsidiary or any Affiliate for the Employee’s benefit under any employee benefit plan now or hereafter established. Such Compensation shall be calculated before deduction of any income or employment tax withholdings, but shall be withheld from the Employee’s net income.

2.8 “Effective Date” shall mean May 17, 2017.

2.9 “Eligible Employee” means an Employee of the Company or any Participating Subsidiary (i) who is customarily employed for at least twenty (20) hours per week and (ii) who is customarily employed for more than five (5) months per calendar year; but excluding (a) the Company’s Chief Executive Officer, (b) each senior management Employee who reports directly to the Company’s Chief Executive Officer, and (c) each other senior management Employee as identified in writing by the Administrator as being ineligible for the Plan.

2.10 “Employee” shall mean any person who renders services to the Company or a Participating Subsidiary in the status of an employee within the meaning of Section 3401(c) of the Code. “Employee” shall not include any director of the Company or a Participating Subsidiary who does not render services to the Company or a Participating Subsidiary in the status of an employee within the meaning of Section 3401(c) of the Code.

2.11 “Enrollment Date” shall mean the first date of each Offering Period.

2.12 “Exercise Date” shall mean the last trading day of each Offering Period, except as provided in Section 5.2 hereof.

2.13 “Exchange Act” shall mean the Securities Exchange Act of 1934, as amended.

2.14 “Fair Market Value” shall mean, as of any date, the value of a Share determined as follows:

(a) If the Common Stock is (i) listed on any established securities exchange (such as the New York Stock Exchange, the NASDAQ Global Market and the NASDAQ Global Select Market), (ii) listed on any national market system or (iii) listed, quoted or traded on any automated quotation system, its Fair Market Value shall be the closing sales price for a Share as quoted on such exchange or system for such date or, if there is no closing sales price for a Share on the date in question, the closing sales price for a Share on the last preceding date for which such quotation exists, as reported in *The Wall Street Journal* or such other source as the Administrator deems reliable;

(b) If the Common Stock is not listed on an established securities exchange, national market system or automated quotation system, but the Common Stock is regularly quoted by a recognized securities dealer, its Fair Market Value shall be the mean of the high bid and low asked prices for such date or, if there are no high bid and low asked prices for a Share on such date, the high bid and low asked prices for a Share on the last preceding date for which such information exists, as reported in *The Wall Street Journal* or such other source as the Administrator deems reliable; or

(c) If the Common Stock is neither listed on an established securities exchange, national market system or automated quotation system nor regularly quoted by a recognized securities dealer, its Fair Market Value shall be established by the Administrator in good faith.

2.15 “New Exercise Date” shall have such meaning as set forth in Section 5.2(b) hereof.

2.16 “Offering Period” shall mean, unless otherwise determined by the Administrator, each approximately six (6)-month period during the term of the Plan (i) commencing on June 21 and ending on December 20 and (ii) commencing on December 21 and ending on June 20.

2.17 “Option” shall mean the right to purchase Shares pursuant to the Plan during each Offering Period.

2.18 “Parent” shall mean any entity (other than the Company), whether domestic or foreign, in an unbroken chain of entities ending with the Company if each of the entities other than the Company beneficially owns, at the time of the determination, securities or interests representing more than fifty percent (50%) of the total combined voting power of all classes of securities or interests in one of the other entities in such chain.

2.19 “Participant” shall mean any Eligible Employee who elects to participate in the Plan.

2.20 “Participating Subsidiary” shall mean each Subsidiary that has been designated by the Board or Committee from time to time in its sole discretion as eligible to participate in the Plan in accordance with Section 7.2 hereof, in each case, including any Subsidiary in existence on the Effective Date and any Subsidiary formed or acquired following the Effective Date.

2.21 “Payday” shall mean the regular and recurring established day for payment of Compensation to an Employee of the Company or any Participating Subsidiary.

2.22 “Plan Account” shall mean a bookkeeping account established and maintained by the Company in the name of each Participant.

2.23 “Share” shall mean a share of Common Stock.

2.24 “Subsidiary” shall mean (a) a corporation, association or other business entity of which fifty percent (50%) or more of the total combined voting power of all classes of capital stock is owned, directly or indirectly, by the Company and/or by one or more

Subsidiaries, (b) any partnership or limited liability company of which fifty percent (50%) or more of the equity interests are owned, directly or indirectly, by the Company and/or by one or more Subsidiaries, and (c) any other entity not described in clauses (a) or (b) above of which fifty percent (50%) or more of the ownership and the power (whether voting interests or otherwise), pursuant to a written contract or agreement, to direct the policies and management or the financial and the other affairs thereof, are owned or controlled by the Company and/or by one or more Subsidiaries.

2.25 "Withdrawal Election" shall have such meaning as set forth in Section 6.1(a) hereof.

### **ARTICLE III. PARTICIPATION**

3.1 Eligibility. Any Eligible Employee who shall be employed by the Company or a Participating Subsidiary on a given Enrollment Date for an Offering Period shall be eligible to participate in the Plan during such Offering Period, subject to the requirements of Articles IV and V hereof.

#### 3.2 Election to Participate; Payroll Deductions

(a) Except as provided in Section 3.3 hereof, an Eligible Employee may become a Participant in the Plan only by means of payroll deduction. Each individual who is an Eligible Employee as of the Enrollment Date of the applicable Offering Period may elect to participate in such Offering Period and the Plan by delivering to the Company an enrollment form for the Plan designating payroll deduction authorization by such date specified by the Company.

(b) Payroll deductions with respect to an Offering Period (i) shall be equal to at least one percent (1%) of the Participant's Compensation as of each Payday during the applicable Offering Period, but not more than twenty-five percent (25%) of the Participant's Compensation as of each Payday during the applicable Offering Period and (ii) may be expressed either as (A) a whole number percentage or (B) a fixed dollar amount (as determined by the Administrator). Amounts deducted from a Participant's Compensation with respect to an Offering Period pursuant to this Section 3.2 shall be deducted each Payday through payroll deduction and credited to the Participant's Plan Account.

(c) Following at least one (1) payroll deduction, a Participant may decrease (to as low as 0%) the amount deducted from such Participant's Compensation only once during an Offering Period upon ten (10) calendar days' prior written or electronic notice to the Company. A Participant may not increase the amount deducted from such Participant's Compensation during an Offering Period.

(d) Notwithstanding the foregoing, upon the completion of an Offering Period, each Participant in such Offering Period shall automatically participate in the Offering Period that commences immediately following the completion of such Offering Period at the same payroll deduction percentage or fixed amount as in effect at the completion of the prior Offering Period, unless such Participant delivers to the Company a different election with respect to the successive Offering Period in accordance with Section 3.1 hereof, or unless such Participant becomes ineligible for participation in the Plan.

3.3 Leave of Absence. During leaves of absence approved by the Company meeting the requirements of Treasury Regulation Section 1.421-1(h)(2) under the Code, an individual shall be treated as an Employee of the Company or Participating Subsidiary that employs such individual immediately prior to such leave.

### **ARTICLE IV. PURCHASE OF SHARES**

4.1 Grant of Option; Automatic Exercise. Each Participant shall be granted an Option with respect to an Offering Period on the applicable Exercise Date. On the Exercise Date for such Offering Period, the Option will be automatically exercised to (a) purchase that number of Shares calculated by dividing (i) such Participant's payroll deductions accumulated on or prior to such Exercise Date and retained in the Participant's Plan Account on such Exercise Date by (ii) the Fair Market Value of a Share on such Exercise Date (the "Purchased Shares") and (b) acquire a number of Shares equal to the Purchased Shares that are subject to a risk of forfeiture (the "Restricted Shares"). The balance, if any, remaining in the Participant's Plan Account (after exercise of such Participant's Option) as of such Exercise Date shall be carried forward to the next Offering Period, unless the Participant has elected to withdraw from the Plan pursuant to Section 6.1 hereof or, pursuant to Section 6.2 hereof, such Participant has ceased to be an Eligible Employee.

4.2 Restricted Shares. The risk of forfeiture on the Restricted Shares shall automatically lapse on the first anniversary of the Exercise Date, subject to the Participant continuing to be an Employee through such date.

4.3 Share Issuance. As soon as practicable following the applicable Exercise Date (but in no event more than thirty (30) days thereafter), the Purchased Shares and Restricted Shares shall be delivered (either in share certificate or book entry form), in the Company's sole discretion, to either (i) the Participant or (ii) an account established in the Participant's name at a stock brokerage or other financial services firm designated by the Company. If the Company is required to obtain from any commission or agency authority to issue any such Shares, the Company shall seek to obtain such authority. Inability of the Company to obtain from any such commission or agency authority which counsel for the Company deems necessary for the lawful issuance of any such shares shall relieve the Company from liability to any Participant except to refund to the Participant such Participant's Plan Account balance, without interest thereon.

#### 4.4 Transferability.

(a) An Option granted under the Plan shall not be transferable, other than by will or the applicable laws of descent and distribution, and shall be exercisable during the Participant's lifetime only by the Participant. No Option or interest or right to the Option shall be available to pay off any debts, contracts or engagements of the Participant or his or her successors in interest or shall be subject to disposition by pledge, encumbrance, assignment or any other means whether such disposition be voluntary or involuntary or by operation of law by judgment, levy, attachment, garnishment or any other legal or equitable proceedings (including bankruptcy), and any attempt at disposition of the Option shall have no effect.

(b) Unless otherwise determined by the Administrator, no Shares issued upon exercise of an Option under the Plan may be assigned, transferred, pledged or otherwise disposed of in any way by the Participant until the first anniversary of the Exercise Date upon which such Shares were purchased. Unless otherwise determined by the Administrator, in the event a Participant ceases to be an Employee prior to the first anniversary of the Exercise Date upon which Shares were purchased, the Restricted Shares acquired on such Exercise Date shall be forfeited for no consideration, and the transfer restrictions applicable to the Purchased Shares purchased on such Exercise Date shall immediately lapse.

4.5 Limitations on the Purchase of Shares. Notwithstanding any provision in the Plan to the contrary, no more than an aggregate of five hundred thousand (500,000) Shares (the "Offering Period Share Limit") shall be purchased by one or more Participants on any Exercise Date. Prior to the commencement of an Offering Period, the Administrator may provide for a limit on individual contributions or a maximum number of Shares a Participant may acquire in such Offering Period and any such limit or maximum shall be deemed to constitute an Offering Period Share Limit hereunder. In the event the Company determines that, on a given Exercise Date, the number of Shares with respect to which Options are to be exercised may exceed the Offering Period Share Limit, the Administrator shall make a pro rata allocation of the Shares available for issuance on such Exercise Date in as uniform a manner as shall be practicable and as it shall determine in its sole discretion to be equitable among all Participants exercising Options to purchase Shares on such Exercise Date. For the avoidance of doubt, any such pro rata allocation shall be applied to an equal extent between Purchased Shares and Restricted Shares.

## ARTICLE V. PROVISIONS RELATING TO COMMON STOCK

5.1 Common Stock Reserved. Subject to adjustment as provided in Section 5.2 hereof, the maximum number of Shares that shall be made available for sale under the Plan shall be four million seven hundred thousand (4,700,000) Shares. Shares made available for sale under the Plan may be authorized but unissued shares or reacquired shares reserved for issuance under the Plan.

#### 5.2 Adjustments Upon Changes in Capitalization, Dissolution, Liquidation, Merger or Asset Sale.

(a) Changes in Capitalization. Subject to any required action by the stockholders of the Company, the number of Shares which have been authorized for issuance under the Plan but not yet placed under an Option, as well as the price per share and the number of Shares covered by each Option under the Plan which has not yet been exercised shall be proportionately adjusted for any increase or decrease in the number of issued Shares resulting from a stock split, reverse stock split, stock dividend, combination or reclassification of the Common Stock or any other increase or decrease in the number of Shares effected without receipt of consideration by the Company; provided, however, that conversion of any convertible securities of the Company shall not be deemed to have been "effected without receipt of consideration." Such adjustment shall be made by the Administrator, whose determination in that respect shall be final, binding and conclusive. Except as expressly provided herein, no issuance by the Company of shares of stock of any class, or securities convertible into shares of stock of any class, shall affect, and no adjustment by reason thereof shall be made with respect to, the number or price of Shares subject to an Option.

(b) Dissolution or Liquidation. In the event of the proposed dissolution or liquidation of the Company, the Offering Period then in progress shall be shortened by setting a new Exercise Date (the "New Exercise Date"), and such Offering Period shall

terminate immediately prior to the consummation of such proposed dissolution or liquidation, unless provided otherwise by the Administrator. The New Exercise Date shall be before the date of the Company's proposed dissolution or liquidation. The Administrator shall notify each Participant in writing, at least ten (10) business days prior to the New Exercise Date, that the next Exercise Date for the Participant's Option has been changed to the New Exercise Date and that the Participant's Option shall be exercised automatically on the New Exercise Date, unless prior to such date the Participant has withdrawn from the Offering Period as provided in Section 6.1(a)(i) hereof or the Participant has ceased to be an Eligible Employee as provided in Section 6.2 hereof.

(c) Merger or Asset Sale. In the event of a proposed sale of all or substantially all of the assets of the Company, or the merger of the Company with or into another corporation, each outstanding Option shall be assumed or an equivalent Option substituted by the successor corporation or a Parent or Subsidiary of the successor corporation. In the event that the Option is not assumed or substituted, any Offering Periods then in progress shall be shortened by setting a New Exercise Date and any Offering Periods then in progress shall end on the New Exercise Date. The New Exercise Date shall be before the date of the Company's proposed sale or merger. The Administrator shall notify each Participant in writing, at least ten (10) business days prior to the New Exercise Date, that the next Exercise Date for the Participant's Option has been changed to the New Exercise Date and that the Participant's Option shall be exercised automatically on the New Exercise Date, unless prior to such date the Participant has withdrawn from the Offering Periods as provided in Section 6.1(a)(i) hereof or the Participant has ceased to be an Eligible Employee as provided in Section 6.2 hereof.

5.3 Insufficient Shares. If the Administrator determines that, on a given Exercise Date, the number of Shares with respect to which Options are to be exercised may exceed the number of Shares remaining available for sale under the Plan on such Exercise Date, the Administrator shall make a pro rata allocation of the Shares available for issuance on such Exercise Date in as uniform a manner as shall be practicable and as it shall determine in its sole discretion to be equitable among all Participants exercising Options to purchase Shares on such Exercise Date, and unless additional shares are authorized for issuance under the Plan, no further Offering Periods shall take place and the Plan shall terminate pursuant to Section 7.5 hereof. If an Offering Period is so terminated, then the balance of the amount credited to the Participant's Plan Account which has not been applied to the purchase of Shares shall be paid to such Participant in one (1) lump sum in cash within thirty (30) days after such Exercise Date, without any interest thereon.

5.4 Rights as Stockholders. With respect to Shares subject to an Option, a Participant shall not be deemed to be a stockholder of the Company and shall not have any of the rights or privileges of a stockholder. A Participant shall have the rights and privileges of a stockholder of the Company when, but not until, Shares have been deposited in the designated brokerage account following exercise of his or her Option. Notwithstanding the foregoing, in the event a dividend is paid in respect of Restricted Shares, such dividend shall not be paid to the Participant holding such Restricted Shares unless and until the risk of forfeiture thereon lapses.

## **ARTICLE VI. TERMINATION OF PARTICIPATION**

### 6.1 Cessation of Contributions; Voluntary Withdrawal.

(a) A Participant may cease payroll deductions during an Offering Period and elect to withdraw from the Plan by delivering written or electronic notice of such election (a "Withdrawal Election") to the Company in such form and at such time prior to the Exercise Date for such Offering Period as may be established by the Administrator. A Participant electing to withdraw from the Plan may elect to either (i) withdraw all of the funds then credited to the Participant's Plan Account as of the date on which the Withdrawal Election is received by the Company, in which case amounts credited to such Plan Account shall be returned to the Participant in one (1) lump-sum payment in cash within thirty (30) days after such election is received by the Company, without any interest thereon, and the Participant shall cease to participate in the Plan and the Participant's Option for such Offering Period shall terminate; or (ii) subject to Section 6.2 below, exercise the Option for the maximum number of whole Shares on the applicable Exercise Date with any remaining Plan Account balance returned to the Participant in one (1) lump-sum payment in cash within thirty (30) days after such Exercise Date, without any interest thereon, and after such exercise cease to participate in the Plan. As soon as practicable following the Company's receipt of a Withdrawal Election, the Participant's payroll deduction authorization and his or her Option to purchase Shares under the Plan shall terminate.

(b) A Participant's withdrawal from the Plan shall not have any effect upon his or her eligibility to participate in any similar plan which may hereafter be adopted by the Company or in succeeding Offering Periods which commence after the termination of the Offering Period from which the Participant withdraws.

(c) A Participant who ceases contributions to the Plan during any Offering Period shall not be permitted to resume contributions to the Plan during such Offering Period.

6.2 Termination of Eligibility. Upon a Participant's ceasing to be an Eligible Employee for any reason, such Participant's Option for the applicable Offering Period shall automatically terminate, he or she shall be deemed to have elected to withdraw from the Plan, and such Participant's Plan Account shall be paid to such Participant or, in the case of his or her death, to the person or persons entitled thereto as set forth in an applicable beneficiary designation form (or, if there is no such applicable form, pursuant to applicable law), within thirty (30) days after such cessation of being an Eligible Employee, without any interest thereon.

## **ARTICLE VII. GENERAL PROVISIONS**

### 7.1 Administration.

(a) The Plan shall be administered by the Committee (or another committee or a subcommittee of the Board assuming the functions of the Committee under the Plan), which, unless otherwise determined by the Board, shall consist solely of two or more members of the Board, each of whom is intended to qualify as a "non-employee director" as defined by Rule 16b-3 of the Exchange Act and an "independent director" under the rules of any securities exchange or automated quotation system on which the Shares are listed, quoted or traded, in each case, to the extent required under such provision. The Committee may delegate administrative tasks under the Plan to the services of an Agent and/or Employees to assist in the administration of the Plan, including establishing and maintaining an individual securities account under the Plan for each Participant.

(b) It shall be the duty of the Administrator to conduct the general administration of the Plan in accordance with the provisions of the Plan. The Administrator shall have the power, subject to, and within the limitations of, the express provisions of the Plan:

i. To establish and terminate Offering Periods;

ii. To determine when and how Options shall be granted and the provisions and terms of each Offering Period (which need not be identical);

iii. To select Participating Subsidiaries in accordance with Section 7.2 hereof; and

iv. To construe and interpret the Plan, the terms of any Offering Period and the terms of the Options and to adopt such rules for the administration, interpretation, and application of the Plan as are consistent therewith and to interpret, amend or revoke any such rules. The Administrator, in the exercise of this power, may correct any defect, omission or inconsistency in the Plan, any Offering Period or any Option, in a manner and to the extent it shall deem necessary or expedient to make the Plan fully effective.

(c) The Administrator may adopt rules or procedures relating to the operation and administration of the Plan to accommodate the specific requirements of local laws and procedures. Without limiting the generality of the foregoing, the Administrator is specifically authorized to adopt rules and procedures regarding handling of participation elections, payroll deductions, payment of interest, conversion of local currency, payroll tax, withholding procedures and handling of stock certificates which vary with local requirements. In its absolute discretion, the Board may at any time and from time to time exercise any and all rights and duties of the Administrator under the Plan.

(d) The Administrator may adopt sub-plans applicable to particular Participating Subsidiaries or locations. The rules of such sub-plans may take precedence over other provisions of this Plan, with the exception of Section 5.1 hereof, but unless otherwise superseded by the terms of such sub-plan, the provisions of this Plan shall govern the operation of such sub-plan.

(e) All expenses and liabilities incurred by the Administrator in connection with the administration of the Plan shall be borne by the Company. The Administrator may, with the approval of the Committee, employ attorneys, consultants, accountants, appraisers, brokers or other persons. The Administrator, the Company and its officers and directors shall be entitled to rely upon the advice, opinions or valuations of any such persons. All actions taken and all interpretations and determinations made by the Administrator in good faith shall be final and binding upon all Participants, the Company and all other interested persons. No member of the Board or Administrator shall be personally liable for any action, determination or interpretation made in good faith with respect to the Plan or the options, and all members of the Board or Administrator shall be fully protected by the Company in respect to any such action, determination or interpretation.

7.2 Designation of Participating Subsidiaries. The Board or Committee shall designate from among the Subsidiaries, as determined from time to time, the Subsidiary or Subsidiaries that shall constitute Participating Subsidiaries. The Board or Committee may designate a Subsidiary, or terminate the designation of a Subsidiary, without the approval of the stockholders of the Company.

7.3 Accounts. Individual accounts shall be maintained for each Participant in the Plan.

7.4 No Right to Employment. Nothing in the Plan shall be construed to give any person (including any Participant) the right to remain in the employ of the Company, a Parent or a Subsidiary or to affect the right of the Company, any Parent or any Subsidiary to terminate the employment of any person (including any Participant) at any time, with or without cause, which right is expressly reserved.

7.5 Amendment, Suspension and Termination of the Plan

(a) The Board may, in its sole discretion, amend, suspend or terminate the Plan at any time and from time to time; provided, however, that without approval of the Company's stockholders given within twelve (12) months before or after action by the Board, the Plan may not be amended to increase the maximum number of Shares subject to the Plan or in any other manner that requires the approval of the Company's stockholders under applicable law or applicable stock exchange rules or regulations. No Option may be granted during any period of suspension of the Plan or after termination of the Plan. For the avoidance of doubt, without the approval of the Company's stockholders and without regard to whether any Participant rights may be considered to have been "adversely affected," the Board or the Committee, as applicable, shall be entitled to change the terms of an Offering Period, limit the frequency and/or number of changes in the amount withheld during an Offering Period, permit payroll withholding in excess of the amount designated by a Participant in order to adjust for delays or mistakes in the Company's processing of properly completed withholding elections, establish reasonable waiting and adjustment periods and/or accounting and crediting procedures to ensure that amounts applied toward the purchase of Shares for each Participant properly correspond with amounts withheld from the Participant's Compensation, and establish such other limitations or procedures as the Board or the Committee, as applicable, determines in its sole discretion advisable which are consistent with the Plan.

(b) In the event the Administrator determines that the ongoing operation of the Plan may result in unfavorable financial accounting consequences, the Administrator may, in its discretion and, to the extent necessary or desirable, modify or amend the Plan to reduce or eliminate such accounting consequence including, but not limited to:

- i. shortening any Offering Period so that the Offering Period ends on a new Exercise Date, including an Offering Period underway at the time of the Administrator action; and
- ii. allocating Shares.

Such modifications or amendments shall not require stockholder approval or the consent of any Participant.

(c) Upon termination of the Plan, the balance in each Participant's Plan Account shall be refunded as soon as practicable after such termination, without any interest thereon.

7.6 Use of Funds; No Interest Paid. All funds received by the Company by reason of purchase of Shares under the Plan shall be included in the general funds of the Company free of any trust or other restriction and may be used for any corporate purpose. No interest shall be paid to any Participant or credited under the Plan.

7.7 Effect Upon Other Plans. The adoption of the Plan shall not affect any other compensation or incentive plans in effect for the Company, any Parent or any Subsidiary. Nothing in the Plan shall be construed to limit the right of the Company, any Parent or any Subsidiary (a) to establish any other forms of incentives or compensation for Employees of the Company or any Parent or any Subsidiary or (b) to grant or assume Options otherwise than under the Plan in connection with any proper corporate purpose, including, but not by way of limitation, the grant or assumption of options in connection with the acquisition, by purchase, lease, merger, consolidation or otherwise, of the business, stock or assets of any corporation, firm or association.

7.8 Conformity to Securities Laws. Notwithstanding any other provision of the Plan, the Plan and the participation in the Plan by any individual who is then subject to Section 16 of the Exchange Act shall be subject to any additional limitations set forth in any applicable exemption rule under Section 16 of the Exchange Act (including any amendment to Rule 16b-3 of the Exchange Act) that are requirements for the application of such exemptive rule. To the extent permitted by applicable law, the Plan shall be deemed amended to the extent necessary to conform to such applicable exemptive rule.

7.9 Data Privacy. As a condition of participating in the Plan, each Participant explicitly and unambiguously consents to the collection, use and transfer, in electronic or other form, of personal data as described in this Section 7.9 by and among, as applicable, the Company and its Subsidiaries for the exclusive purpose of implementing, administering and managing the Participant's participation in the Plan. The Company and its Subsidiaries may hold certain personal information about a Participant, including but not limited to, the Participant's name, home address and telephone number, date of birth, social security or insurance number or other

identification number, salary, nationality, job title(s), any shares of stock held in the Company or any of its Subsidiaries, details of all Purchased Shares, Restricted Shares and Options, in each case, for the purpose of implementing, managing and administering the Plan and Awards (the “Data”). The Company and its Subsidiaries may transfer the Data amongst themselves as necessary for the purpose of implementation, administration and management of a Participant’s participation in the Plan, and the Company and its Subsidiaries may each further transfer the Data to any third parties assisting the Company and its Subsidiaries in the implementation, administration and management of the Plan. These recipients may be located in the Participant’s country, or elsewhere, and the Participant’s country may have different data privacy laws and protections than the recipients’ country. Through participating in the Plan, each Participant authorizes such recipients to receive, possess, use, retain and transfer the Data, in electronic or other form, for the purposes of implementing, administering and managing the Participant’s participation in the Plan, including any requisite transfer of such Data as may be required to a broker or other third party with whom the Company or any of its Subsidiaries or the Participant may elect to deposit any Shares. The Data related to a Participant will be held only as long as is necessary to implement, administer, and manage the Participant’s participation in the Plan. A Participant may, at any time, view the Data held by the Company with respect to such Participant, request additional information about the storage and processing of the Data with respect to such Participant, recommend any necessary corrections to the Data with respect to the Participant or refuse or withdraw the consents herein in writing, in any case without cost, by contacting his or her local human resources representative. The Company may cancel Participant’s ability to participate in the Plan and, in the Administrator’s discretion, the Participant may forfeit any Restricted Shares for which the risk of forfeiture has not lapsed if the Participant refuses or withdraws his or her consents as described herein. For more information on the consequences of refusal to consent or withdrawal of consent, Participants may contact their local human resources representative.

7.10 Tax Withholding. The Company or any Participating Subsidiary shall have the authority and the right to deduct or withhold, or require a Participant to remit to the Company, an amount sufficient to satisfy federal, state, local and foreign taxes (including the Participant’s FICA or employment tax obligation) required by law to be withheld with respect to any taxable event concerning a Participant arising as a result of the Plan. The Administrator may in its sole discretion and in satisfaction of the foregoing requirement withhold or have surrendered, or allow a Participant to elect to have the Company withhold or surrender, Restricted Shares for which the risk of forfeiture has lapsed. Unless determined otherwise by the Administrator, the number of Shares which may be so withheld or surrendered shall be limited to the number of shares which have a Fair Market Value on the date of withholding or surrender no greater than the aggregate amount of such liabilities based on the maximum statutory withholding rates for federal, state, local and foreign income tax and payroll tax purposes that are applicable to such supplemental taxable income. The Administrator shall also have the authority and right to initiate, or permit a Participant to initiate, a broker- assisted sell-to-cover transaction whereby Shares are sold by such broker and the proceeds of such sale are remitted to the Company to satisfy tax withholding obligations.

7.11 Governing Law. The Plan and all rights and obligations thereunder shall be construed and enforced in accordance with the laws of the State of Delaware.

7.12 Notices. All notices or other communications by a Participant to the Company under or in connection with the Plan shall be deemed to have been duly given when received in the form specified by the Company at the location, or by the person, designated by the Company for the receipt thereof (including without limitation the Company’s stock plan administrator).

7.13 Conditions to Issuance of Shares.

(a) Notwithstanding anything herein to the contrary, the Company shall not be required to issue or deliver any certificates or make any book entries evidencing Shares pursuant to the exercise of an Option by a Participant, unless and until the Board or the Committee has determined, with advice of counsel, that the issuance of such Shares is in compliance with all applicable laws, regulations of governmental authorities and, if applicable, the requirements of any securities exchange or automated quotation system on which the Shares are listed or traded, and the Shares are covered by an effective registration statement or applicable exemption from registration. In addition to the terms and conditions provided herein, the Board or the Committee may require that a Participant make such reasonable covenants, agreements, and representations as the Board or the Committee, in its discretion, deems advisable in order to comply with any such laws, regulations or requirements.

(b) All certificates for Shares delivered pursuant to the Plan and all Shares issued pursuant to book entry procedures are subject to any stop-transfer orders and other restrictions as the Committee deems necessary or advisable to comply with federal, state or foreign securities or other laws, rules and regulations and the rules of any securities exchange or automated quotation system on which the Shares are listed, quoted or traded. The Committee may place legends on any certificate or book entry evidencing Shares to reference restrictions applicable to the Shares.

(c) The Committee shall have the right to require any Participant to comply with any timing or other restrictions with respect to the settlement, distribution or exercise of any Option, including a window-period limitation, as may be imposed in the sole discretion of the Committee.



(d) Notwithstanding any other provision of the Plan, unless otherwise determined by the Committee or required by any applicable law, rule or regulation, the Company may, in lieu of delivering to any Participant certificates evidencing Shares issued in connection with any Option, record the issuance of Shares in the books of the Company (or, as applicable, its transfer agent or stock plan administrator).

7.14 Section 409A. Neither the Plan nor any Option granted hereunder is intended to constitute or provide for “nonqualified deferred compensation” within the meaning of Section 409A of the Code and the Department of Treasury regulations and other interpretive guidance issued thereunder, including without limitation any such regulations or other guidance issued after the Effective Date (together, “Section 409A”). Notwithstanding any provision of the Plan to the contrary, if the Administrator determines that any Option may be or become subject to Section 409A of the Code, the Administrator may adopt such amendments to the Plan and/or adopt other policies and procedures (including amendments, policies and procedures with retroactive effect), or take any other actions as the Administrator determines are necessary or appropriate to avoid the imposition of taxes under Section 409A of the Code, either through compliance with the requirements of Section 409A of the Code or with an available exemption therefrom.

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## Calix, Inc.

## Reconciliation of GAAP to non-GAAP Measures

(Unaudited)

## Reconciliation of GAAP to Non-GAAP Net Income (Loss) (In Thousands)

	2019			
	First Quarter	Second Quarter	Third Quarter	Fourth Quarter
GAAP net income (loss)	\$ (9,767)	\$ (5,045)	\$ (3,379)	\$ 497
Adjustments to reconcile GAAP net income (loss) to non-GAAP net income (loss):				
Stock-based compensation	3,145	2,569	2,762	2,705
Intangible asset amortization	—	—	352	658
U.S. tariff and tariff-related costs	2,151	1,855	1,097	1,138
Loss on asset retirement	—	—	2,474	—
Non-GAAP net income (loss)	<u>\$ (4,471)</u>	<u>\$ (621)</u>	<u>\$ 3,306</u>	<u>\$ 4,998</u>

## Reconciliation of GAAP to Non-GAAP Net Income (Loss) Per Diluted Common Share

	2019			
	First Quarter	Second Quarter	Third Quarter	Fourth Quarter
GAAP net income (loss) per diluted common share	\$ (0.18)	\$ (0.09)	\$ (0.06)	\$ 0.01
Adjustments to reconcile GAAP net income (loss) per diluted common share to non-GAAP net income (loss) per diluted common share:				
Stock-based compensation	0.06	0.05	0.05	0.05
Intangible asset amortization	—	—	0.01	0.01
U.S. tariff and tariff-related costs	0.04	0.03	0.02	0.02
Loss on asset retirement	—	—	0.04	—
Non-GAAP net income (loss) per diluted common share	<u>\$ (0.08)</u>	<u>\$ (0.01)</u>	<u>\$ 0.06</u>	<u>\$ 0.09</u>

## Use of Non-GAAP Financial Information

Calix uses certain non-GAAP financial measures to supplement its consolidated financial statements, which are presented in accordance with GAAP. In this proxy statement, Calix has presented non-GAAP net income (loss) and non-GAAP EPS. These non-GAAP measures are provided as performance targets in our executive cash incentive plan as the measure primarily excludes certain non-cash charges for stock-based compensation, intangible asset amortization, U.S. tariff and tariff-related costs and loss on asset retirement, which Calix believes are not indicative of its core operating results. The presentation of these non-GAAP measures is not meant to be a substitute for results presented in accordance with GAAP, but rather should be evaluated in conjunction with the comparable GAAP measure. A reconciliation of these non-GAAP measures to the most directly comparable GAAP measures are provided above. The non-GAAP financial measures used by Calix may be calculated differently from, and therefore may not be comparable to, similarly titled measures used by other companies.

**UNITED STATES  
SECURITIES AND EXCHANGE COMMISSION  
Washington, DC 20549**

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**FORM 10-K**

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(Mark One)

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

For the fiscal year ended December 31, 2019

OR

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

For the transition period from \_\_\_\_\_ to \_\_\_\_\_

Commission File Number: 001-34674

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**Calix, Inc.**

(Exact Name of Registrant as Specified in Its Charter)

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Delaware  
(State or Other Jurisdiction of  
Incorporation or Organization)

68-0438710

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

2777 Orchard Parkway  
San Jose, California  
(Address of Principal Executive Offices)

95134  
(Zip Code)

Registrant's telephone number, including area code (408) 514-3000

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

<u>Title of each class</u>	<u>Trading symbol</u>	<u>Name of each exchange on which registered</u>
Common Stock, \$0.025 par value	CALX	The New York Stock Exchange

Securities registered pursuant to section 12(g) of the Act:

None

(Title of class)

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

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

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

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

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

Large Accelerated Filer

Accelerated Filer

Non-accelerated filer

Smaller Reporting Company

Emerging Growth Company

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

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

The aggregate market value of the Common Stock held by non-affiliates of the registrant based upon the closing sale price on the New York Stock Exchange on June 28, 2019, the last business day of the Registrant's most recently completed second fiscal quarter, was approximately \$303 million. Shares held by each executive officer, director and by each other person (if any) who owns more than 10% of the outstanding common stock have been excluded in that such persons may be deemed to be affiliates. This determination of affiliate status is not necessarily a conclusive determination for other purposes.

As of February 14, 2020, the number of shares of the registrant's common stock outstanding was 56,564,853.

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**DOCUMENTS INCORPORATED BY REFERENCE**

Portions of the registrant's definitive proxy statement for its 2020 annual meeting of stockholders are incorporated by reference in Items 10, 11, 12, 13 and 14 of Part III.

**Calix, Inc.**

**Form 10-K**

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## SPECIAL NOTE REGARDING FORWARD-LOOKING STATEMENTS

This report includes forward-looking statements that involve substantial risks and uncertainties. All statements other than statements of historical facts contained in this report, including statements regarding Calix's future financial position, business strategy and plans, product projections, anticipated market and industry trends and objectives of management for future operations, are forward-looking statements. In some cases, you can identify forward-looking statements by terminology such as "believe," "could," "expect," "may," "estimate," "continue," "anticipate," "intend," "should," "plan," "predict," "will," "would," "project," "potential" or the negative of these terms or other similar expressions. Forward-looking statements include Calix's expectations concerning the outlook for its business, productivity, plans and goals for future operational improvements and capital investments, operational performance, future market conditions or economic performance and developments in the capital and credit markets and expected future financial performance.

Forward-looking statements involve a number of risks, uncertainties and assumptions, and actual results or events may differ materially from those projected or implied in those statements. Important factors that could cause such differences include:

- our ability to predict our revenue and reduce and control costs related to our products or service offerings;
- fluctuations in our gross margin;
- the concentration of our customer base as well as our dependence on a limited number of key customers;
- our ability to ramp sales and achieve market acceptance of our new products and communications service providers', or CSPs', willingness to deploy our new products;
- our ability to manage our relationships with our third-party vendors, including contract manufacturers, or CMs, original design manufacturers, or ODMs, logistics providers, component suppliers and development partners;
- our ability to forecast our manufacturing requirements and manage our inventory;
- our dependence on sole-, single- and limited-source suppliers, including suppliers located primarily or solely in China where there are a number of factors that could negatively impact our supply chain;
- the capital spending patterns of CSPs, and any decrease or delay in capital spending by CSPs due to macro-economic conditions, regulatory uncertainties or other reasons;
- the impact of government-sponsored programs on our customers and the impact to our customers of a U.S. government shutdown;
- intense competition;
- our ability to develop new products or enhancements that support technological advances and meet changing CSP requirements;
- the length and unpredictability of our sales cycles and timing of orders;
- our lack of long-term, committed-volume purchase contracts with our customers;
- our ability to increase our sales to larger CSPs globally;
- our exposure to the credit risks of our customers;
- the interoperability of our products with CSP networks;
- the quality of our products, including any undetected hardware defects or bugs in our software;
- our ability to build and sustain an adequate and secure information technology infrastructure; and
- our ability to estimate future warranty obligations due to product failure rates;
- our products' compliance with industry standards;
- our ability to expand our international operations;
- our ability to protect our intellectual property and the cost of doing so;
- our ability to obtain necessary third-party technology licenses at reasonable costs;
- the regulatory and physical impacts of climate change and other natural events;
- the attraction and retention of qualified employees and key management personnel;
- our ability to maintain proper and effective internal controls.

Calix cautions you against placing undue reliance on forward-looking statements, which reflect our current beliefs and are based on information currently available to us as of the date a forward-looking statement is made. Forward-looking statements set forth in this Annual Report on Form 10-K speak only as of the date of its filing. We undertake no obligation to revise forward-looking statements to reflect future events, changes in circumstances or changes in beliefs. In the event that we do update any forward-looking statements, no inference should be made that we will make additional updates with respect to that statement, related matters or any other forward-looking statements.

## PART I

### ITEM 1. Business

#### Company Overview

Calix, Inc. (together with its subsidiaries, “Calix,” “we,” “our” or “us”) was incorporated in August 1999 and is a Delaware corporation. Calix is a leading global provider of cloud and software platforms, systems and services required to realize the unified access network and the smart, connected premises of tomorrow. Our mission is to connect everyone and everything. Calix platforms empower our customers to build new business models, rapidly deploy new services and make the promise of the smart, connected home and business a reality. Innovative CSPs rely on Calix platforms to help them master and monetize the complex infrastructure between their subscribers and the cloud. Our platforms and services help our customers build next generation networks by embracing a DevOps operating model, optimizing the subscriber experience by leveraging big data analytics and turning the increasing complexity of the subscriber edge into new revenue streams.

We are delivering software platforms that help CSPs meet emerging threats from web-scale players and reinvent how they serve their device-enabled subscribers. Our solutions enable CSPs to launch entirely new business models that capitalize on the opportunities that are being generated by the increase of new applications and devices such as streaming services, smart phones, Internet of Things, or IoT, augmented and virtual reality applications and autonomous technologies. Our customers, who are embracing our strategic platforms, recognize that providing a sensational subscriber experience enables them to compete today and in the future. We also provide cloud analytics designed to help CSPs identify subscriber needs by using network and behavioral data. The insights generated from these analytics enable CSPs to create and market new offerings that monetize their investments in their networks. Finally, we strive to put our customers and their brands first to ensure that they will always have a central place in their subscribers’ lives. Our solution strategy is intended to help our customers build and reinforce their brand presence within their subscribers’ premises. We believe this must be an element of their strategy for sustaining and growing their businesses.

Our current customers include CSPs of almost every size and type. Our solutions may be used by any entity providing communications services to a subscriber. This universe includes local and competitive exchange carriers, cable multiple system operators, or cable MSOs, wireless internet service providers, or WISPs, fiber overbuilders such as municipalities and electric cooperatives and hospitality providers. We market and sell our portfolio to CSPs globally through our direct sales force as well as in partnership with a number of resellers. We have enabled over 1,600 customers to deploy passive optical, Active Ethernet and point-to-point Ethernet fiber access networks. Our premises systems and cloud solutions enable these CSPs to provide industry leading managed Wi-Fi and a growing portfolio of subscriber services to millions of their customers.

#### Industry Background and Trends

CSPs compete in a rapidly changing market to deliver a range of services to their residential and business subscribers. Subscribers purchase an array of services from a variety of CSPs, starting with basic voice and data through advanced broadband services such as high-speed Internet, Internet protocol television, or IPTV, mobile broadband, high-definition, ultra-high-definition and over-the-top video and online gaming. Consumers are also rapidly adding devices that require high bandwidth, low latency services such as virtual and augmented reality as well as IoT devices that bring significant complexity to the premises network. It is likely that adoption of autonomous technologies such as self-driving cars will dramatically increase demand and complexity. Leading CSPs are deploying new capabilities and offerings such as mobile applications, network security, parental controls and Quality of Service, or QoS, that help subscribers master the complexity introduced by new devices, applications and services. We believe that the CSP is uniquely positioned to manage these capabilities and offerings on behalf of subscribers, and this position presents the greatest potential source of differentiable value for CSPs.

The rapid growth in new technologies is generating increased network traffic and putting pressure on CSPs to cost effectively upgrade and enhance their networks to meet demand. For example, Cisco Systems, Inc. estimates that global Internet Protocol, or IP, traffic on a monthly basis will increase from 122 exabytes in 2017 to 396 exabytes in 2022, representing a compound annual growth rate of 26%. In addition, Cisco Systems, Inc. estimates by 2022, the number of devices connected to IP networks will be more than three times the global population. As the corresponding smart home applications become more sophisticated, they will shift from being useful to essential. This proliferation of new devices (and usage patterns) creates a tremendous opportunity and increases the pressure on CSPs to offer new services and create revenue streams by mastering the complexity of the smart, connected home and business for their subscribers.

#### *Web-Scale Players Have Become a Competitive Force*

The level of competition among CSPs - wireline and wireless service providers, cable MSOs and other CSPs - has increased over the last decade as traditional service boundaries have fallen. All providers are now competing for the same residential and

business subscribers using similar types of IP-based services. The expansion of new technologies in the subscriber premises creates significant new opportunities for all CSPs. Technology innovators of all types and sizes are moving aggressively to seize that opportunity, and we are now seeing web-scale players aggressively enter subscribers' homes and businesses via interactive smart home hubs and devices. These entrants, such as Amazon.com, Inc., or Amazon, Alphabet Inc., or Google and Microsoft Corporation, are extending their current platforms (e.g., data driven search, e-commerce) into subscriber premises with new devices and services that are helping to reshape the home environment. The simplicity of operating these devices, as well as their use of easily accessible data, enables these web-scale players to rapidly deploy new services and command a central place in the subscriber's daily life. The level of insight that they generate by mining user data, coupled with their DevOps business model, positions them to offer and deploy services to subscribers at a pace that traditional CSP operating and business models cannot match.

IoT, virtual reality and other connected devices have become mainstream, and they will continue to become more and more prevalent in subscriber homes in 2020. According to Statista, household penetration of smart devices is 32.4% and is expected to hit 52.4% by 2024. Mordor Intelligence has estimated the smart home market at \$64.60 billion in 2019, and it is expected to reach \$246.42 billion by 2025 (a compounded annual growth rate of 25%). Companies such as Amazon, Google and Apple Inc. have recognized this business opportunity, and they have created and acquired significant new smart premises offerings.

To address this challenge and establish control of the device-enabled subscriber, we believe CSPs must respond by leveraging analytical tools that utilize network data and subscriber behavioral data to tailor services that meet the individual subscribers' needs. These services include high-bandwidth packages, managed and whole home Wi-Fi as well as advanced applications such as security and parental controls. We believe these new services represent the CSP's greatest opportunity to create new revenue streams and higher average revenue per user, or ARPU, while reducing subscriber churn. CSPs must also leverage network and subscriber data to streamline and automate subscriber facing functions such as customer service. These data-driven approaches can significantly reduce service costs, improve profitability and support investment in new services and technologies. Increasingly, companies in the communications space will embrace strategies that apply machine learning and artificial intelligence technologies that promise to dramatically improve the subscriber experience, build subscriber intimacy and loyalty, while increasing ARPU. By leveraging data to build a tighter bond with their subscribers and deliver high-value services, CSPs can more effectively meet the challenge presented by web-scale players.

### ***The Experience Economy***

In the 2020 Data-Driven Marketing & Advertising Outlook Study, over 80% of marketers said delivering a consistent customer experience is extremely or very important to their companies. Customer experience has become the most important means for many brands to differentiate themselves in today's data-driven marketplace. Using data and insights to identify the customer's unique path to purchase the optimal experience, companies are able to customize and personalize their interactions, removing friction, and improve effectiveness. This is driving the need for tools that continually and automatically refine segments based on changing behaviors.

Leading CSPs recognize that high operating margins rely on the experiences that connectivity enables. High performing Wi-Fi is the starting point, enabling the modern applications that subscribers expect, whether it is a low-latency gaming session or a video call with smooth frame rate. Thousands of networked products and services make our lives more convenient, entertain us or keep us safe.

Delivering a market leading, connected experience requires more than a high-bandwidth service. When subscribers complain that 'the internet isn't working,' they often mean the Wi-Fi is not working and blame their CSP. On one level, owning the subscriber "experience" means ensuring that high speed data connections are not undermined by underpowered Wi-Fi hardware and that CSPs have the tools they need to manage and service subscribers cost-effectively.

At the next level, it is about creating new revenue and margin opportunities for new applications. CSPs are moving beyond commodity hardware and adding meaningful value to everyday connected experiences - whether it is providing necessities like network security and parental controls or enabling progressive services like voice controls or cloud gaming. Subscribers want a simple, safe and functional connected experience, and CSPs are perfectly positioned to lead in the experience economy.

### ***The Shift to a DevOps Business Model***

Access networks are the "life blood" of delivering the connected experience by directly and physically connecting the residential or business subscriber to the CSP's data center, central office or similar facility, creating the on-ramp to the Internet. The access network is critical for service delivery as it governs the bandwidth capacity, service quality available to subscribers and ultimately the services and experience CSPs can provide to subscribers. Providing differentiated, high-quality, high-speed connectivity has become increasingly critical for CSPs to retain and expand their subscriber base, launch new revenue-generating services and deliver a value-added experience. To meet the demands of device-enabled subscribers, CSPs have already begun to deploy access technologies that are software defined and leverage next generation Passive Optical Network,



or PON, architectures such as NG-PON2, XGS-PON and 10G EPON. In doing so, they are addressing many of limitations of legacy access systems:

- Limited capacity of outdated access architectures – Network architectures have physical limitations in their ability to scale bandwidth, avoid latency issues and deliver the advanced broadband services subscribers demand today and are expected to increasingly demand in the future.
- Inflexible networks that constrain subscriber offerings – Networks were designed to support a narrow range of services, and as a result, they limit the ability of CSPs to deploy the advanced broadband services increasingly demanded by their subscribers.
- Expensive to deploy and operate – With a wide variety of equipment installed, networks require significant downtime and labor for maintenance and upgrades, thereby placing a significant and recurring capital and operating expense burden on CSPs.
- Back-office systems that inhibit deployment of new services – Traditional methods for operationalizing new products and services often require significant testing and lengthy back-office integration activities. This often places CSPs at a competitive disadvantage relative to emerging service providers that are leveraging agile management practices.

By replacing traditional hardware functions with software defined access, or SDA, as well as software defined networking, or SDN, CSPs can overcome these operational challenges and bring new products and services to market faster. Many CSPs are embracing SDA and SDN to help accelerate innovation, deploy automation, bring agility to their networks and significantly reduce service disruptions. By embracing standards-based, modular software platforms that abstract software functions from hardware, CSPs can free themselves from a dependence on specific hardware technologies and upgrade their access network to enable a DevOps business model. The winning service providers of the future will embrace SDA platforms and transform their access networks into a competitive advantage. Ultimately, this new model will enable CSPs to manage a range of access systems across every deployment scenario (e.g., central office, head-end, cabinet or mounted on a pole) in a consistent manner. With this shift they will introduce services at a pace that can then match the speed of the web-scale players.

### ***The Imperative to Develop Lean Operating Models***

We believe CSPs face a dual challenge in the coming years – mounting competitive pressure and the requirement to increase their investments in technologies that can deliver the new services that their subscribers demand. Most will need to make shifts in their operating models to thrive in the coming decade. They must implement a lean operating model that reduces the overall operating cost to run the network and deliver services to subscribers at an accelerated pace as well as at a significantly lowered cost. The adoption of new technologies that provide automation and intelligence, such as SDA, will help service providers adopt agile operating models and reduce the burden of network and back-office operations.

### ***10 Gigabit Services Gain Momentum***

The adoption of data-intensive applications like cloud gaming and remote worker high-definition video conferencing are driving the demand for 10 gigabit, or Gb, services. Many industry experts claim that CSPs are already facing ever-increasing bandwidth demand from their subscribers, and upcoming applications such as cloud-based gaming and streaming platforms are going to increase demand further. They also highlight that the move to 10 Gb services will come at a cost and one size will not fit every subscriber scenario. CSPs must have visibility and analytics to monitor and meet the evolving behaviors and usage patterns of their subscribers. As a result, we are seeing CSPs of all sizes looking to identify subscribers who would benefit from multi-gigabit services and deploy the PON technologies of their choice on a single system or network to meet subscriber demand. In fact, Ovum estimates that purchases of 10 Gb capable access systems may surpass GPON system purchases by 2021. Ideally, CSPs will embrace a network built for all PON technology such as GPON, XGS-PON, 10G EPON and NG-PON2, so they are not limited to choosing a specific PON technology to deliver 10 Gb services. We believe leading CSPs are planning to future-proof their fiber networks and deploy the right technology at the right time to optimize their capital investments.

### ***The Rapid Emergence of Wi-Fi 6***

Consumer dependence on Wi-Fi continues to increase, with 75% of people in the U.S. reporting that Wi-Fi is their primary method of connecting to the Internet, according to Parks Associates. By 2022, it is expected that most households will have as many as 50 Wi-Fi connected devices, more than double the 2017 average, according to Cisco VNI. The trends are clear: more wireless devices, higher bandwidth applications and a greater dependence on a reliable, wall-to-wall Wi-Fi.

However, this is a challenge for many CSPs that have concentrated their investment on bringing faster speeds to the home, but not connectivity inside the home. According to a 2019 Calix sponsored report by John Kendall, Associate Director, Research & Analysis at IHS Markit, consumers may have fast speeds to the house but do not find these access speeds available wirelessly

around the home. As a result, the Wi-Fi 6 standard (also known as IEEE 802.11ax) is fast becoming the new wireless foundation for a whole host of CSP-managed subscriber experiences: trouble-free wireless connectivity, content filtering and parental control, network security, smart home automation and more.

Altogether, the Wi-Fi 6 standard defines more than 50 features beyond the Wi-Fi 5 standard. One of the largest trends from the 2020 Consumer Electronics Show, or CES, was the emergence of Wi-Fi 6 routers and devices. Consumer brand companies such as Netgear, TP-Link, D-Link and Asus have announced new products, each claiming to offer some combination of the highest Wi-Fi 6 throughput, lowest latency or greatest coverage. Similarly, other manufacturers at CES announced a number of Wi-Fi 6 enabled devices to capture the consumers' imaginations.

### ***The Deployment of 5th Generation, or 5G, Networks***

As subscribers adopt next generation mobile applications and technologies, the demand for higher bandwidth, lower latency and dramatically higher device densities is accelerating. Because existing LTE mobile networks are increasingly challenged to meet these demands, many CSPs are announcing and moving to deploy 5G mobile networks that promise dramatically greater performance and capabilities for mobile and fixed broadband services. 5G is significantly different from previous generations in the mobile evolution, because it delivers higher bandwidth (10 Gbps per radio), lower latency (less than 1 msec) and supports a dramatically greater number of connections (1 million devices per km<sup>2</sup>). By leveraging higher frequency spectrum and more efficient data encoding, 5G offers CSPs a path to differentiate their services and shift the competitive landscape. CSPs are pursuing two major strategies to deploy 5G capabilities across their networks:

- **Upgrading existing LTE infrastructure** – By upgrading their existing LTE wireless networks with 5G radios, CSPs will realize 10 to 20% higher bandwidth for 5G mobile devices. This approach will offer a quick path to 5G services for some CSPs and may differentiate their mobile broadband services. However, this incremental strategy offers relatively limited improvements in wireless capacity.
- **Leveraging millimeter wavelength technology** – Leading CSPs will deploy thousands of millimeter wave 5G small cells to realize a 5- to 10-fold increase in capacity across their mobile and fixed broadband networks. This approach will enable CSPs to support virtually any next generation mobile, augmented or virtual reality, IoT or autonomous vehicle or device application. This will open up tremendous new business opportunities for early adopters. Due to the inherent range limitations of millimeter wave technology, 5G small cells must be deployed in very close proximity to subscriber devices. This will require the deployment of thousands of 5G small cells throughout a CSP's network to deliver services to subscribers.

With the adoption of 5G millimeter wavelength technology, CSPs will require transport that is both very capable and economically efficient. CSP cell networks will ultimately come to resemble high-density broadband access networks that leverage high-bandwidth, reliable fiber transport. To make the economics work, CSPs will ultimately need to embrace fiber efficient point-to-multi-point capabilities offered by NG-PON2 that include:

- Aggregated 10 Gb services delivered over a single wavelength;
- Channel bonding to increase capacity delivered for a single service; and
- Multiple wave lengths over a single PON to provide unmatched resiliency and low latency operations.

While 5G networks will be significantly more capable, the deployment of thousands of radio stations will introduce significant operational complexity for CSPs. As a result, 5G will accelerate the imperative for CSPs to adopt SDA technologies that simplify network operations and architectures. CSPs will also need to embrace advanced premises systems that exploit the capabilities delivered by 5G fixed wireless access networks to deliver an exceptional subscriber experience.

### ***The Role of Governments in Supporting Technology Investment***

As CSPs face increasing competitive pressure, they must accelerate their investments to upgrade their access networks and deploy new subscriber facing technologies. Governments around the world recognize the importance of expanding broadband networks and delivering advanced broadband services to more people and businesses. As a result, many governments have established stimulus programs or other incentives for broadband investment.

In the United States, programs like the Connect America Fund, or CAF, E-Rate and ReConnect provide billions of dollars each year to CSPs in the form of capital investment incentives and grants and loans to encourage broadband network investment in unserved or underserved communities. For example, in 2015, the CAF program was authorized to distribute \$2.0 billion per year through the end of 2020 to offset the costs of installing and operating CSP operated broadband and voice networks for large service providers in the United States. Between 2016 and 2018, this program was extended to smaller service providers to distribute over \$1.5 billion annually over the next 10 years to offset the costs of installing and operating CSP operated broadband and voice networks. In order to promote greater accountability, in 2019 the Federal Communications Commission,

or FCC, established a uniform framework for measuring the speed and latency performance for recipients of CAF. CSPs who wish to continue leveraging this program must seek new solutions that enable them to report and demonstrate their ability to meet the requirements established by this new framework. In addition, the E-Rate program was authorized to offer \$1.5 billion in grants to build gigabit capable network connections to schools. The E-Rate program is funded at its current level indefinitely. Finally, in 2018, the U.S. Department of Agriculture announced a new broadband loan and grant pilot program, now called the ReConnect Program providing \$1.15 billion to facilitate high speed broadband to the farms, which will allow them to increase productivity.

Dedicated to its long-term goal to close the digital divide, the FCC approved a new rural broadband fund called the Rural Digital Opportunity Fund, or RDOF, in January 2020. RDOF auctions will award over \$20 billion for new broadband network and service development. The deployment of these funds will be spread across a ten-year period starting in 2021. Given the competitive nature of the reverse auction, we anticipate that many greenfield service providers will compete and likely take a portion of these funds from the larger traditional service providers, which have typically received them in the past.

## **Strategy Overview**

We believe that many CSPs can and will evolve to provide the most relevant services and experience to their subscribers. Today, many CSPs command a privileged and strategic position in their subscribers' premises. They provide a service that is becoming a necessity for most subscribers. With significant new technologies coming into the marketplace, the opportunities to differentiate based on the subscriber experience and generate new revenue streams are manifold. However, the journey from connectivity provider to essential provider of high bandwidth Wi-Fi and experiences for the smart, connected home and business will require significant transformation for most CSPs. Our strategy is to position Calix as the essential provider of platforms and services that enable this transformation. The principal elements of our strategy are:

***Focus on Our Strategic Platforms and Solutions*** – Our strategy centers on increasing the market adoption of our three strategic platforms - Calix Cloud<sup>®</sup>, EXOS<sup>®</sup> (Experience eXtensible Operating System) and AXOS<sup>®</sup> (Access eXtensible Operating System).

- Calix Cloud is a role-based analytics platform that leverages network data and subscriber behavioral data to deliver analytics and intelligence to communications professionals via role-specific dashboards. Calix Cloud provides the subscriber analytics that enable a CSP to deliver targeted marketing, services and experiences to build customer intimacy and loyalty. Calix Cloud currently includes Calix Marketing Cloud for CSP marketing teams and Calix Support Cloud for CSP customer support teams.
- EXOS is a carrier class smart home and business operating system that supports residential, business and mobile subscribers. EXOS, coupled with our market leading GigaSpire<sup>®</sup> premises systems, provides a unique “service enablement platform” that is designed for mastering and monetizing the complexity of the subscriber edge. EXOS enables CSPs to elevate every aspect of their business by deploying smart home and business services and generate new revenue streams.
- AXOS is an operating system for access networks that allows a service provider to deliver all services on a single, elastic, converged access network that is always on, simple to operate and quick to deploy. AXOS, coupled with our E-Series systems, provides a unique platform for the SDA network that enables CSPs to transform their business processes and deliver new services at DevOps speed. Armed with AXOS, CSPs can simplify their network operations, their network architectures and their business models.

***Extend Portfolio of Calix Services*** – Our services team helps CSPs define their transformation strategy, build new skills, implement new technologies and deploy new subscriber services. Calix Services address a CSP's entire network and service delivery lifecycle. Our service offerings include managed services for Remote Network Monitoring, or RMS, as well as deployment enablement services to help CSPs accelerate and streamline network and premises implementation projects. We also offer customer success and professional services that are critical for driving adoption of our strategic platforms. These services allow CSPs to benefit directly from our experience working with over a thousand service providers to optimize their operations and leverage our advanced analytics to improve the operational efficiency of their teams.

***Engage Directly with Customers*** – Calix continues to invest in our direct sales capabilities to ensure that we engage deeply with our customers to help them understand the differentiable value that our platforms provide. As an innovator and a market leader, it is important that our sales and solution engineering resources continually drive the adoption of our strategic platforms. As we deploy new solutions, we are building the expertise of our team by adding specialized resources with deep expertise in areas such as marketing, cloud platforms and network operations. Our direct model is complemented with selective programs for Calix channel partners who have established local market expertise, demonstrated the ability to generate new market opportunities and support sales of cutting-edge technologies.

**Expand Customer Footprint Across Our Expanded Total Addressable Market** – In 2019, we added over 100 new customers spanning CSPs of all types. Our diverse and growing customer footprint is a critical source of our growth as we expand our portfolio and sell additional platforms to both new and existing customers. Our platforms are dramatically expanding our total addressable market, and as such, we intend to continue to engage emerging providers that are creating entirely new customer segments, including fiber overbuilders, utilities and municipalities. We will also build on our recent momentum in penetrating service provider segments where our current share is relatively low such as cable MSOs, large CSPs and international markets.

**Pursue Strategic Relationships** – We expect to continue to pursue strategic technology and distribution relationships, alliances and acquisitions that help us align with CSPs’ strategic priorities. We continue to invest to ensure interoperability across the ecosystems that support our customers’ most critical business processes through our partner programs. We continue to work with current ecosystem partners while exploring a range of new partnerships to expand the services available on our platforms. By adding new solutions to our platform ecosystem, Calix is significantly enhancing the value that our platforms deliver to CSPs and their subscribers.

## **Portfolio Overview**

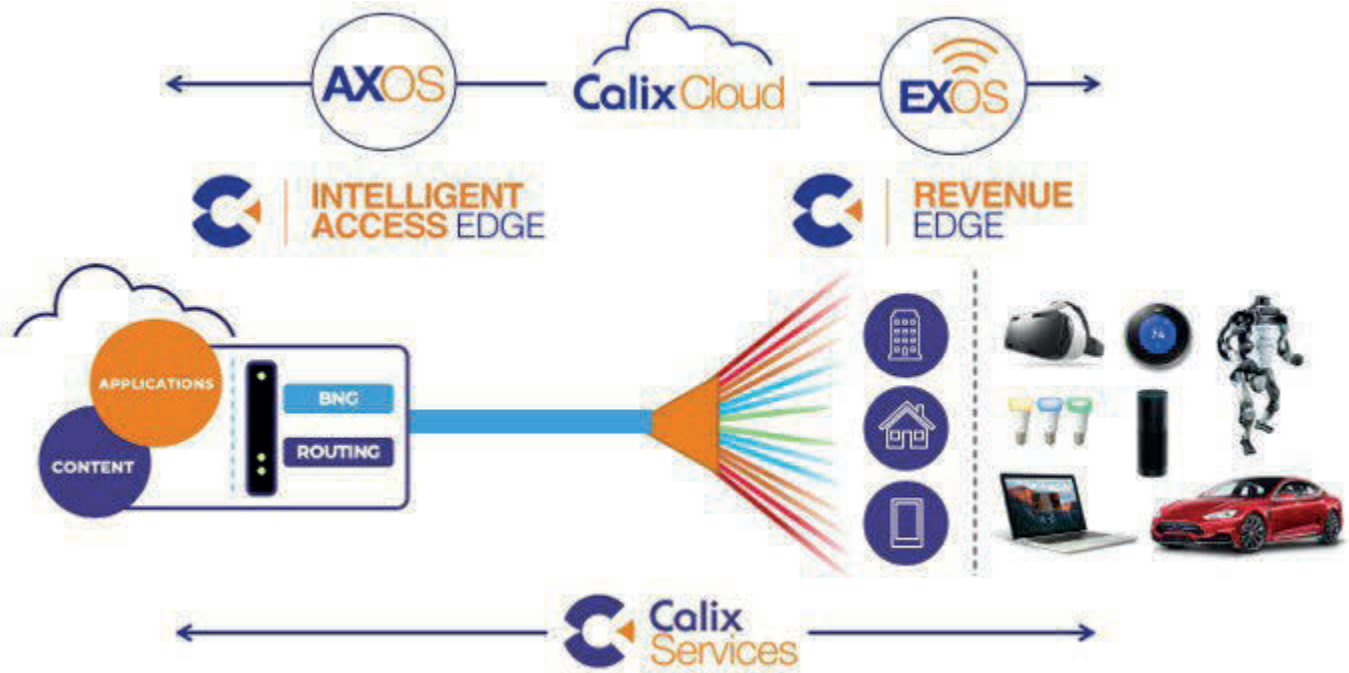
By embracing open, modular, standards-based strategies, we provide intelligence and flexibility across a CSP’s entire network – from their data centers to their subscribers’ connected devices. Calix platforms are designed to provide our customers the agility that they need to offer the managed services that their subscribers demand. While we continue to support our non-AXOS and non-EXOS systems and our traditional cloud and software products, we are focused on driving the evolution and market penetration of our strategic platforms and services.

In 2019 we introduced two strategic solutions to make it easier for CSPs to quickly adopt the Calix platforms, systems and services:

- **The Revenue EDGE** is a subscriber experience solution designed to transform CSP business models. The Revenue EDGE builds on the powerful EXOS platform and GigaSpire family by integrating real-time subscriber insights via Calix Cloud to enable CSPs to deploy new revenue-generating services and applications.
- **The Intelligent Access EDGE** is an SDA solution that consolidates edge routing, subscriber management, aggregation, and Optical Line Terminal, or OLT, functionality, dramatically simplifying network architectures and operations. By incorporating AXOS, CSPs can future proof their fiber networks and deploy the right technology at the right time to optimize their capital investments.

The Calix portfolio allows for a broad range of subscriber services to be provisioned and delivered over a single unified network. These systems can deliver voice and data services, advanced broadband services, mobile broadband as well as high-definition video and online gaming. Our goal is to help CSPs simplify their network operations, network architectures and business operations while enabling them to offer new services. Our premises systems allow CSPs to master the complexity of the smart, connected home and offer new services to differentiate through the delivery of an amazing subscriber experience. Furthermore, our goal is to help CSPs elevate every aspect of their business – their brand, their service quality, their subscriber experience and their revenue streams.

Representation of how Calix platforms and services support a CSP's entire network:



**The Revenue EDGE**

Calix understands that CSPs need to create and maintain a unique brand image and generate revenue streams that build on their strategic position as the preferred home connectivity provider. The growing complexity at the “subscriber edge” represents a significant opportunity for CSPs to create new revenue streams. The Revenue EDGE is an end-to-end solution that encompasses the capabilities that a CSP needs to offer new services that monetize the complexity of the subscriber edge. Successful CSPs recognize that subscribers are not all the same and leverage data-driven insights to match services with specific subscriber needs. Because CSPs can deliver and manage every Revenue EDGE service and application for the subscriber, they can eliminate the complexity and performance issues that typically impact services such as Wi-Fi, network security, parental controls and home automation. In short, with the Revenue EDGE, CSPs can now offer a value proposition that “over-the-top” players and consumer solutions simply cannot match.

Representation that depicts the components of the Revenue EDGE Solution (Foundation and Suites):



## Revenue EDGE Insights

We believe that the company with the best data and insights will win in their market. Calix Support Cloud and Calix Marketing Cloud deliver real-time analytics and insights to enable CSPs to provide a seamless experience tailored to the ever evolving needs of their subscribers. The ability to deliver these experiences is increasingly a critical success factor for CSPs.

**Calix Support Cloud** – Calix Support Cloud provides customer support/care teams with data and analytics that take the guess work out of the broadband and Wi-Fi performance troubleshooting process. With Calix Support Cloud, customer support professionals can analyze a subscriber’s in-home experience to identify broadband and Wi-Fi issues and address many issues without requiring field technician intervention. With Calix Support Cloud, leading CSPs are leveraging machine learning and predictive analytics to proactively address issues before they impact the subscriber experience and reduce support call volumes, call times, “truck rolls” and operational costs.

**Calix Marketing Cloud** – Calix Marketing Cloud is designed for service provider marketing teams who want to leverage real-time data and analytics to be more effective and efficient in their marketing efforts. Calix Marketing Cloud includes role-based dashboards and analytics that provide insights that help marketing teams understand and target subscribers based on their needs and behaviors. CSPs who leverage Calix Marketing Cloud have experienced dramatic improvements in marketing return on investment, or ROI, and revenue growth.

## EXOS Platform and Revenue EDGE Systems

**EXOS Platform** – EXOS is a carrier class premises operating system and software platform that supports residential, business and mobile subscribers. EXOS is the first premises operating system that is designed to help CSPs elevate every aspect of their business by rapidly deploying new services for the smart, connected home and business. All GigaSpire and GigaMesh® systems are powered by EXOS. EXOS incorporates a software model that is standards-based, fully abstracted from the hardware and always-on. Thanks to the unique architecture of EXOS, CSPs can offer new subscriber services and master the complexity of the subscriber edge. Armed with EXOS, CSPs can select and rapidly deploy services such as cloud-enabled voice services, network security and parental controls. When combined with these capabilities, EXOS offers a unique and powerful services enablement platform.

Representation that summarizes the primary benefits delivered by EXOS:



EXOS is architected to abstract software functionality from the underlying system-on-chip in premises gateways. This architecture simplifies software updates and streamlines operational processes. The EXOS abstraction layer also ensures the delivery of a consistent subscriber experience regardless of the specific hardware deployed to subscribers. EXOS leverages Linux containers that provide flexibility to CSPs when they deploy application packages to create new revenue streams. This “containerized” architecture also ensures that new applications may be deployed without the requirement to regression test the entire applications portfolio running on the system. This approach accelerates time to market for new services.

The EXOS management plane is decoupled and centralized, enabling CSPs to manage all applications simultaneously, even if applications are installed independently. The EXOS architecture ensures that subscribers receive an “always on” service and benefit from application updates without the need to “re-boot” their premises systems or schedule service visits. The

Microservices Aggregation Platform that supports EXOS captures data from every system or activity across a subscriber base. As CSPs deploy EXOS they can leverage this data for performance analytics, subscriber experience insights, marketing, maintenance and the application of artificial intelligence for predictive modeling.

### **Revenue EDGE Systems**

**GigaSpire BLAST Systems** – GigaSpire BLAST systems are powered by EXOS and provide industry leading Wi-Fi coverage and enable industry leading application scalability. With GigaSpire BLAST systems, CSPs can elevate their brand and offer new revenue generating experiences. The Calix GigaSpire BLAST systems offer:

- Industry leading Wi-Fi performance and coverage with the latest Wi-Fi 6 technology
- Always-on operation, that reduces service disruptions
- Advanced instrumentation and analytics to enable optimal performance for all connected devices

GigaSpire BLAST systems are available in a range of models that provide optimal performance across a range of subscriber use-cases. CSPs can choose from multiple Wi-Fi antenna configurations and form factors that offer cost and performance profiles that address differences in home size and subscriber device usage. Calix will continue to evolve this portfolio to ensure that CSPs can meet changing subscriber requirements.

**GigaMesh** – The Calix GigaMesh is a high-performance Wi-Fi satellite that enables ubiquitous Wi-Fi in every part of the home. The GigaMesh is powered by EXOS and optimized for interoperability with GigaSpire BLAST Systems.

Representation of the GigaSpire BLAST systems:



### **EDGE Services**

Every Revenue EDGE system provides foundational services that elevate the subscriber experience. Foundational managed services and applications include managed Wi-Fi, Alexa Voice Services, Broadband Performance Testing and Marketing Campaign Delivery. The intuitive CommandIQ™ mobile application puts control of the home experience directly in the hands of subscribers.

**CommandIQ** – CommandIQ is a mobile application that provides the subscriber with a comprehensive view of all smart devices installed in their network. CommandIQ features a menu of useful options that enable the end subscriber to manage and tune their home experience by running speed tests, enabling guest Wi-Fi, adjusting parental controls and enabling network security. CSPs can also elevate their brand by skinning the application with their brand colors and logo.

**Alexa Voice Services** – The GigaSpire family includes Alexa-enabled systems that enable the use of any standard Alexa skill as well as Calix custom skills that provide information on network speed, device count, bandwidth-intensive devices, device performance and recently connected devices.

**Advanced Managed Wi-Fi** – CSPs can move ahead of their competition by being first to their market with Wi-Fi 6. More importantly, they can ensure the delivery of an amazing experience by leveraging Calix Cloud to manage and optimize the experience of every subscriber.

**Broadband Performance Testing** – CSPs can ensure that their network is delivering advertised performance levels with the Calix Broadband Performance testing solution that is delivered via EXOS-powered GigaSpire and Calix Support Cloud. CSPs can also leverage these capabilities to ensure compliance with FCC testing requirements.

**Marketing Campaign Delivery** – CSPs can utilize the marketing campaign delivery capability included with Calix Marketing Cloud to deliver targeted messages directly to the CommandIQ mobile application. This capability opens up an entirely new channel for communicating with subscribers regarding new services, customer service updates and special promotions.

### **Revenue EDGE Enablement**

Revenue EDGE Enablement resources are designed to ensure that CSP teams are fully enabled to deploy, manage and monetize the services that they provide to subscribers. EDGE Enablement resources help CSPs minimize time to market and maximize ROI. These resources include marketing content, training programs, success services and professional services. Each component of the EDGE Enablement resources addresses an aspect of CSP readiness to deliver an exceptional subscriber experience.

### **Revenue EDGE Suites**

ProtectIQ™ and ExperienceIQ™ are the first two application suites developed specifically for the Revenue EDGE Solution. The EXOS scalable architecture allows for applications to be independently developed, tested and released. This approach gives CSPs a simple way to introduce new services to subscribers and a consistent, repeatable approach to deploy and manage these applications. These solutions enable CSPs to build their brand, generate new revenue and manage and secure the smart, connected home. More importantly, the Revenue EDGE Solution enables a CSP to offer new services that they can actively manage for the subscriber. By offering capabilities such as parental controls and home network security as a managed service, the CSPs can reduce the complexity of the subscriber experience and expand the value that they are delivering to the subscriber.

**ProtectIQ** – ProtectIQ allows CSPs to protect and manage subscriber networks from a host of threats such as viruses, malware, intrusion and phishing, hijacking, spyware, adware and malware websites and to alert subscribers when unwanted visitors try to enter the home network. As viruses and malware become increasingly sophisticated, home networks require an equally innovative security solution. ProtectIQ enables the CSP to not only deploy the latest security software but actively manage it on behalf of a subscriber.

**ExperienceIQ** – ExperienceIQ provides industry leading parental controls, allowing subscribers to manage screen time, content and access from the CommandIQ application. As new applications and devices proliferate, many subscribers demand deeper control over who can access the content delivered to the people who are accessing their home networks. ExperienceIQ enables the CSP to guide the subscriber and ensure that the control settings are optimized to meet the subscriber's objectives.

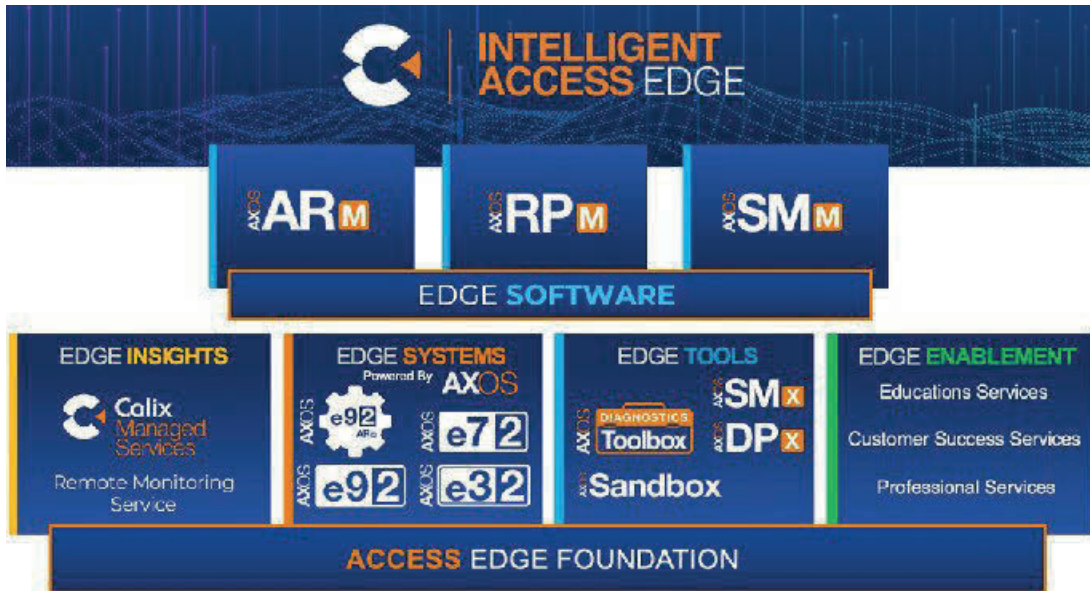
### **The Intelligent Access EDGE**

The Intelligent Access EDGE solution redefines the access edge of the network by simplifying its architecture and operations. By collapsing multiple network elements into a single system in the access network and using specialized software modules to add and remove functionality, the solution dramatically reduces the total cost of ownership, or TCO, and the time to market for new services.

From a single point in the network, the Intelligent Access EDGE solution enables CSPs to maintain all of their services and manage their entire network with one common service model, while reducing network operational expenses by as much as 40%. Enhanced platform analytics and automation help to optimize network planning, automate critical tasks and accommodate future capabilities and services. The Intelligent Access EDGE solution is built on the award-winning Calix AXOS software platform.



Representation of the Intelligent Access EDGE solution:



### *Access EDGE Insights*

The Intelligent Access EDGE Insights enable CSPs to more effectively monitor network performance and more efficiently address performance issues. Access EDGE Insights are delivered through the Calix Remote Monitoring Service, which is a cloud-based managed service offering that provides CSPs with better visibility and analytics to rapidly solve network problems that can impact subscriber experience. This cloud-based platform automatically associates and correlates disparate alarms, reducing the number of incidents that an operations team needs to analyze. The service provides continuous network alarm monitoring using the Calix Intelligent Remote Monitoring Platform and enables rapid isolation and repair through automated analysis and notification with triage and root cause of incidents affecting subscribers.

### *AXOS Platform and Access EDGE Systems*

**AXOS Platform** – AXOS is a software platform built for the specific needs of the access network. The AXOS platform is an architecture built to leverage the best of data center software design and network virtualization across the challenging and variable environment of the access network. With an always-on architecture and consistent provisioning services, a CSP can leverage AXOS to deliver all services on a single, elastic, converged access network that is always on. AXOS is the only access platform with a portfolio of systems that will power networks built on all PON technologies - GPON, XGS-PON, 10G EPON and NG-PON2. With our everyPON strategy, service providers are not limited to choosing a specific PON technology to deliver the services that run on their networks. With AXOS, they can future proof their fiber networks and deploy the right technology at the right time to optimize their capital investments. Over 250 Calix customers are already deploying AXOS to simplify their operations, network and business models.

Representation that summarizes the primary benefits delivered by AXOS:



We believe AXOS offers a revolutionary way for CSPs to operate their access networks and accelerate their business transformation. AXOS achieves this because it is architected with discrete software modules that operate on top of a unique hardware abstraction layer that preserves software independence from the underlying hardware. This architecture simplifies upgrades to non-events, supports stateful, self-healing operation and facilitates virtualization of processes and services. All components within AXOS utilize standards-based YANG data models to represent the operational functions and the NETCONF protocol that enable AXOS-powered systems to fit into any open SDN orchestration and control framework. Open, published APIs also allow customers to directly program unique network applications and services.

The AXOS platform removes the complexity of network deployments by reducing the need to utilize middleware to integrate costly hardware and software. AXOS offers CSPs a path to the simplified, intelligent, unified access network that can accelerate time-to-revenue, increase service velocity, eliminate service disruptions and reduce total cost of ownership. As a result, CSPs can simplify their business models and focus investment and resources on revenue generating services and functions.

**Access EDGE Systems** – AXOS is implemented in our E-Series family of modular, non-blocking systems including the E9-2™, E7-2®, E3-2®, E3-16F® and E5-16F®. By offering AXOS on the entire E-Series family of systems, Calix enables our customers to meet a wide variety of deployment scenarios. The Calix Access system portfolio is designed for high availability and purpose-built for the demands of access network deployments. Our access systems are built and tested to meet or exceed network equipment-building system standards, which are a set of safety, spatial and environmental design guidelines for communications equipment. Our products are highly compatible and designed to be easily integrated into the existing operational and management infrastructure of CSP access networks.

AXOS E-Series systems are capable of supporting both centralized and decentralized network architectures that range from the data center edge, central office or headend to the remote cabinet or multiple dwelling unit.

Representation of the Intelligent Access EDGE Systems:



### Access EDGE Tools

The AXOS Access EDGE tools are a set of foundational capabilities that enable a network operations team to continuously evolve and efficiently manage their network. AXOS Sandbox, Services Management Connector, or SMx, DOCSIS Provisioning Connector, or DPx, and the AXOS Diagnostic Toolbox provide all of the core functionality that an operations team requires to add new services, improve operational efficiency and assess network performance. Armed with this tools set, an operations team can manage the full life cycle of their network services.

**AXOS Sandbox** – AXOS Sandbox is a virtual testing environment that improves service introduction by eliminating the need for physical lab systems. Service providers can accelerate service delivery by reducing the time needed for lab testing, Business Support System, or BSS, and Operations Support System, or OSS, integration and software certification by deploying virtual instances of AXOS systems. AXOS Sandbox runs the actual production software release of each AXOS system.

**Services Management Connector** – The SMx connector is a network services domain manager that provides subscriber and services provisioning via a GUI interface. SMx provides REST/JSON northbound interface with integrated tools like SWAGGER for rapid back-office integration.

**DOCSIS Provisioning Connector** – The DPx connector is a virtualized DOCSIS Connector for PON networks that enables seamless SDN transition. DPx implements a microservices architecture designed to automate service delivery and management on anyPON and anyPHY into DOCSIS back office systems. DPx eliminates the need for custom OSS integration.

**AXOS Diagnostics Toolbox** – The AXOS Diagnostic Toolbox is an integrated set of network diagnostic tools such as Wireshark, TCP Dump and Video Channel Analyzer that enables remote management and troubleshooting of the access network. These tools help to reduce or eliminate costly truck rolls and enable network operations teams to ensure or restore high-quality services as quickly as possible.

### Access EDGE Enablement

Access EDGE Enablement services are designed to ensure CSP teams are fully enabled to deploy and manage next generation networks. Calix offers a range of training courses and success and professional services to assist CSPs in every domain of network management from strategy to deployment and management.

### Access EDGE Software

The AXOS modular architecture allows service providers to choose from a traditional Layer 2 network architecture or to build simplified layer 3 network architectures by consolidating key subscriber-related functions into a single solution with optional AXOS modules:

**AXOS Routing Protocol Module (RPm)** – RPm is designed for CSPs who are seeking to bring Layer 3 intelligence to their access network, but already have an MPLS solution or do not need an MPLS solution. RPm provides the benefits of a routed network including the security and ability to move caching and other edge compute closer to the subscriber without impacting

other functions in the network. CSPs can reduce provisioning overhead costs, failure groups, transport costs and simplify service and subscriber turn up.

**AXOS Advanced Routing Module (ARm)** – ARm is designed for CSPs seeking to bring Layer 3 intelligence to their access network including MPLS capabilities. ARm provides the benefits of a routed network including the security and ability to move caching and other edge compute closer to the subscriber without impacting other functions in the network. CSPs can reduce provisioning overhead costs, failure groups, transport costs and simplify service and subscriber turn up.

**AXOS Subscriber Management Module (SMm)** – SMm is a software module that brings subscriber management capabilities to the access network such as authentication, authorization, accounting of subscriber sessions, address assignment, policy management and Lawful Intercept, which is short for Lawfully Authorized Electronic Surveillance for Internet Access and Services. With SMm, CSPs get unprecedented visibility into the traffic entering the network, enabling subscriber management and the use of policy and filters to prevent network attacks.

### **Traditional Products**

Calix continues to support and sell our portfolio of non-AXOS and non-EXOS systems as well as traditional software and Compass<sup>®</sup> Cloud products that are widely deployed in customer networks. For many CSPs, the process of operationalizing new systems and transitioning to new products can be lengthy. We expect that these products will continue to be utilized in our customers' networks for many years to come. These products include:

**Calix GigaFamily** – The Calix GigaFamily includes our first generation of carrier-class Wi-Fi gateways. It includes the Calix GigaCenter<sup>®</sup> and 804 mesh systems. These systems provide 802.11ac Wi-Fi and whole home Wi-Fi services. When deployed in conjunction with the Calix Cloud, the GigaFamily systems provide the capabilities required for a managed Wi-Fi offering that delivers optimized Wi-Fi services to subscribers.

**Non-AXOS E-Series Access Systems and Nodes** – E-Series access systems and access nodes that are designed to support an array of advanced IP-based service and run our EXA operating system. These systems are not supported by AXOS.

**Calix C-Series Multiservice Access Systems** – Designed to support a wide array of basic voice and data services offered by CSPs while also supporting advanced, high-speed, packet-based services such as Gigabit Ethernet, GPON, digital subscriber line, or DSL (including very high-speed DSL 2, or VDSL2) and advanced applications.

**Calix B-Series Access Nodes** – Consist of chassis-based nodes that are designed to support an array of advanced IP-based services offered by CSPs, including Ethernet transport and aggregation, as well as voice, data and video services over both fiber- and copper-based network architectures.

**P-Series Optical Network Terminals and Residential Gateways** – A broad range of non-EXOS customer premises solutions, including optical network terminals, or ONTs, and residential gateways for residential and business use in conjunction with our E-Series, C-Series and B-Series systems.

### **Calix Services**

The Calix Services team helps CSPs define their strategy, implement new solutions and manage their networks. CSPs choose Calix platforms because of their ability to simplify network management and support an agile service delivery model. Calix Services spans the entirety of the network and service delivery lifecycle. Our expertise, developed over many years of building cutting-edge software platforms and providing critical services to our customers, positions us to be the vendor of choice. Today, the Calix Services team delivers services to CSPs of every size and every type. We are continually expanding our portfolio of service offerings to ensure that our customers realize the full potential of our platforms.

**Calix Professional Services** – Calix offers defined service packages to accelerate network design and deployment, optimize performance and scalability and apply field-proven best practices, processes and tools. Use cases for Calix Professional Services include the collapse of multiple network silos into a single software defined access architecture, the seamless migration to next-generation PON architectures, the deployment of managed whole home Wi-Fi services and smart home services and facilitated OSS/BSS integration services. These offerings optimize CSP end-to-end processes from operations to technology deployment to service lifecycle management.

**Calix Managed Services** – Our managed services feature a cloud-based remote monitoring service that monitors a CSP's end-to-end access network (24 hours a day, 7 days a week) to ensure issues are automatically identified and assessed. This service leverages machine learning technology developed through thousands of Calix Support Services engagements with CSPs to correlate alarms, filter extraneous events and identify critical issues. The service provides incident notifications to CSP team members that include the nature, location and severity of events to help reduce mean time-to-repair.

**Calix Support Services** – Calix offers three tiers of support services – Standard, Essential and Vantage - that ensure software updates, the agility of operational workflows, service uptime and customer experience. Calix support tiers are designed to

provide optimal support to our customers who are adopting our strategic platforms - Calix Cloud, EXOS, and AXOS. Our highest support tier, Vantage, includes our Remote Monitoring service and support from a Calix service director who partners with customers to implement strategies that ensure delivery of an exceptional subscriber experience.

**Calix Education Services** – Calix offers an array of self-service and instructor-led, remote and onsite learning and certifications solutions to help CSPs build the skills required to successfully execute deployments and effectively run next generation networks. Calix offers specific learning paths that are designed to help CSPs enhance the skills of their teams and maximize the value that they derive when they deploy our strategic platforms.

**Calix Success Services** – To ensure that our customers maximize the return on their investments in our software solutions, we offer Calix Success Services. The primary focus of the Success Services engagements is the use of the data and analytics delivered through our Calix Cloud Platform to transform our customers’ business processes. Our Success Services team members leverage their domain expertise in marketing, customer support and operations to help our customers achieve their business objectives. These engagements are typically multi-year (aligned to our cloud subscription terms).

Representation of the Calix Services portfolio:



## Customers

We operate a differentiated customer engagement model that focuses on direct alignment with our customers through sales, service and support. In order to allocate our product development and sales efforts efficiently, we believe that it is critical to target markets, customers and applications deliberately. We have traditionally targeted CSPs, which own, build and upgrade their own access networks and value strong relationships with their systems and software suppliers.

We classify CSPs into large, medium and small based on the number of their broadband subscribers. Large CSPs are those with wide geographic footprints and broadband subscribers of 2.5 million or more. Medium CSPs also operate typically within a wide geographic footprint but are smaller in scale with broadband subscribers that range from 250,000 to 2.5 million. Small CSPs consist primarily of over 1,000 predominantly local independent operating companies, or IOCs, typically focused on a single community or a cluster of communities. They include a growing number of municipalities, electric cooperatives, fiber overbuilders and wireless ISPs. These entities range in size from a few hundred to 250,000 broadband subscribers.

To date, we have focused primarily on CSPs in the North American market. Our existing customers’ networks serve over 100 million subscriber lines. Our customers span all sizes of broadband subscriber count from a few hundred to more than six million. A small sample of our customers includes Allo Communications; CenturyLink, Inc., or CenturyLink; CityFibre Holdings Limited; Cox Communications; Frontier Communications Corporation, or Frontier; Forked Deer Connect, LLC; Gibson Connect, LLC; Sky Cable Corporation; TDS Telecommunications LLC; Windstream Holdings, Inc., or Windstream; and Verizon Communications, Inc.

We have a few large customers who have represented a significant portion of our sales in any given period. CenturyLink accounted for 15% of total revenue in 2019, 18% in 2018 and 31% in 2017. No other customer represented more than 10% of total revenue in 2019, 2018 and 2017. In addition, our large customers represented 22% of total revenue in 2019 while our medium and small customers represented 8% and 70%, respectively.

Sales to customers outside the United States represented approximately 14% of our total revenue in 2019, 12% in 2018 and 11% in 2017. Historically, our sales outside the United States were predominantly to customers in the Middle East, Canada, Europe and Caribbean.

### **Customer Engagement Model**

We design, market and sell our Calix Cloud and software platforms, systems and Calix Services predominantly through our direct sales force, supported by marketing and product management personnel. We have expanded this model to include a small number of select channel partners in North America and dozens of international channel partners, who are part of our Fiber Forward™ Partner Program. Our sales effort is organized either by named accounts or regional responsibilities. Account teams comprise sales managers, supported by solution engineers and account managers, who work to target and sell to existing and prospective CSPs. The sales process includes analyzing CSPs' existing networks and identifying how they can utilize our products and services within their networks. Even in circumstances where a channel partner is involved, our sales and marketing personnel are often selling side-by-side with the channel partner. We believe that our direct customer engagement approach provides us with significant differentiation in the customer sales process by aligning us more closely with our customers' changing needs.

### **Research and Development**

Continued investment in research and development is critical to our business. Our research and development team is composed of engineers with expertise in software and cloud platforms, optics, wireless and hardware. Increasingly, our engineers are focused on enhancements to our platforms. Our teams of engineers are located in our San Jose and Petaluma facilities located in California; our Minneapolis, Minnesota facility and our Nanjing, China facility. We also outsource a portion of our software development to domestic and international third parties. Our research and development efforts are also extended by our co-development partnerships with third-party developers such as Infosys whereby we are able to utilize their substantially larger product development teams to bring cutting edge, software-based products to market while creating new revenue opportunities for both parties. Our research and development team is responsible for designing, developing and enhancing our Cloud and software platforms and systems, performing product and quality assurance testing and ensuring the compatibility of our products with third-party hardware and software products. We have made significant investments in the Calix portfolio. We intend to continue to dedicate significant resources to research and development to develop, enhance and deliver new platform features and capabilities, including investment in innovative technologies that support our business strategy.

### **Manufacturing**

We rely substantially on CMs, ODMs and other third-party partners for the supply and distribution of our products. We work closely with these third parties to provide hardware system design, source and procure materials, manufacture and deliver our products. Our manufacturing organization consists primarily of supply chain managers, new product introduction personnel and test engineers. We tightly integrate our supply chain management and new product introduction activities with the activities outsourced to these third parties. We have made significant changes to our supply chain to align to our platform strategy and through 2019 the changes were accelerated by the imposition by the U.S. government of tariffs on goods imported from China. Such changes include the transition of manufacturing previously conducted in China to three different manufacturing partners outside China, increased leveraging of ODM partners for hardware systems design and management of raw materials used for manufacture and transition of global supply chain operations and activities to geographies outside of China, including Taiwan and Vietnam, to mitigate the impact of the U.S. tariffs. Our relationships with our CMs and ODMs allow us to decrease new product introduction time, conserve working capital, reduce product costs and minimize delivery lead times while maintaining high product quality. Order fulfillment is performed by Pegasus Logistics Group, Inc. located in Texas. We also qualify and utilize other vendors for various portions of our supply chain from time to time, including order fulfillment of our circuit boards, optics and cabinets. This model allows us to operate with lower inventory levels while maintaining the ability to scale quickly to handle increased order volume.

Product reliability is essential for our customers, who place a premium on continuity of service for their subscribers. We perform rigorous quality control testing to help ensure the reliability of our systems. Our internal manufacturing organization designs, develops and implements complex test processes to help ensure the quality and reliability of our products.

### **Seasonality**

Fluctuations in our revenue occur due to many factors, including the varying budget cycles and seasonal buying patterns of our customers. More specifically, our customers tend to spend less in the first fiscal quarter as they are finalizing their annual capital spending budgets, and in certain regions, customers are also challenged by winter weather conditions that inhibit outside fiber deployment.

## Intellectual Property

Our success depends upon our ability to protect our core technology and intellectual property. To accomplish this, we rely on a combination of intellectual property rights, including patents, trade secrets, copyrights and trademarks as well as customary contractual protections. In addition, we generally control access to and the use of our proprietary technology and other confidential information. This protection is accomplished through a combination of internal and external controls, including contractual protections with employees, contractors, customers and partners, and through a combination of U.S. and international intellectual property laws.

As of December 31, 2019, we held 125 U.S. patents and had three pending U.S. patent applications. One of the U.S. patents is also covered by granted international patents in three countries. As of December 31, 2019, we had no pending international patent applications. U.S. patents generally have a term of twenty years from filing. We have added to our patent portfolio since our inception. The remaining terms on the individual patents vary from five months to 17 years.

We rely on intellectual property laws as well as nondisclosure agreements, licensing arrangements and confidentiality provisions to establish and protect our proprietary rights. U.S. patent, copyright and trade secret laws afford us only limited protection, and the laws of some foreign countries do not protect proprietary rights to the same extent. Our pending patent applications may not result in issued patents, and the issued patents may not be enforceable. Any infringement of proprietary rights could result in significant litigation costs. Further, any failure by us to adequately protect our proprietary rights could result in competitors offering similar products, resulting in the loss of our competitive advantage and decreased sales.

We believe that the frequency of assertions of patent infringement continues to increase in our industry. In particular, patent holders, including entities and organizations that purchase or hold patents to monetize such rights, assert patent infringement claims as a competitive tactic as well as a source of revenue. Any claim of infringement from a third party, even claims without merit, could cause us to incur substantial costs defending against such claims and could distract our management from operating our business. Furthermore, a party making such a claim, if successful, could secure a judgment that requires us to pay substantial damages. A judgment could also include an injunction or other court order that could prevent us from selling our products. In addition, we might be required to seek a license for the use of such intellectual property, which may not be available on commercially reasonable terms or at all. Alternatively, we may be required to develop non-infringing technology, which would require significant effort and expense and may ultimately not be successful.

## Competition

The communications equipment market is highly competitive. Competition in this market is based on any one or a combination of the following factors:

- functionality;
- price;
- existing business and customer relationships;
- the ability of products and services, including turnkey professional services capabilities, to meet customers' immediate and future network requirements;
- product quality;
- installation capability;
- service and support;
- scalability; and
- manufacturing capability.

We compete with a number of companies within markets that we serve, and we anticipate that competition will intensify. Suppliers with which we compete include ADTRAN, Inc., or ADTRAN; Amazon; Casa Systems; Ciena Corporation; Cisco Systems Inc.; CommScope Inc.; DASAN Zhong Solutions, Inc.; Huawei Technologies Co. Ltd.; Juniper Networks Inc.; Nokia Corporation; Plume Design, Inc. and ZTE Corporation. There are also a number of smaller companies with which we compete in various geographic or vertical markets. While most of these smaller competitors lack broad national scale and product portfolios, they can offer strong competition on a deal-by-deal basis. As we expand into adjacent markets, we expect to encounter new competitors. Many of our competitors have substantially greater name recognition, manufacturing capacity and technical, financial and marketing resources as well as better established relationships with CSPs than we do. Many of our competitors have greater resources to develop products or pursue acquisitions and more experience in developing or acquiring new products and technologies and in creating market awareness for their products and technologies. In addition, a number of

our competitors have the financial resources to offer competitive products at below market pricing levels that could prevent us from competing effectively.

## Employees

As of December 31, 2019, we employed a total of 763 employees, of which 557 employees were located in the United States. Our employees are not represented by a labor union with respect to their employment with us, except for our French employee who is subject to a collective bargaining arrangement. We have not experienced any work stoppages, and we consider our relations with our employees to be good.

## Corporate Information

Calix, Inc., a Delaware corporation, was founded in August 1999. Our principal executive offices are located at 2777 Orchard Parkway, San Jose, California 95134, and our telephone number is (408) 514-3000. Our website address is [www.calix.com](http://www.calix.com). We do not incorporate the information on or accessible through our website into this Annual Report on Form 10-K, and you should not consider any information on, or that can be accessed through, our website as part of this Annual Report on Form 10-K. Calix<sup>®</sup>, the Calix logo design, AXOS<sup>®</sup>, Calix Cloud<sup>®</sup>, CommandIQ<sup>™</sup>, Compass<sup>®</sup>, Consumer Connect<sup>®</sup>, E3<sup>®</sup>, E5<sup>®</sup>, E7<sup>®</sup>, E9<sup>™</sup>, EXOS<sup>®</sup>, ExperienceIQ<sup>™</sup>, Fiber Forward<sup>®</sup>, GigaCenter<sup>®</sup>, GigaMesh<sup>®</sup>, GigaSpire<sup>®</sup>, ProtectIQ<sup>™</sup> and other trademarks or service marks of Calix appearing in this Annual Report on Form 10-K are the property of Calix. Trade names, trademarks and service marks of other companies appearing in this Annual Report on Form 10-K are the property of the respective holders. The SEC maintains a website at [www.sec.gov](http://www.sec.gov) that contains reports, proxy statements and other information regarding issuers that file electronically with the SEC. We post on the Investor Relations page of our website, [www.calix.com](http://www.calix.com), a link to our filings with the SEC free of charge, as soon as reasonably practical after they are filed electronically with the SEC.

### ITEM 1A. Risk Factors

*We have identified the following additional risks and uncertainties that may affect our business, financial condition and/or results of operations. Investors should carefully consider the risks described below, together with the other information set forth in this Annual Report on Form 10-K, before making any investment decision. The risks described below are not the only ones we face. Additional risks not currently known to us or that we currently believe are immaterial may also significantly impair our business operations. Our business could be harmed by any of these risks. The trading price of our common stock could decline due to any of these risks, and investors may lose all or part of their investment.*

#### **Risks Related to Our Business and Industry**

***Adverse global economic conditions, geopolitical issues and other conditions that impact our increasingly global operations, including uncertainty around global trade policies and outbreaks of pandemic diseases, could have a negative effect on our business, results of operations and financial condition and liquidity.***

As a global company, our performance is affected by global economic conditions as well as geopolitical issues and other conditions with global reach. In recent years concerns about the global economic outlook have adversely affected market and business conditions in general. Macroeconomic weakness and uncertainty also make it more difficult for us to accurately forecast revenue, gross margin and expenses. Geopolitical issues, such as tariffs and trade policy changes imposed by both the United States and China beginning in late 2018 and further tariffs and other international trade policy changes have resulted in increasing tensions among China, the United States, Canada and other countries and create uncertainty for global commerce. In particular, the United States has referenced the potential imposition of tariffs on imports from other countries where we produce some of our products, such as the recent imposition of tariffs on steel imported from Vietnam. We have incurred substantial costs and diversion of resources as a result of these tariff and trade policy changes. Recently, the uncertainty over the novel coronavirus outbreak in China, which has resulted in government-imposed travel restrictions across a number of countries and closures of numerous business operations in China, may disrupt and delay our and our suppliers' operations in China. Sustained uncertainty about, or worsening of, global economic conditions, geopolitical issues and other conditions with global impact may increase our cost of doing business or disrupt our supply chain operations and may cause our customers to reduce or delay spending and could intensify pricing pressures. Any or all of these factors could negatively affect demand for our products and our business, financial condition and result of operations. Additional risks associated with the impact of the U.S. tariffs on our business and result of operations are described in the below risk factor captioned *"If we fail to manage our supply chain effectively, or if the federal government increases the imposition of tariffs to goods imported from countries where we do business, our ability to conduct our business will be materially impaired, which would adversely impact our gross margins and results of operations."* Additional risks associated with disruptions to our supply chain are described in the below risk factors captioned *"Our business and results of operations may be negatively affected by the coronavirus outbreak that has severely impacted Wuhan, China, which is a primary producer of materials and components for the telecommunications industry"* and *"Our use of and reliance upon development resources in China may expose us to unanticipated costs or liabilities."*



***Our business and results of operations may be negatively affected by the coronavirus outbreak that has severely impacted Wuhan, China, which is a primary producer of materials and components for the telecommunications industry.***

Certain materials and components for the telecommunications industry, such as fiber optics and optical-electronic components, are produced primarily in Wuhan, China, which has been the center of the recent novel coronavirus outbreak reported to have infected more than 68,000 people with more than 1,600 deaths largely in Wuhan and the surrounding Hubei province. Wuhan and the Hubei province have been subject to containment measures implemented by local authorities, including travel restrictions, mandatory quarantine, shutdown of business activities and other measures that have impacted their economy and productivity. Furthermore, restrictions and shutdown of business activities throughout other parts of China, including of factories upon which we rely for materials and components, have been implemented in attempts to contain the transmission of the coronavirus. The continued impact of the novel coronavirus, including as to when these containment measures may be lifted, remains uncertain.

The manufacture of our products requires optical-electronic components and materials sourced from suppliers in China. Although we have limited dependencies on suppliers in Wuhan, the containment measures that began in Wuhan have been expanded to other parts of China and have included factory shutdowns at some of our suppliers. If these containment measures continue for a prolonged period, we may experience a global shortage of such components and materials. Any such shortages may negatively impact our ability to supply products to meet customer requirements, which could materially adversely affect our business and results of operations. Shortages of fiber optics and other materials due to the decreased productivity in Wuhan may delay planned fiber network buildouts by CSPs, which in turn could delay or lower demand for our products.

***We have a history of losses, and we may not be able to generate positive operating income and positive cash flows in the future.***

We have experienced net losses in each year of our existence. We incurred net losses of \$17.7 million in 2019, \$19.3 million in 2018 and \$83.0 million in 2017. As of December 31, 2019, we had an accumulated deficit of \$702.6 million.

We expect to continue to incur significant expenses and cash outlays for research and development associated with our platforms and systems, including our cloud and services operations, investments in innovative technologies, expansion of our product portfolio, sales and marketing, customer support and general and administrative functions as we expand our business and operations and target new customer opportunities, including larger CSPs and cable MSOs as well as additional types of regional and local providers. Given our anticipated growth and the intense competitive pressures we face, we may be unable to adequately control our operating costs or generate positive operating income.

We cannot guarantee that we will achieve profitability in the future. We will have to generate and sustain significant and consistent increased revenue, while continuing to control our expenses, in order to achieve and then maintain profitability. We may also incur significant losses in the future for a number of reasons, including the risks discussed in this “Risk Factors” section and other factors that we cannot anticipate. If we are unable to generate positive operating income and positive cash flows from operations, our liquidity, results of operations and financial condition will be adversely affected. If we are unable to generate cash flows to support our operational needs, we may need to seek other sources of liquidity, including additional borrowings, to support our working capital needs. In addition, we may choose to seek other sources of liquidity even if we believe we have generated sufficient cash flows to support our operational needs. There is no assurance that any other sources of liquidity may be available to us on acceptable terms or at all. If we are unable to generate sufficient cash flows or obtain other sources of liquidity, we will be forced to limit our development activities, reduce our investment in growth initiatives and institute cost-cutting measures, all of which would adversely impact our business and growth.

***Our quarterly and annual operating results may fluctuate significantly, which may make it difficult to predict our future performance and could cause the market price of our stock to decline.***

A number of factors, many of which are outside of our control, may cause or contribute to significant fluctuations in our quarterly and annual operating results. These fluctuations may make financial planning and forecasting difficult. Comparing our operating results on a period-to-period basis may not be meaningful, and you should not rely on our past results as an indication of our future performance. If our revenue or operating results fall below the expectations of investors or securities analysts, or below any guidance we may provide to the market, the market price of our stock would likely decline.

In addition to the other risk factors listed in this “Risk Factors” section, factors that have in the past and may continue to contribute to the variability of our operating results include:

- our ability to predict our revenue and reduce and control our costs;
- our ability to predict product functions and features desired by our customers;
- the impact of global economic conditions;

- our ability to effectively manage our global supply chain operations to mitigate the impact of U.S. tariffs and other trade policies;
- our ability to manage our relationships with our third-party vendors, including CMs, ODMs, logistics providers, component suppliers and development partners;
- our ability to forecast our manufacturing and product supply requirements and manage our inventory;
- our dependence on sole-, single- and limited-source suppliers and supply chain partners, including suppliers located primarily or solely in China where there are a number of factors that could negatively impact our supply chain;
- the capital spending patterns of CSPs and any decrease or delay in capital spending by CSPs due to macro-economic conditions, regulatory uncertainties or other reasons;
- the impact of government-sponsored programs on our customers and the impact to our customers of U.S. federal government disruptions, such as government shutdowns, on such programs;
- intense competition, including market entrants whose products may be substitutes to ours;
- our ability to develop new products or enhancements that support technological advances and meet changing CSP requirements;
- our ability to ramp sales and achieve market acceptance of our new products and CSPs' willingness to adopt and deploy our new products;
- the concentration of our customer base as well as our dependence on a limited number of key customers;
- the length and unpredictability of our sales cycles and timing of orders;
- our lack of long-term, committed-volume purchase contracts with our customers;
- our ability to increase our sales globally and to increase our customer base;
- our exposure to the credit risks of our customers;
- fluctuations in our gross margin;
- the interoperability of our products with CSP networks;
- our products' compliance with industry standards and regulatory requirements that apply to our products and services;
- our ability to expand our international operations;
- our ability to protect our intellectual property and the cost of doing so;
- the quality of our products, including any undetected hardware defects or bugs in our software;
- our ability to manage data security risks as we grow our cloud and software portfolio;
- our ability to estimate future warranty and service obligations;
- our ability to obtain necessary third-party technology licenses at reasonable costs;
- the regulatory and physical impacts of climate change and other natural events;
- the attraction and retention of qualified employees and key management personnel; and
- our ability to maintain proper and effective internal controls.

***Our gross margin may fluctuate over time, and our current level of gross margin may not be sustainable.***

Our current level of gross margin may not be sustainable and may be adversely affected by numerous factors, including:

- changes in customer, geographic or product mix, including the mix of configurations within each product group;
- the pursuit or addition of new large customers;
- increased price competition, including the impact of customer discounts and rebates;
- our ability to effectively manage the transition of our global supply chain operations to mitigate the impact of U.S. tariffs;
- our ability to reduce and control product costs;

- an increase in revenue mix toward services, which typically have lower margins;
- changes in component pricing;
- changes in pricing with our third-party manufacturing partners;
- charges incurred due to inventory holding periods if parts ordering does not correctly anticipate product demand;
- introduction of new products and new technologies, which may involve higher component costs;
- our ability to scale our services business in order to gain desired efficiencies;
- changes in shipment volume;
- changes in or increased reliance on distribution channels;
- potential liabilities associated with increased reliance on third-party vendors;
- increased expansion efforts into new or emerging markets;
- increased warranty costs;
- excess and obsolete inventory and inventory holding charges;
- expediting costs incurred to meet customer delivery requirements; and
- potential costs associated with contractual obligations.

***Our customer base is concentrated, and there are a limited number of potential customers for our products. The loss of any of our key customers, a decrease in purchases by our key customers, pricing pressures or our inability to grow our customer base would adversely impact our revenue and results of operations and any delays in payment by a key customer could negatively impact our cash flows and working capital.***

Historically, a large portion of our sales has been to a limited number of customers. For example, one customer accounted for 15% of total revenue in 2019, 18% of total revenue in 2018 and 31% of total revenue in 2017. However, we cannot anticipate the same level of purchases in the future by these or other customers who have historically comprised a larger percentage of our revenue. Although these customers now comprise a smaller percentage of our revenue, we expect that changes in the CSP market, such as financial difficulties, spending cuts or corporate consolidations that impact purchasing decisions by these customers may continue to adversely impact our revenue, and as a result, revenue from such customers may remain flat or continue to decline. For example, CenturyLink completed a large acquisition at the end of 2017, which disrupted its historical levels of purchases with us and we have continued to experience significantly reduced levels of purchases by CenturyLink compared to historical levels. There is no assurance that purchasing levels by CenturyLink will increase from current levels or return to historical levels, and we expect continued uncertainty as it continues to complete its transition activities and corporate strategies. We have experienced and expect to continue to experience delays or declines in purchases by certain CSPs due to deterioration and weakness in their financial condition. For example, Windstream, another one of our larger customers, filed a voluntary petition for relief under Chapter 11 of the U.S. Bankruptcy Code in February 2019 after it was found in default of certain debt instruments. Another customer, Frontier, recently disclosed that it was exploring alternatives that may include a filing for bankruptcy relief. Any decrease or delay in purchases and/or capital expenditure plans of any of our key customers, particularly if prolonged or sustained, or our inability to grow our sales with existing customers, may have a material negative impact on our revenue and results of operations.

We anticipate that a large portion of our revenue will continue to depend on sales to a limited number of customers. In addition, some larger customers may demand discounts and rebates or desire to purchase their access systems and software from multiple providers. As a result of these factors, our future revenue opportunities may be limited, and we may face pricing pressures, which in turn could adversely impact our margins and our profitability. The loss of, reduction in or pricing discounts associated with, orders from any key customer would significantly reduce our revenue and harm our business. Furthermore, delays in payment and/or extended payment terms from any of our key or larger customers could have a material negative impact on our cash flows and working capital to support our business operations.

Furthermore, over the years the CSP market has undergone substantial consolidation. Industry consolidation generally has negative implications for equipment suppliers, including a reduction in the number of potential customers, a decrease in aggregate capital spending and greater pricing leverage on the part of CSPs over equipment suppliers. Continued consolidation of the CSP industry and among independent local exchange carriers and IOC customers, who represent a large part of our business, could make it more difficult for us to grow our customer base, increase sales of our products and maintain adequate gross margin.

***Our new products are early in their life cycles and subject to uncertain market demand. If our customers are unwilling to adopt our platforms, install our new products or deploy our new services, or we are unable to achieve market acceptance of our new products, our business and financial results will be harmed.***

Our new products are early in their life cycles and subject to uncertain market demand. They also may face obstacles in manufacturing, deployment and competitive response. Adoption of our new products, such as our smart home and business systems, is dependent on the success of our customers in investing, deploying and selling advanced services to their subscribers. Our products support a variety of advanced broadband services, such as high-speed Internet, managed Wi-Fi, connected home, IPTV, mobile broadband, high-definition video and online gaming. If we are unable to ramp sales of our new products, or if subscriber demand for our services does not grow as expected or declines, or our customers are unable or unwilling to invest in our platforms to deploy and market these services, demand for our products may decrease or fail to grow at rates we anticipate.

***If we fail to manage our supply chain effectively, or if the federal government increases the imposition of tariffs to goods imported from countries where we do business, our ability to conduct our business will be materially impaired, which would adversely impact our gross margins and results of operations.***

Until recently, substantially all of our products were manufactured in China. We recently completed activities to realign our supply chain operations to move substantially all of our product manufacturing to locations outside of China. The transition of global supply chain operations is complex, requires significant resources and unanticipated costs, involves significant third-party dependencies and carries numerous risks of disruptions to the manufacture and supply of our products, including exacerbation of the risks associated with our reliance upon third-party manufacturing and supply partners. In particular, in the first quarter of 2019, we experienced product shortages due to production delays associated with the transition of our global supply chain operations that impaired our ability to fulfill customer orders and resulted in revenue below our plan. The manufacture of our products requires components and materials sourced from suppliers in China, including optical-electronic components and materials manufactured in China. We continue to face increasing competition for components and resources from third-party manufacturing and supply partners as more companies seek to transition manufacturing operations out of China due to the ongoing uncertainty of the escalating tariff wars. We may experience further disruptions, product unavailability, delays or unanticipated costs associated with the supply of our products which would adversely affect the demand for our products and have a material adverse effect on our business, gross margins and results of operations if we are unable to manage our supply chain effectively, secure our desired rates for the manufacture and supply of our products with new supply chain partners or if the federal government increases the imposition of tariffs to goods imported from additional countries where we produce some of our products. Additional risks associated with our reliance upon third-party manufacturing and supply partners are described in the below risk factors captioned “*We utilize domestic and international third-party vendors to assist in the design, development and manufacture of certain of our products, and to provide logistics services in the distribution of our products. If these vendors fail to provide these services, we could incur additional costs and delays or lose revenue.*” and “*If we fail to forecast our manufacturing requirements accurately or fail to properly manage our inventory with our contract manufacturers, we could incur additional costs, experience manufacturing delays and lose revenue.*”

***Our business and results of operations may be negatively affected by the coronavirus outbreak that has severely impacted Wuhan, China, which is a primary producer of materials and components for the telecommunications industry.***

Certain materials and components for the telecommunications industry, such as fiber optics and optical-electronic components, are produced primarily in Wuhan, China, which has been the center of the recent novel coronavirus outbreak reported to have infected more than 73,000 people with more than 1,800 deaths largely in Wuhan and the surrounding Hubei province. Wuhan and the Hubei province have been subject to containment measures implemented by local authorities, including travel restrictions, mandatory quarantine, shutdown of business activities and other measures that have impacted their economy and productivity. Furthermore, restrictions and shutdown of business activities throughout China, including of factories upon which we rely for materials and components, have been implemented in attempts to contain the transmission of the coronavirus. The continued impact of the novel coronavirus, including as to when these containment measures may be lifted, remains uncertain.

Although we have limited dependencies on suppliers in Wuhan, the containment measures that began in Wuhan have been expanded throughout China and have included factory shutdowns at some of our suppliers. If these containment measures continue for a prolonged period, we may experience a global shortage of such components and materials. Any such shortages may negatively impact our ability to supply products to meet customer requirements, which could materially adversely affect our business and results of operations. Shortages of fiber optics and other materials due to the decreased productivity in Wuhan may delay planned fiber network buildouts by CSPs, which in turn could delay or lower demand for our products.

***We depend on sole-source, single-source and limited-source suppliers for some key components. If we and our business partners are unable to source these components on a timely or cost-effective basis, we will not be able to deliver our products to our customers.***

We depend on sole-source, single-source and limited-source suppliers for some key components of our products. For example, certain of our application-specific integrated circuit processors and resistor networks are purchased from sole-source suppliers, including certain components sourced solely through suppliers located in China.

Any of the sole-source, single-source and limited-source suppliers upon whom we or our business partners rely could stop producing our components, be subject to tariffs, epidemics or other conditions that disrupt their operations, cease operations or enter into exclusive arrangements with our competitors. For example, we have encountered disruptions in our supply of certain components sourced from China as a result of the recent novel coronavirus outbreak and the continued uncertainty around trade and tariff policies between the U.S. and China. Disruptions of manufacturing activities in China business activities, particularly if prolonged, may adversely affect our ability to obtain components and materials needed to manufacture our products at acceptable prices or at all, which would in turn harm our business and results of operations. We may also experience shortages or delay of critical components as a result of growing demand in the industry or other sectors. For example, growth in electronic and IoT devices, wireless products, automotive electronics and artificial intelligence all drive increased demand for certain components, such as chipsets and memory products, which may result in lower availability and increased prices for such components. The cost of components may also be impacted by regulatory requirements.

In addition, purchase volumes of such components may be too low for Calix to be considered a priority customer by these suppliers, and we may not be able to negotiate commercially reasonable terms for our business needs. As a result, these suppliers could stop selling to us and our business partners at commercially reasonable prices, or at all. Any such interruption or delay may force us and our business partners to seek similar components from alternative sources, which may not be available, or result in higher than anticipated prices for such components. Switching suppliers could also require that we redesign our products to accommodate new components and could require us to re-qualify our products with our customers, which would be costly and time consuming. Any interruption in the supply of sole-source, single-source or limited-source components for our products would adversely affect our ability to meet scheduled product deliveries to our customers, could result in lost revenue or higher expenses and would harm our business.

***We do not have manufacturing capabilities, and therefore we depend solely upon a small number of third-party manufacturing partners to manufacture and supply our products. Consequently, our operations are highly dependent upon our third-party manufacturing partners and our business could be disrupted if we encounter problems with any of these partners.***

We do not have internal manufacturing capabilities and rely upon a small number of third-party manufacturing partners such as CMs and ODMs to supply our products to meet customer needs. Our reliance on a small number of manufacturing partners makes us vulnerable to possible supply and capacity constraints and reduced control over component availability, delivery schedules, quality, manufacturing yields and costs. Our business operations and ability to supply our products are highly dependent upon our manufacturing partners. Accordingly, if we encounter problems or other disruptions in our business with any of these manufacturing partners, our business could be disrupted.

In some cases, we do not have supply contracts with our manufacturing partners and these manufacturers are not contractually obligated to supply products to us for any specific period, in any specific quantity or at any certain price. In addition, we are dependent upon our manufacturing partners' quality systems and controls and the adherence of such systems and controls to applicable standards. If our manufacturing partners fail to maintain levels of quality manufacture suitable for us or our customers, we may incur higher costs and our relationships with our customers may be harmed.

The revenue that our manufacturing partners generate from our orders represent a relatively small percentage of their overall revenue. As a result, fulfilling our orders may not be considered a priority if such manufacturers are constrained in their ability to fulfill all of their customer obligations in a timely manner. In addition, a substantial part of our manufacturing is done in our manufacturers' facilities that are located outside of the United States. We believe that the location of these facilities outside of the United States increases supply risk, including the risk of supply interruptions or reductions in manufacturing quality or controls. Moreover, regulatory changes or government actions relating to export or import regulations, economic sanctions or related legislation, or the possibility of such changes or actions, may create uncertainty or result in changes to or disruption in our operations with our manufacturers.

Additional risks associated with our supply chain operations are described in the above risk factor captioned "*If we fail to manage our supply chain effectively, or if the federal government increases the imposition of tariffs to goods imported from other countries where we do business, our ability to conduct our business will be materially impaired, which would adversely impact our gross margins and results of operations.*"

If any of our manufacturing partners were unable or unwilling to continue manufacturing our products in required volumes and at high quality levels, we would have to identify, qualify and select acceptable alternative manufacturers which could disrupt our ability to maintain continuous supply of product to meet customer requirements. An alternative manufacturer may not be available to us when needed or may not be in a position to satisfy our production requirements at commercially reasonable prices and quality. Any significant interruption in manufacturing, including labor shortages or competition for components,

would require us to reduce our supply of products to our customers, which in turn would reduce our revenue and harm our relationships with our customers.

***We utilize domestic and international third-party vendors to assist in the design, development and manufacture of certain of our products, and to provide logistics services in the distribution of our products. If these vendors fail to provide these services, we could incur additional costs and delays or lose revenue.***

From time to time we enter into agreements for the design, development and/or manufacture of certain of our products in order to enable us to offer products on an accelerated basis. We also rely upon limited third-party vendors for logistics services to distribute our products. If any of these third-party vendors stop providing their services, for any reason, we would have to obtain similar services from alternative sources, which may not be available on commercially reasonable terms, if at all. We also have limited control over disruptions that may occur at the facilities of these third-party partners, such as supply interruptions, labor shortages or design and manufacturing quality failures, quality control issues, and strikes or systems failures that may interrupt transportation and logistics services. In addition, switching development firms or manufacturers could require us to extend our development timeline and/or re-qualify our products with our customers, which would also be costly and time-consuming.

Any interruption in the development, supply or distribution of our products would adversely affect our ability to meet scheduled product deliveries to our customers, or exacerbate delays in customer order fulfillment that have already resulted from recent product unavailability related to the supply chain transition efforts described above, and could result in lost revenue or higher costs, which would negatively impact our margins and operating results and harm our business.

***If we fail to forecast our manufacturing requirements accurately or fail to properly manage our inventory with our third-party manufacturers, we could incur additional costs, experience manufacturing delays and lose revenue.***

We bear inventory risk under our third-party manufacturing arrangements. Lead times for the materials and components that we order through our manufacturers vary significantly and depend on numerous factors, including the specific supplier and market demand for a component at a given time. Lead times for certain key materials and components incorporated into our products are currently lengthy, requiring our manufacturers to order materials and components several months in advance of manufacture, which impacts the lead time for our products.

If we overestimate our production requirements, our manufacturers may purchase excess components and build excess inventory, and we could be required to pay for these excess parts or products and their storage costs. We have in the past had to reimburse our primary CM for certain inventory purchases that have been rendered excess or obsolete. Examples of when inventory may be rendered excess or obsolete include manufacturing and engineering change orders resulting from design changes or in cases where inventory levels greatly exceed projected demand. If we incur payments to our manufacturers associated with excess or obsolete inventory, this may have an adverse effect on our gross margins, financial condition and results of operations.

We have experienced unanticipated increases in demand from customers, which resulted in delayed shipments and variable shipping patterns. If we underestimate our product requirements, our manufacturers may have inadequate component inventory, which could interrupt manufacturing of our products, increase our cost of product revenue associated with expedite fees and air freight and/or result in delays or cancellation of sales.

Furthermore, while we have largely transitioned our global supply chain operations to mitigate the impact of U.S. tariffs imposed on goods imported from China, we have experienced and may continue to experience production interruptions from our manufacturers. Additional risks associated with the transition of our supply chain operations to mitigate the impact of substantial tariffs are described in the above risk factor captioned “*While we have substantially realigned our supply chain operations and transitioned manufacturing out of China to mitigate the impact of the federal government's imposition of tariffs on goods imported from China, if we fail to manage these changes to our supply chain effectively, or if the federal government increases the imposition of tariffs to goods imported from other countries where we do business, our ability to conduct our business will be materially impaired, which would adversely impact our gross margins and results of operations.*”

***Our business is dependent on the capital spending patterns of CSPs, and any decrease or delay in capital spending by CSPs in response to economic conditions, seasonality, uncertainties associated with the implementation of regulatory reform or otherwise would reduce our revenue and harm our business.***

Demand for our products depends on the magnitude and timing of capital spending by CSPs as they construct, expand, upgrade and maintain their access networks. Any future economic downturn may cause a slowdown in telecommunications industry spending, including in the specific geographies and markets in which we operate. In response to reduced consumer spending, challenging capital markets or declining liquidity trends, capital spending for network infrastructure projects of CSPs could be delayed or canceled. In addition, capital spending is cyclical in our industry, sporadic among individual CSPs and can change on short notice. As a result, we may not have visibility into changes in spending behavior until nearly the end of a given quarter.

CSP spending on network construction, maintenance, expansion and upgrades is also affected by reductions in their budgets, delays in their purchasing cycles, access to external capital (such as government grants and loan programs or the capital markets) and seasonality and delays in capital allocation decisions. For example, our CSP customers tend to spend less in the first quarter as they are still finalizing their annual budgets and in certain regions customers are also challenged by winter weather conditions that inhibit outside fiber deployment, resulting in weaker demand for our products in the first quarter of our fiscal year. Also, softness in demand across any of our customer markets, including due to macro-economic conditions beyond our control or uncertainties associated with the implementation of regulatory reform, has in the past and could in the future lead to unexpected slowdown in capital expenditures by service providers.

Many factors affecting our results of operations are beyond our control, particularly in the case of large CSP orders and network infrastructure deployments involving multiple vendors and technologies where the achievement of certain thresholds for acceptance is subject to the readiness and performance of the CSP or other providers and changes in CSP requirements or installation plans. Further, CSPs may not pursue investment for our new platforms or infrastructure upgrades that require our access systems and software. Infrastructure improvements may be delayed or prevented by a variety of factors including cost, regulatory obstacles (including uncertainties associated with the implementation of regulatory reforms), mergers, lack of consumer demand for advanced communications services and alternative approaches to service delivery. Reductions in capital expenditures by CSPs, particularly CSPs that are significant customers, may have a material negative impact on our revenue and results of operations and slow our rate of revenue growth. As a consequence, our results for a particular period may be difficult to predict, and our prior results are not necessarily indicative of results in future periods.

***Our markets are rapidly changing, which makes it difficult to predict our future revenue and plan our expenses appropriately.***

We compete in markets characterized by rapid technological change, changing needs of CSPs, evolving industry standards and frequent introductions of new products and services. We invest significant amounts to pursue innovative technologies that we believe will be adopted by CSPs. For example, we have invested and continue to invest resources and funds in our cloud and software platforms. In addition, on an ongoing basis we expect to reposition our product and service offerings and introduce new products and services as we encounter rapidly changing CSP requirements and increasing competitive pressures. If we cannot increase sales of our new products and services, keep pace with rapid technological developments to meet our customers' needs and compete with evolving industry standards or if the technologies we choose to invest in fail to meet customer needs or are not adopted by customers in the timeframes that we expect, it would be difficult to forecast our future revenue and plan our operating expenses.

***Government-sponsored programs and U.S. federal government shutdowns could impact the timing and buying patterns of CSPs, which may cause fluctuations in our operating results.***

We sell to CSPs, which include U.S.-based IOCs, which have revenue that is particularly dependent upon interstate and intrastate access charges and federal and state subsidies. The FCC and some states may consider changes to such payments and subsidies, and these changes could reduce IOC revenue. Furthermore, many IOCs use or expect to use government-supported loan programs or grants, such as Rural Utility Service loans and grants, to finance capital spending. These government-supported loan programs and grants generally include conditions such as deployment criteria, domestic preference provisions and other requirements that apply to the project and selected equipment as conditions for funding. Changes to the terms or administration of these programs, including uncertainty from government and administrative change, potential funding limitations that impact our ability to meet program requirements or funding delays due to U.S. federal government shutdowns could reduce the ability of IOCs to access capital or secure funding under government-funded programs to purchase our products and services and thus reduce our revenue opportunities.

Many of our customers were awarded grants or loans under government stimulus programs or funds distributed under the FCC's CAF program, and have purchased and will continue to purchase products from us or other suppliers while such programs and funding are available. However, customers may substantially curtail purchases as funding winds down or as planned purchases are completed.

In addition to the impact of U.S. federal government shutdowns, any changes in government regulations and subsidies could also cause our customers to change their purchasing decisions, which could have an adverse effect on our operating results and financial condition.

***We face intense competition that could reduce our revenue and adversely affect our financial results.***

The market for our products is highly competitive, and we expect competition from both established and new companies to increase. Our competitors include companies such as ADTRAN, Inc.; Amazon; Casa Systems; Ciena Corporation; Cisco Systems Inc.; CommScope Inc.; DASAN Zhong Solutions, Inc.; Huawei Technologies Co. Ltd.; Juniper Networks Inc.; Nokia Corporation; Plume Design, Inc. and ZTE Corporation, among others.

Our ability to compete successfully depends on a number of factors, including:

- the successful development of new products;
- our ability to anticipate CSP and market requirements and changes in technology and industry standards;
- our ability to differentiate our products from our competitors' offerings based on performance, cost-effectiveness or other factors;
- our ability to meet increased customer demand for services and support for their network requirements;
- our ability to gain customer acceptance of our products; and
- our ability to market and sell our products.

The broadband access equipment market has undergone and continues to undergo consolidation, as participants have merged, made acquisitions or entered into partnerships or other strategic relationships with one another to offer more comprehensive solutions than they individually had offered. Examples include Arris Group's acquisition of Pace plc in January 2016; Nokia's acquisition of Alcatel-Lucent in January 2016; the merger of DASAN Zhone Solutions with DASAN Network Solutions in September 2016; and CommScope's acquisition of Arris in April 2019. We expect this trend to continue as companies attempt to strengthen or maintain their market positions in an evolving industry.

Many of our current or potential competitors have longer operating histories, greater name recognition, larger customer bases and significantly greater financial, technical, sales, marketing and other resources than we do and are better positioned to acquire and offer complementary products and services. Many of our competitors have broader product lines and can offer bundled solutions, which may appeal to certain customers. Our competitors may also invest additional resources in developing more compelling product offerings. Potential customers may also prefer to purchase from their existing suppliers rather than a new supplier, regardless of product performance or features, because the products that we and our competitors offer require a substantial investment of time and funds to qualify and install.

Some of our competitors may offer substantial discounts or rebates to win new customers or to retain existing customers. If we are forced to reduce prices in order to secure customers, we may be unable to sustain gross margin at desired levels or achieve profitability. Competitive pressures could result in increased pricing pressure, reduced profit margin, increased sales and marketing expenses and failure to increase, or the loss of, market share, any of which could reduce our revenue and adversely affect our financial results.

***Product development is costly, and if we fail to develop new products or enhancements that meet changing CSP requirements, we could experience lower sales.***

Our industry is characterized by rapid technological advances, frequent new product introductions, evolving industry standards and unanticipated changes in subscriber requirements. Our future success will depend significantly on our ability to anticipate and adapt to such changes, and to offer, on a timely and cost-effective basis, products and features that meet changing CSP demands and industry standards. We intend to continue to invest in developing new products and enhancing the functionality of our platforms, including to reach a broader set of customers. Developing our products is expensive and complex and involves uncertainties, including pricing risks from sourcing sufficient quantities of custom components from limited suppliers on terms which may not be commercially acceptable for us. We may not have sufficient resources to successfully manage lengthy product development cycles. Our research and development expenses were \$81.2 million, or 19% of total revenue, in 2019, \$90.0 million, or 20% of total revenue, in 2018 and \$127.5 million, or 25% of total revenue, in 2017. We believe that we must continue to dedicate a significant amount of resources to our research and development efforts, including increased reliance on third-party partners to maintain our competitive position. As we continue to invest in third-party partners to develop additional features to our product and service platforms, we may experience increased challenges in design, integration and support of such third-party features in our product and service offerings. These investments may take several years to generate positive returns, if ever. Furthermore, certain of our engineering services arrangements impose future payment obligations, in the form of minimum revenue-share payments on the sale of the developed products, that are set based on our expectations of future customer demand associated with the developed products, and require us to make minimum payments whether or not we achieve the desired customer demand. If our forecasts for the developed products fall short of expectations, we may have an asset impairment related to said products, which could adversely affect our financial results. In addition, we may experience design, manufacturing, software development quality, support, marketing and other difficulties that could delay or prevent the development, introduction or marketing of new products and enhancements. If we fail to meet our development targets, demand for our products will decline.

In addition, the introduction of new or enhanced products also requires that we manage the transition from older products to these new or enhanced products in order to minimize disruption in customer ordering patterns, fulfill ongoing customer commitments and ensure that adequate supplies of new products are available for delivery to meet anticipated customer demand. If we fail to maintain compatibility with other software or equipment found in our customers' existing and planned networks, or if our products cannot be effectively deployed in our customer networks to provide desired services, we may face



substantially reduced demand for our products, which would reduce our revenue opportunities and market share. Moreover, as customers complete infrastructure deployments, they may require greater levels of service and support than we have provided in the past. We may not be able to provide products, services and support to compete effectively for these market opportunities. If we are unable to anticipate and develop new products or enhancements to our existing products on a timely and cost-effective basis, our products may become technologically obsolete more rapidly than anticipated over time, resulting in lower sales which would harm our business.

***Our sales cycles can be long and unpredictable, and our sales efforts require considerable time and expense. As a result, our sales are difficult to predict and may vary substantially from quarter to quarter, which may cause our operating results to fluctuate significantly.***

The timing of our revenue is difficult to predict. Our sales efforts often involve educating CSPs about the use and benefits of our products. CSPs typically undertake a significant evaluation process, which frequently involves not only our products but also those of our competitors and results in a lengthy sales cycle. Sales cycles for larger customers are relatively longer and require considerably more time and expense. We spend substantial time, effort and money in our sales efforts without any assurance that our efforts will produce sales. In addition, product purchases are frequently subject to budget constraints, multiple approvals and unplanned administrative, processing and other delays. The timing of revenue related to sales of products and services that have installation requirements may be difficult to predict due to interdependencies that may be beyond our control, such as CSP testing and turn-up protocols or other vendors' products, services or installations of equipment upon which our products and services rely. Such delays may result in fluctuations in our quarterly revenue. If sales expected from a specific customer for a particular quarter are not realized in that quarter or at all, we may not achieve our revenue forecasts and our financial results would be adversely affected.

***Our focus on CSPs with relatively small networks limits our revenue from sales to any one customer and makes our future operating results difficult to predict.***

A large portion of our sales efforts continue to be focused on CSPs with relatively small networks, cable MSOs and selected international CSPs. Our current and potential customers generally operate small networks with limited capital expenditure budgets. Accordingly, we believe the potential revenue from the sale of our products to any one of these customers is limited. As a result, we must identify and sell products to new customers each quarter to continue to increase our sales. In addition, the spending patterns of many of our customers are characterized by small and sporadic purchases. As a consequence, we have limited backlog and will likely continue to have limited visibility into future operating results.

***We do not have long-term, committed-volume purchase contracts with our customers, and therefore have no guarantee of future revenue from any customer.***

We typically have not entered into long-term, committed-volume purchase contracts with our customers, including our key customers which account for a material portion of our revenue. As a result, any of our customers may cease to purchase our products at any time. In addition, our customers may attempt to renegotiate terms of sale, including price and quantity. If any of our key customers stop purchasing our access platforms, systems and software for any reason, our business and results of operations would be harmed.

***Our efforts to increase our sales to CSPs globally, including cable MSOs, may be unsuccessful.***

Our sales and marketing efforts have been focused on CSPs in North America. Part of our long-term strategy is to increase sales to CSPs globally, including cable MSOs. We have devoted and continue to devote substantial technical, marketing and sales resources to these larger CSPs, who have lengthy equipment qualification and sales cycles, without any assurance of generating sales. In particular, sales to these larger CSPs may require us to upgrade our products to meet more stringent performance criteria and interoperability requirements, develop new customer-specific features or adapt our products to meet international standards. Implementing these requirements and features is costly and could negatively impact our operating results, financial condition and cash flows. Moreover, if we are unable to obtain materials at favorable costs, our margins and profitability could be adversely impacted. For example, we work with large CSPs in testing and laboratory trials for our NG-PON2 technology and cable MSO applications. We have invested and expect to continue to invest considerable time, effort and expenditures, including investment in product research and development, related to these opportunities without any assurance that our efforts will produce orders or revenue. If we are unable to successfully increase our sales to larger CSPs, our operating results, financial condition, cash flows and long-term growth may be negatively impacted.

***We are exposed to the credit risks of our customers; if we have inadequately assessed their creditworthiness, we may have more exposure to accounts receivable risk than we anticipate. Failure to collect our accounts receivable in amounts that we anticipate could adversely affect our operating results and financial condition.***

In the course of our sales to customers, we may encounter difficulty collecting accounts receivable and could be exposed to risks associated with uncollectible accounts receivable. We maintain an allowance for doubtful accounts for estimated losses

resulting from the inability or unwillingness of our customers to make required payments. However, these allowances are based on our judgment and a variety of factors and assumptions.

We perform credit evaluations of our customers' financial condition. However, our evaluation of the creditworthiness of customers may not be accurate if they do not provide us with timely and accurate financial information, or if their situations change after we evaluate their credit. Furthermore, some of our international customers operate in countries with developing economies, which from time to time, experience financial crises and become unable to make payments in U.S. dollars. While we attempt to monitor these situations carefully, adjust our allowances for doubtful accounts as appropriate and take measures to collect accounts receivable balances, we have written down accounts receivable and written off doubtful accounts in prior periods and may be unable to avoid additional write-downs or write-offs of doubtful accounts in the future. Such write-downs or write-offs could negatively affect our operating results for the period in which they occur and could harm our cash flow or our financial condition.

***Our products must interoperate with many software applications and hardware products found in our customers' networks. If we are unable to ensure that our products interoperate properly, our business will be harmed.***

Our products must interoperate with our customers' existing and planned networks, which often have varied and complex specifications, utilize multiple protocol standards, include software applications and customizations and products from multiple vendors and contain multiple generations of products that have been added over time. As a result, we must continually ensure that our products interoperate properly with these existing and planned networks. To meet these requirements, we must undertake development efforts, including test protocols, that require substantial capital investment and employee resources. We may not accomplish these development goals quickly or cost-effectively, if at all. If we fail to maintain compatibility with other software or equipment found in our customers' existing and planned networks, we may face substantially reduced demand for our products, which would reduce our revenue opportunities and market share.

We have entered into interoperability arrangements with a number of equipment and software vendors for the use or integration of their technology with our products. These arrangements give us access to and enable interoperability with various products that we do not otherwise offer. If these relationships fail, we may have to devote substantially more resources to the development of alternative products and processes and our efforts may not be as effective as the combined solutions under our current arrangements. In some cases, these other vendors are either companies that we compete with directly or companies that have extensive relationships with our existing and potential customers and may have influence over the purchasing decisions of those customers. Some of our competitors have stronger relationships with some of our existing and other potential interoperability partners, and as a result, our ability to have successful interoperability arrangements with these companies may be harmed. Our failure to establish or maintain key relationships with third-party equipment and software vendors may harm our ability to successfully sell and market our products.

***The quality of our support and services offerings is important to our customers, and if we fail to continue to offer high quality support and services, we could lose customers, which would harm our business.***

Once our products are deployed within our customers' networks, they depend on our support organization to resolve any issues relating to those products. A high level of support is critical for the successful marketing and sale of our products. Furthermore, our services to customers have increasingly broadened to include network optimization, integration and development services and remote monitoring to help our customers deploy our products within their networks. If we do not effectively assist our customers in deploying our products, succeed in helping them quickly resolve post-deployment issues or provide effective ongoing support, it could adversely affect our ability to sell our products to existing customers and harm our reputation with potential new customers. As a result, our failure to maintain high quality support and services could result in the loss of customers, which would harm our business.

***An increase in revenue mix towards deployment services may adversely affect our gross margin.***

In response to greater customer demand for certain professional and support services for our products, we continue to invest and grow our services business while de-prioritizing lower gross margin deployment services. Our services include deployment services, product warranty and support services, customer success services, customer enablement services, managed services to help our customers manage and optimize their networks and education and certification services. Deployment services typically have a lower gross margin than product purchases or other service offerings. We also rely upon third-party subcontractors to assist with some of our professional and support services projects, which generally result in higher costs and increased risk of cost overruns, which can negatively impact our gross margin. Moreover, if we are unable to achieve desired efficiencies and scale as we ramp and develop our services business, we may incur higher than expected costs, which can further adversely impact our gross margin.

***Our products are highly technical and may contain undetected hardware defects or software bugs, which could harm our reputation and adversely affect our business.***

Our products, including our smart home and business systems and our cloud and software platforms, are highly technical and, when deployed, are critical to the operation of many networks. Our products have contained and may contain undetected defects, bugs or security vulnerabilities, which risks may be exacerbated as we continue to expand our cloud and software portfolio. Some defects in our products may only be discovered after a product has been installed and used by customers and may in some cases only be detected under certain circumstances or after extended use. Any errors, bugs, defects or security vulnerabilities discovered in our products after commercial release could result in loss of revenue or delay in revenue recognition, loss of customers and increased service and warranty and retrofit costs, any of which could adversely affect our business, operating results and financial condition. In addition, we could face claims for security and data breach, product liability, tort or breach of warranty. Our contracts with customers contain provisions relating to warranty disclaimers and liability limitations, which may not be upheld. Defending a lawsuit, regardless of its merit, is costly and may divert management's attention and adversely affect the market's perception of us and our products. In addition, if our business liability insurance coverage proves inadequate or future coverage is unavailable on acceptable terms or at all, our business, operating results and financial condition could be adversely impacted.

***Increasing data privacy regulations could impact our business and expose us to increased liability.***

Government and regulatory authorities in the United States and around the world have implemented and are continuing to implement broader and more stringent laws and regulations concerning data protection. For example, in July 2016, the European Commission adopted the EU-U.S. Privacy Shield to replace Safe Harbor as a compliance mechanism for the transfer of personal data from the European Union to the United States. In addition, the General Data Protection Regulation, or GDPR, adopted by the European Parliament became effective in May 2018 to harmonize data privacy laws across Europe. Among other requirements, the GDPR imposes specific duties and requirements upon companies that collect, process or control personal data of European Union residents. Although we currently do not have material operations or business in the European Union, the GDPR regulations could cause us to incur substantial costs in order to expand our business or deliver certain services in the European Union. Furthermore, the GDPR imposes penalties for noncompliance of up to the greater of €20 million or 4% of a company's worldwide revenue; accordingly, any non-compliance with the GDPR could result in a material adverse effect on our business, financial condition and results of operations. In addition, the United Kingdom's pending exit from the European Union creates uncertainty with respect to whether the United Kingdom will enact data protection laws or regulations designed to be consistent with the GDPR. Moreover, the California Consumer Privacy Act became effective in California in January 2020 and provides new data privacy rights for consumers and new operational requirements for companies. The interpretation and application of these data protection laws and regulations are often uncertain and in flux, and it is possible that they may be interpreted and applied in a manner that is inconsistent with our data practices. Complying with emerging and changing laws could cause us to incur substantial costs or require us to change our business practices in a manner adverse to our business.

Concerns about or regulatory actions involving our practices with regard to the collection, storage, processing, use or disclosure of customer information or other privacy related matters, even if unfounded, could damage our reputation and adversely affect operating results. While we strive to provide transparency about our collection, use, disclosure and security over any personal data and to comply with all applicable data protection laws and regulations, the failure or perceived failure to comply may result in inquiries and other proceedings or actions against us by government entities or others, or could cause us to lose customers, which could potentially have an adverse effect on our business.

***Security breaches and data loss may expose us to liability, harm our reputation and adversely affect our business.***

As part of our business operations, we collect, store, process, use and/or disclose sensitive data relating to our business, including in connection with the provision of our cloud services and in our information systems and data centers (including third-party data centers). In some cases, we use third-party service providers for services that may include the collection, handling, processing and/or storage of personal data on our behalf. In addition, we host our customers' subscriber data in third-party data centers in the course of providing services and solutions to our customers through our cloud and smart home and business subscriptions. While we and our service providers apply multiple layers of security to control access to data and use encryption and authentication technologies to secure data from unauthorized access, use, alteration and disclosure, these security measures may be compromised. Malicious hackers may attempt to gain access to our network or data centers; steal proprietary information related to our business, products, employees, and customers; or interrupt our systems and services or those of our customers or others. Although we monitor our networks and continue to enhance our security protections, hackers are increasingly more sophisticated and aggressive, and our efforts may be inadequate to prevent all incidents of data breach or theft. The theft, loss, or misuse of personal data collected, stored or processed by us or our service providers to run our business could result in significantly increased security and remediation costs or costs related to defending legal claims. If we or our service providers do not allocate and effectively implement and manage the resources necessary to maintain adequate security measures, we could be subjected to data loss, unauthorized data disclosure or a compromise or breach of our systems or those of our third-party data centers. As we continue to grow our cloud and software portfolio, risks arising from or related to security breaches or data loss are likely to increase. Any loss of data or compromise of our systems or data centers could result

in a loss of confidence in the security of our offerings, damage our reputation, cause the loss of current or potential customers or partners, lead to legal and regulatory liability and adversely affect our business, financial condition, operating results and cash flows.

***If we experience protracted disruption in functionality or processing capabilities of our newly migrated enterprise resource planning, or ERP, system, we may not be able to effectively transact our business or produce our financial statements on a timely basis and without incurrence of additional costs, which would adversely affect our business, results of operations and cash flows.***

We recently migrated our Oracle ERP system to Oracle's cloud platform. This migration involved significant complexity, requiring us to move and reconfigure all of our current system processes, transactions, data and controls to a new Oracle platform. We have also experienced substantial delays and higher than planned resource needs in our migration efforts due in part to the complexity, volume and scope of changes involved in the migration. Although we conducted design validations and user testing, we currently are and may continue to experience difficulties and delays in transacting our business due to system challenges, limitations in functionality, inadequate change management or process deficiencies in the production use of the system. We are highly dependent upon our ERP system for critical business functions, including order processing and management, supply chain and procurement operations, financial planning and accounting; accordingly, protracted disruption in functionality or processing capabilities of the ERP system could materially impair our ability to conduct our business, process transactions timely or to produce accurate financial statements on a timely basis. If our ability to conduct our business, process transactions or to produce accurate financial statements on a timely basis remains impaired, our business, results of operations and cash flows would be adversely affected.

***Our estimates regarding future warranty or product obligations may change due to product failure rates, shipment volumes, field service obligations and rework costs incurred in correcting product failures. If our estimates change, the liability for warranty or product obligations may be increased, impacting future cost of revenue.***

Our products are highly complex, and our product development, manufacturing and integration testing may not be adequate to detect all defects, errors, failures and quality issues. Quality or performance problems for products covered under warranty could adversely impact our reputation and negatively affect our operating results and financial position. The development and production of new products with high complexity often involves problems with software, components and manufacturing methods. If significant warranty or other product obligations arise due to reliability or quality issues arising from defects in software, faulty components or improper manufacturing methods, our operating results and financial position could be negatively impacted by:

- cost associated with fixing software or hardware defects;
- high service and warranty expenses;
- high inventory obsolescence expense;
- delays in collecting accounts receivable;
- payment of liquidated damages for performance failures; and
- declining sales to existing customers.

***As the market for our products evolves, changing customer requirements may adversely affect the valuation of our inventory.***

Customer demand for our products can change rapidly in response to market and technology developments. Demand can be affected not only by customer- or market-specific issues, but also by broader economic and/or geopolitical factors. We may, from time to time, adjust inventory valuations downward in response to our assessment of demand from our customers for specific products or product lines. The related excess inventory charges may have an adverse effect on our gross margin, financial condition and results of operations.

***If we fail to comply with evolving industry standards, sales of our existing and future products would be adversely affected.***

The markets for our products are characterized by a significant number of standards, both domestic and international, which are evolving as new technologies are developed and deployed. As we expand into adjacent markets and increase our international footprint, we are likely to encounter additional standards. Our products must comply with these standards in order to be widely marketable. In some cases, we are compelled to obtain certifications or authorizations before our products can be introduced, marketed or sold in new markets or to customers that we have not historically served. For example, our ability to maintain Operations System Modification for Intelligent Network Elements certification for our products will affect our ongoing ability to continue to sell our products to Tier 1 CSPs.

In addition, our ability to expand our international operations and create international market demand for our products may be limited by regulations or standards adopted by other countries that may require us to redesign our existing products or develop new products suitable for sale in those countries. Although we believe our products are currently in compliance with domestic and international standards and regulations in countries in which we currently sell, we may not be able to design our products to comply with evolving standards and regulations in the future. This ongoing evolution of standards and differing foreign regulations may directly affect our ability to market or sell our products, particularly with regards to our cloud and software platforms in international markets. Further, the cost of complying with the evolving standards and regulations or the failure to obtain timely domestic or foreign regulatory approvals or certification could prevent us from selling our products where these standards or regulations apply, which would result in lower revenue and lost market share.

***We may be unable to successfully expand our international operations. In addition, we may be subject to a variety of international risks that could harm our business.***

We currently generate most of our sales from customers in North America and have more limited experience marketing, selling and supporting our products and services outside North America or managing the administrative aspects of a worldwide operation. Our ability to expand our international operations is dependent on our ability to create or maintain international market demand for our products. In addition, as we expand our operations internationally, our support organization will face additional challenges including those associated with delivering support, training and documentation in languages other than English. If we invest substantial time and resources to expand our international operations and are unable to do so successfully and in a timely manner, our business, financial condition and results of operations may suffer.

In the course of expanding our international operations and operating overseas, we will be subject to a variety of risks, including:

- differing regulatory requirements, including tax laws, trade laws, data privacy laws, labor regulations, tariffs, export quotas, custom duties or other trade restrictions;
- liability or damage to our reputation resulting from corruption or unethical business practices in some countries;
- exposure to effects of fluctuations in currency exchange rates if, over time, international customer contracts are increasingly denominated in local currencies;
- longer collection periods and difficulties in collecting accounts receivable;
- greater difficulty supporting and localizing our products;
- added costs of supporting cloud infrastructure outside of the United States;
- different or unique competitive pressures as a result of, among other things, the presence of local equipment suppliers;
- challenges inherent in efficiently managing an increased number of employees over large geographic distances, including the need to implement appropriate systems, policies and compensation, benefits and compliance programs;
- limited or unfavorable intellectual property protection;
- risk of change in international political or economic conditions, terrorist attacks or acts of war; and
- restrictions on the repatriation of earnings.

***We engage resellers to promote, sell, install and support our products to some customers in North America and internationally. Their failure to do so or our inability to recruit or retain appropriate resellers may reduce our sales and thus harm our business.***

We engage some value-added resellers, or VARs, who provide sales and support services for our products. We compete with other telecommunications systems providers for our VARs' business and many of our VARs are free to market competing products. Our use of VARs and other third-party support partners and the associated risks of doing so are likely to increase as we expand sales outside of North America. If a VAR promotes a competitor's products to the detriment of our products or otherwise fails to market our products and services effectively, we could lose market share. In addition, the loss of a key VAR or the failure of VARs to provide adequate customer service could have a negative effect on customer satisfaction and could cause harm to our business. If we do not properly recruit and train VARs to sell, install and service our products, our business, financial condition and results of operations may suffer.

***We may have difficulty evolving and scaling our business and operations to meet customer and market demand, which could result in lower profitability or cause us to fail to execute on our business strategies.***

In order to grow our business, we will need to continually evolve and scale our business and operations to meet customer and market demand. Evolving and scaling our business and operations places increased demands on our management as well as our financial and operational resources to effectively:

- manage organizational change;
- manage a larger organization;
- accelerate and/or refocus research and development activities;
- expand our manufacturing, supply chain and distribution capacity;
- increase our sales and marketing efforts;
- broaden our customer-support and services capabilities;
- maintain or increase operational efficiencies;
- scale support operations in a cost-effective manner;
- implement appropriate operational and financial systems; and
- maintain effective financial disclosure controls and procedures.

If we cannot evolve and scale our business and operations effectively, we may not be able to execute our business strategies in a cost-effective manner and our business, financial condition, profitability and results of operations could be adversely affected.

***We may not be able to protect our intellectual property, which could impair our ability to compete effectively.***

We depend on certain proprietary technology for our success and ability to compete. We rely on intellectual property laws as well as nondisclosure agreements, licensing arrangements and confidentiality provisions to establish and protect our proprietary rights. U.S. patent, copyright and trade secret laws afford us only limited protection, and the laws of some foreign countries do not protect proprietary rights to the same extent. Our pending patent applications may not result in issued patents, and our issued patents may not be enforceable. Any infringement of our proprietary rights could result in significant litigation costs. Further, any failure by us to adequately protect our proprietary rights could result in our competitors offering similar products, resulting in the loss of our competitive advantage and decreased sales.

It may become more difficult to adequately protect our intellectual property as we expand our reliance on third parties for the design, development and/or manufacture of our products. While our contracts with such third parties contain provisions relating to intellectual property rights, indemnification and liability, they may not be adequately enforced. Our third-party providers may also be subject to unauthorized third-party copying or use of our proprietary rights.

Despite our efforts to protect our proprietary rights, attempts may be made to copy or reverse engineer aspects of our products or to obtain and use information that we regard as proprietary. Accordingly, we may be unable to protect our proprietary rights against unauthorized third-party copying or use. Furthermore, policing the unauthorized use of our intellectual property is difficult and costly. Litigation may be necessary in the future to enforce 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, diversion of resources and harm to our business.

***We could become subject to litigation regarding intellectual property rights that could harm our business.***

We may be subject to intellectual property infringement claims that are costly to defend and could limit our ability to use some technologies in the future. The risk of such claims could increase as we expand our product portfolio and increasingly rely on more technologies. Third parties may assert patent, copyright, trademark or other intellectual property rights to technologies or rights that are important to our business. Such claims may originate from non-practicing entities, patent holding companies or other adverse patent owners who have no relevant product revenue, and therefore, our own issued and pending patents may provide little or no deterrence to suit from these entities.

We have received in the past and expect that in the future we may receive communications from competitors and other companies alleging that we may be infringing their patents, trade secrets or other intellectual property rights; offering licenses to such intellectual property; threatening litigation or requiring us to act as a third-party witness in litigation. In addition, we have agreed, and may in the future agree, to indemnify our customers for expenses or liabilities resulting from certain claimed infringements of patents, trademarks or copyrights of third parties. Such indemnification may require us to be financially responsible for claims made against our customers, including costs of litigation and damages awarded, which could negatively impact our results of operations. Any claims asserting that our products infringe the proprietary rights of third parties, with or without merit, could be time-consuming, result in costly litigation and divert the efforts of our engineering teams and management. These claims could also result in product shipment delays or require us to modify our products or enter into

royalty or licensing agreements. Such royalty or licensing agreements, if required, may not be available to us on acceptable terms, if at all.

***Our use of open source software could impose limitations on our ability to commercialize our products.***

We incorporate open source software into our products. Although we closely monitor our use of open source software, the terms of many open source software licenses have not been interpreted by the courts, and there is a risk that such licenses could be construed in a manner that could impose unanticipated conditions or restrictions on our ability to sell our products. In such event, we could be required to make our proprietary software generally available to third parties, including competitors, at no cost, to seek licenses from third parties in order to continue offering our products, to re-engineer our products or to discontinue the sale of our products in the event re-engineering cannot be accomplished on a timely basis or at all, any of which could adversely affect our revenue and operating expenses.

***If we are unable to obtain necessary third-party technology licenses, our ability to develop new products or product enhancements may be impaired.***

While our current licenses of third-party technology generally relate to commercially available off-the-shelf technology, we may from time to time be required to license additional technology from third parties to develop new products or product enhancements either directly or through an ODM partner. These third-party licenses may be unavailable to us or our ODMs on commercially reasonable terms, if at all. The inability to obtain necessary third-party licenses may force us to accept substitute technology of lower quality or performance standards or at greater cost or may increase the time-to-market of our products or product enhancements, any of which could harm the competitiveness of our products and result in lost revenue.

***Our ability to incur debt and the use of our funds could be limited by borrowing base restrictions and restrictive covenants in our loan and security agreement for our revolving credit facility.***

In January 2020 we entered into a Loan and Security Agreement with Bank of America, N.A., or the BofA Loan Agreement, which provides for a revolving credit facility up to a principal amount of \$35.0 million, with the availability of borrowings subject to certain conditions and requirements, including the maintenance of Availability (as defined in the BofA Loan Agreement) of at least \$5.0 million. We are dependent on our existing cash, cash equivalents and borrowings available under our BofA Loan Agreement to provide adequate funds for ongoing operations, planned capital expenditures and working capital requirements for at least the next twelve months. If our financial position deteriorates, our borrowing capacity under the credit facility may be reduced, which would adversely impact our business and growth. In addition, the BofA Loan Agreement includes covenants that place certain restrictions on our ability to, among other things, borrow secured debt or unsecured debt beyond a certain amount, create or suffer to exist any liens, sell or transfer any assets, make distributions, liquidate, dissolve, merge, amalgamate, combine or consolidate, or become a party to certain agreements restricting our ability to incur or repay debt, grant liens, make distributions or modify loan agreements, in each case subject to certain exceptions. Failure to maintain these covenants can limit the amount of borrowings that are available to us, increase the cost of borrowings under the facility, and/or require us to make immediate payments to reduce borrowings.

Given our current financial position and history of operating losses, it is possible that we may fail to meet the minimum levels required by the financial covenants, which would constitute an event of default under the BofA Loan Agreement. Events beyond our control could have a material adverse impact on our results of operations, financial condition or liquidity, in which case we may not be able to meet our financial covenants. For example, prior to the BofA Loan Agreement, we were party to a loan agreement with Silicon Valley Bank, or the SVB Loan Agreement, that provided us a revolving credit facility based on a customary accounts receivable borrowing base, subject to certain exceptions and conclusions. During the term of the SVB Loan Agreement, we were not able to meet the financial covenants in several of the quarters due to variability in our results of operations and financial position and had to request waivers and amendments to the SVB Loan Agreement to avoid an event of default. The BofA Loan Agreement covenants may also affect our ability to obtain future financing and to pursue attractive business opportunities and our flexibility in planning for, and reacting to, changes in business conditions. These covenants could place us at a disadvantage compared to some of our competitors, who may have fewer restrictive covenants and may not be required to operate under these restrictions.

***The United Kingdom's withdrawal from the European Union may have a negative effect on global economic conditions, financial markets and our business.***

On January 31, 2020, the United Kingdom formally withdrew from the European Union as a result of a national referendum passed by a majority of voters in the United Kingdom in June 2016. The withdrawal creates significant uncertainty about the future relationship between the United Kingdom and the European Union, including with respect to the laws and regulations that will apply as the United Kingdom determines which European Union laws to replace or replicate. These developments have had and may continue to have a material adverse effect on global economic conditions and the stability of global financial markets and may significantly reduce global market liquidity and restrict the ability of key market participants to operate in certain financial markets. Any of these factors could depress economic activity and restrict our access to capital, or the access

to capital of our customers or partners, which could have a material adverse effect on our operations in the United Kingdom, and generally on our business, financial condition and results of operations and reduce the price of our securities.

***Our failure or the failure of our manufacturers to comply with environmental and other legal regulations could adversely impact our results of operations.***

The manufacture, assembly and testing of our products may require the use of hazardous materials that are subject to environmental, health and safety regulations, or materials subject to laws restricting the use of conflict minerals. Our failure or the failure of our third-party manufacturers to comply with any of these requirements could result in regulatory penalties, legal claims or disruption of production. In addition, our failure or the failure of our manufacturers to properly manage the use, transportation, emission, discharge, storage, recycling or disposal of hazardous materials could subject us to increased costs or liabilities. Existing and future environmental regulations and other legal requirements may restrict our use of certain materials to manufacture, assemble and test products. Any of these consequences could adversely impact our results of operations by increasing our expenses and/or requiring us to alter our manufacturing processes.

***Regulatory and physical impacts of climate change and other natural events may affect our customers and our contract manufacturers, resulting in adverse effects on our operating results.***

As emissions of greenhouse gases continue to alter the composition of the atmosphere, affecting large-scale weather patterns and the global climate, any new regulation of greenhouse gas emissions may result in additional costs to our customers and our contract manufacturers. In addition, the physical impacts of climate change and other natural events, including changes in weather patterns, drought, rising ocean and temperature levels, earthquakes and tsunamis may impact our customers, suppliers and contract manufacturers, and our operations. These potential physical effects may adversely affect our revenue, costs, production and delivery schedules, and cause harm to our results of operations and financial condition.

***We have in the past pursued, and may in the future continue to pursue, acquisitions which involve a number of risks and uncertainties. If we are unable to address and resolve these risks and uncertainties successfully, such acquisitions could disrupt our business and result in higher costs than we anticipate.***

We may in the future acquire businesses, products or technologies to expand our product offerings and capabilities, customer base and business. We have evaluated and expect to continue to evaluate a wide array of potential strategic transactions. We have limited experience making such acquisitions or integrating these businesses after such acquisitions. Any anticipated and unanticipated costs to us related to future transactions could exceed amounts that are covered by insurance and could have a material adverse impact on our financial condition and results of operations. In addition, the anticipated benefit of any acquisitions may never materialize or the process of integrating acquired businesses, products or technologies may create unforeseen operating difficulties and expenditures.

Some of the areas where we have experienced and may in the future experience acquisition-related risks include:

- expenses and distractions, including diversion of management time related to litigation;
- expenses and distractions related to potential claims resulting from any possible future acquisitions, whether or not they are completed;
- retaining and integrating employees from acquired businesses;
- issuance of dilutive equity securities or incurrence of debt;
- integrating various accounting, management, information, human resource and other systems to permit effective management;
- incurring possible write-offs, impairment charges, contingent liabilities, amortization expense of intangible assets or impairment of goodwill and intangible assets with finite useful lives;
- difficulties integrating and supporting acquired products or technologies;
- unexpected capital expenditure requirements;
- insufficient revenue to offset increased expenses associated with acquisitions; and
- opportunity costs associated with committing capital to such acquisitions.

If our goodwill becomes impaired, we may be required to record a significant charge to our results of operations. We review our goodwill for impairment annually or when events or changes in circumstances indicate the carrying value may not be recoverable, such as a sustained or significant decline in stock price and market capitalization. If the carrying value of goodwill was deemed to be impaired, an impairment loss equal to the amount by which the carrying amount exceeds the estimated fair value would be recognized. Any such impairment could materially and adversely affect our financial condition and results of operations.



Foreign acquisitions would involve risks in addition to those mentioned above, including those related to integration of operations across different cultures and languages, currency risks and the particular economic, political and regulatory risks associated with specific countries. We may not be able to address these risks and uncertainties successfully, or at all, without incurring significant costs, delays or other operating problems.

Our inability to address or anticipate any of these risks and uncertainties could disrupt our business and could have a material impact on our financial condition and results of operations.

***Our use of and reliance upon development resources in China may expose us to unanticipated costs or liabilities.***

We operate a wholly foreign owned enterprise in Nanjing, China, where a dedicated team of engineers performs product development, quality assurance, cost reduction and other engineering work. Our reliance upon development resources in China may not enable us to achieve meaningful product cost reductions or greater resource efficiency. Further, our development efforts and other operations in China involve significant risks, including:

- difficulty hiring and retaining appropriate engineering resources due to intense competition for such resources and resulting wage inflation;
- the knowledge transfer related to our technology and exposure to misappropriation of intellectual property or confidential information, including information that is proprietary to us, our customers and third parties;
- heightened exposure to changes in the economic, security, political and pandemic conditions that may arise in China;
- fluctuation in currency exchange rates and tax risks associated with international operations;
- development efforts that do not meet our requirements because of language, cultural or other differences associated with international operations, resulting in errors or delays; and
- uncertainty with respect to tariffs imposed by the federal government on products imported from China and future actions the federal government may take with respect to international trade agreements and U.S. tax provisions related to international commerce that could adversely affect our international operations.

Difficulties resulting from the factors above and other risks related to our operations in China could expose us to increased expense, impair our development efforts, harm our competitive position and damage our reputation. For example, in December 2019, an outbreak of a novel strain of coronavirus was reported in Wuhan, China, which has impacted our research and development operations in Nanjing and may continue to impact our operations, including our ability to meet our desired development timelines. The uncertainty over the coronavirus outbreak has resulted in government-imposed travel restrictions and closures of certain business operations in China, which may also disrupt and delay the supply of component parts sourced from China and our supply chain and our suppliers' operations in and outside of China for the foreseeable future.

***Our customers are subject to government regulation, and changes in current or future laws or regulations that negatively impact our customers could harm our business.***

The FCC has jurisdiction over all of our U.S. customers. FCC regulatory policies that create disincentives for investment in access network infrastructure or impact the competitive environment in which our customers operate may harm our business. For example, future FCC regulation affecting providers of broadband Internet access services could impede the penetration of our customers into certain markets or affect the prices they may charge in such markets. Similarly, changes to regulatory tariff requirements or other regulations relating to pricing or terms of carriage on communication networks could slow the development or expansion of network infrastructures. Consequently, such changes could adversely affect the sale of our products and services. Furthermore, many of our customers are subject to FCC rate regulation of interstate telecommunications services and are recipients of CAF capital incentive payments, which are intended to subsidize broadband and telecommunications services in areas that are expensive to serve. Changes to these programs, rules and regulations that could affect the ability of IOCs to access capital, and which could in turn reduce our revenue opportunities, remain possible.

In addition, many of our customers are subject to state regulation of intrastate telecommunications services, including rates for such services, and may also receive funding from state universal service funds. Changes in rate regulations or universal service funding rules, either at the U.S. federal or state level, could adversely affect our customers' revenue and capital spending plans. Moreover, various international regulatory bodies have jurisdiction over certain of our non-U.S. customers. Changes in these domestic and international standards, laws and regulations, or judgments in favor of plaintiffs in lawsuits against CSPs based on changed standards, laws and regulations could adversely affect the development of broadband networks and services. This, in turn, could directly or indirectly adversely impact the communications industry in which our customers operate.

Many jurisdictions, including international governments and regulators, are also evaluating, implementing and enforcing regulations relating to cyber security, privacy and data protection, which can affect the market and requirements for networking

and communications equipment. To the extent our customers are adversely affected by laws or regulations regarding their business, products or service offerings, our business, financial condition and results of operations would suffer.

***We are subject to governmental export and import controls that could subject us to liability or impair our ability to compete in additional international markets.***

Our products are subject to U.S. export and trade controls and restrictions. International shipments of certain of our products may require export licenses or are subject to additional requirements for export. In addition, the import laws of other countries may limit our ability to distribute our products, or our customers' ability to buy and use our products, in those countries. Changes in our products or changes in export and import regulations or duties may create delays in the introduction of our products in international markets, prevent our customers with international operations from deploying our products or, in some cases, prevent the export or import of our products to certain countries altogether. Any change in export or import regulations, duties or related legislation, shift in approach to the enforcement or scope of existing regulations, or change in the countries, persons or technologies targeted by such regulations, could negatively impact our ability to sell, profitably or at all, our products to existing or potential international customers.

***If we lose any of our key personnel, or are unable to attract, train and retain qualified personnel, our ability to manage our business and continue our growth would be negatively impacted.***

Our success depends, in large part, on the continued contributions of our key personnel, many of whom are highly skilled and would be difficult to replace. None of our key personnel are bound by a written employment contract to remain with us for a specified period. In addition, we do not currently maintain key person life insurance covering our key personnel. If we lose the services of any key personnel, our business, financial condition and results of operations may suffer.

Competition for skilled personnel is intense. We cannot be certain that we will be successful in attracting and retaining qualified personnel, or that newly hired personnel will function effectively, both individually and as a group. If we are unable to effectively recruit, hire and utilize new employees to align with our company objectives, execution of our business strategy and our ability to react to changing market conditions may be impeded, and our business, financial condition and results of operations may suffer.

Volatility or lack of performance in our stock price may also affect our ability to attract and retain our key personnel. Our executive officers and employees hold a substantial number of shares of our common stock and vested stock options. Employees may be more likely to leave us if the shares they own or the shares underlying their equity awards decline in value, or if the exercise prices of stock options that they hold are significantly above the market price of our common stock. If we are unable to retain our employees, our business, operating results and financial condition will be harmed.

***If we fail to maintain proper and effective internal controls, our ability to produce accurate financial statements on a timely basis could be impaired, which would adversely affect our operating results, our ability to operate our business and our stock price.***

Ensuring that we have adequate internal financial and accounting controls and procedures in place to produce accurate financial statements on a timely basis is a costly and time-consuming effort that needs to be re-evaluated frequently. We have in the past discovered, and may in the future discover, areas of our internal financial and accounting controls and procedures that need improvement. The complexity and changes related to our ERP migration described above in the risk factor entitled "*If we fail in our implementation of our new Enterprise Resource Planning, or ERP, system platform, we may not be able to effectively transact our business or produce our financial statements on a timely basis and without incurrence of additional costs, which would adversely affect our business, results of operations and cash flows*" could exacerbate the risk of deficiencies in process and controls upon which we rely to produce accurate and timely financial statements.

Our management is responsible for establishing and maintaining adequate internal control over financial reporting to provide reasonable assurance regarding the reliability of our financial reporting and the preparation of financial statements for external purposes in accordance with U.S. generally accepted accounting principles. Our management does not expect that our internal control over financial reporting will prevent or detect all error and all fraud. A control system, no matter how well designed and operated, can provide only reasonable, not absolute, assurance that the control system's objectives will be met. Because of the inherent limitations in all control systems, no evaluation of controls can provide absolute assurance that misstatements due to error or fraud will not occur or that all control issues and instances of fraud, if any, within our company will have been detected.

We are required to comply with Section 404 of the Sarbanes-Oxley Act, or SOX, which requires us to expend significant resources in developing the required documentation and testing procedures. We cannot be certain that the actions we have taken and are taking to improve our internal controls over financial reporting will be sufficient to maintain effective internal controls over financial reporting in subsequent reporting periods or that we will be able to implement our planned processes and procedures in a timely manner. In addition, new and revised accounting standards and financial reporting requirements may occur in the future and implementing changes required by new standards, requirements or laws may require a significant

expenditure of our management's time, attention and resources which may adversely affect our reported financial results. If we are unable to produce accurate financial statements on a timely basis, investors could lose confidence in the reliability of our financial statements, which could cause the market price of our common stock to decline and make it more difficult for us to finance our operations and growth.

***We incur significant costs as a result of operating as a public company, which may adversely affect our operating results and financial condition.***

As a public company, we incur significant accounting, legal and other expenses, including costs associated with our public company reporting requirements. We also anticipate that we will continue to incur costs associated with corporate governance requirements, including requirements and rules under SOX and the Dodd-Frank Wall Street Reform and Consumer Protection Act, or Dodd-Frank, among other rules and regulations implemented by the SEC, as well as listing requirements of the New York Stock Exchange, or NYSE. Furthermore, these laws and regulations could make it difficult or costly for us to obtain certain types of insurance, including director and officer liability insurance, and we may be forced to accept reduced policy limits and coverage or incur substantially higher costs to obtain the same or similar coverage. The impact of these requirements could also make it difficult for us to attract and retain qualified persons to serve on our Board of Directors, our board committees or as executive officers.

New laws and regulations as well as changes to existing laws and regulations affecting public companies, including the provisions of SOX and the Dodd-Frank Act and rules adopted by the SEC and the NYSE, would likely result in increased costs to us as we respond to their requirements. We continue to invest resources to comply with evolving laws and regulations, and this investment may result in increased general and administrative expense.

***Risks Related to Ownership of Our Common Stock***

***Our stock price may continue to be volatile, and the value of an investment in our common stock may decline.***

The trading price of our common stock has been, and is likely to continue to be, volatile, which means that it could decline substantially within a short period of time and could fluctuate widely in response to various factors, some of which are beyond our control. These factors include those discussed above under “*Risks Related to Our Business and Industry*” and others such as:

- quarterly variations in our results of operations or those of our competitors;
- failure to meet any guidance that we have previously provided regarding our anticipated results;
- changes in earnings estimates or recommendations by securities analysts;
- failure to meet securities analysts' estimates;
- announcements by us or our competitors of new products, significant contracts, commercial relationships, acquisitions or capital commitments;
- developments with respect to intellectual property rights;
- our ability to develop and market new and enhanced products on a timely basis;
- our commencement of, or involvement in, litigation and developments relating to such litigation;
- changes in governmental regulations; and
- a slowdown in the communications industry or the general economy.

In recent years, the stock market in general, and the market for technology companies in particular, has experienced extreme price and volume fluctuations that have often been unrelated or disproportionate to the operating performance of those companies. Broad market and industry factors may seriously affect the market price of our common stock, regardless of our actual operating performance. In addition, in the past, following periods of volatility in the overall market and the market price of a particular company's securities, securities class action litigation has often been instituted against these companies. This litigation, if instituted against us, could result in substantial costs and a diversion of our management's attention and resources.

***If securities or industry analysts do not publish research or reports about our business or if they issue an adverse or misleading opinion regarding our stock, our stock price and trading volume could decline.***

The trading market for our common stock will be influenced by the research and reports that industry or securities analysts publish about us or our business. If any of the analysts who cover us issue an adverse or misleading opinion regarding our stock, our stock price would likely decline. If several of these analysts cease coverage of our company or fail to publish reports on us regularly, we could lose visibility in the financial markets, which in turn could cause our stock price or trading volume to decline.

***Provisions in our charter documents and under Delaware law could discourage a takeover that stockholders may consider favorable and may lead to entrenchment of our management and Board of Directors.***

Our amended and restated certificate of incorporation and amended and restated bylaws contain provisions that could have the effect of delaying or preventing changes in control or changes in our management or our Board of Directors. These provisions include:

- a classified Board of Directors with three-year staggered terms, which may delay the ability of stockholders to change the membership of a majority of our Board of Directors;
- no cumulative voting in the election of directors, which limits the ability of minority stockholders to elect director candidates;
- the exclusive right of our Board of Directors to elect a director to fill a vacancy created by the expansion of the Board of Directors or the resignation, death or removal of a director, which prevents stockholders from being able to fill vacancies on our Board of Directors;
- the ability of our Board of Directors to issue shares of preferred stock and to determine the price and other terms of those shares, including preferences and voting rights, without stockholder approval, which could be used to significantly dilute the ownership of a hostile acquirer;
- a prohibition on stockholder action by written consent, which forces stockholder action to be taken at an annual or special meeting of our stockholders;
- the requirement that a special meeting of stockholders may be called only by the chairman of the Board of Directors, the chief executive officer or the Board of Directors, which may delay the ability of our stockholders to force consideration of a proposal or to take action, including the removal of directors; and
- advance notice procedures that stockholders must comply with in order to nominate candidates to our Board of Directors or to propose matters to be acted upon at a stockholders' meeting, which may 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 us.

We are also subject to certain anti-takeover provisions under Delaware law. Under Delaware law, a corporation may not, in general, engage in a business combination with any holder of 15% or more of its capital stock unless the holder has held the stock for three years or, among other things, the Board of Directors has approved the transaction.

***We may need additional capital in the future to finance our business.***

We may need to raise additional capital to fund operations in the future. Our working capital needs and cash use have continued to increase to support our growth initiatives, and we may need additional capital if our current plans and assumptions change. While we have transitioned our supply chain operations to mitigate the impact of U.S. tariffs on goods imported from China, failure to effectively manage the transition or unanticipated further expenditures associated with mitigation efforts could negatively impact our cash flows and result of operations. Failure to maintain certain restrictive covenants and requirements under the BofA Loan Agreement could result in limiting the amount of borrowings that are available to us, increase the cost of borrowings under the credit facility, and/or cause us to make immediate payments to reduce borrowings or result in an event of default. If future financings involve the issuance of equity securities, our then-existing stockholders would suffer dilution. If we raise additional debt financing, we may be subject to restrictive covenants that limit our ability to conduct our business. If we are unable to generate positive operating income and positive cash flows from operations, our liquidity, results of operations and financial condition will be adversely affected. Furthermore, if we are unable to generate sufficient cash flows to support our operational needs, we may need to seek additional sources of liquidity, including borrowings, to support our working capital needs. In addition, we may choose to seek other sources of liquidity even if we believe we have generated sufficient cash flows to support our operational needs. There is no assurance that any other sources of liquidity may be available to us on acceptable terms or at all. If we are unable to generate sufficient cash flows or obtain other sources of liquidity, we will be forced to limit our development activities, reduce our investment in growth initiatives and institute cost-cutting measures, all of which would adversely impact our business and growth.

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

We do not currently intend to pay any cash dividends on our common stock for the foreseeable future. We currently intend to invest our future earnings, if any, to fund our growth. Additionally, the terms of our credit facility restrict our ability to pay dividends under certain circumstances. Therefore, our stockholders are not likely to receive any dividends on our common stock for the foreseeable future.

**ITEM 1B. Unresolved Staff Comments**

None.

**ITEM 2. Properties**

We currently lease our corporate headquarters in San Jose, California. In addition to our headquarters site, we lease additional office space in the United States and China.

We believe that our facilities are in good condition and are generally suitable to meet our needs for the foreseeable future. We believe that prior to expiration of our current office space leases that we can renew or obtain suitable lease space on commercially reasonable terms for our business needs. In addition, we may continue to seek additional space as needed, and we believe this space will be available on commercially reasonable terms.

**ITEM 3. Legal Proceedings**

From time to time, we are involved in various legal proceedings arising from the normal course of business. We are not currently a party to any legal proceedings that, if determined adversely to us, in our opinion, are currently expected to individually or in the aggregate have a material adverse effect on our business, operating results or financial condition taken as a whole.

**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

#### Comparative Stock Prices

Our common stock has been trading on the New York Stock Exchange, under the trading symbol “CALX” since our initial public offering on March 24, 2010. Prior to this time, there was no public market for our common stock.

#### Number of Common Stockholders

As of February 14, 2020, the approximate number of holders of our common stock was 459 (not including beneficial owners of stock held in street name).

#### Dividends

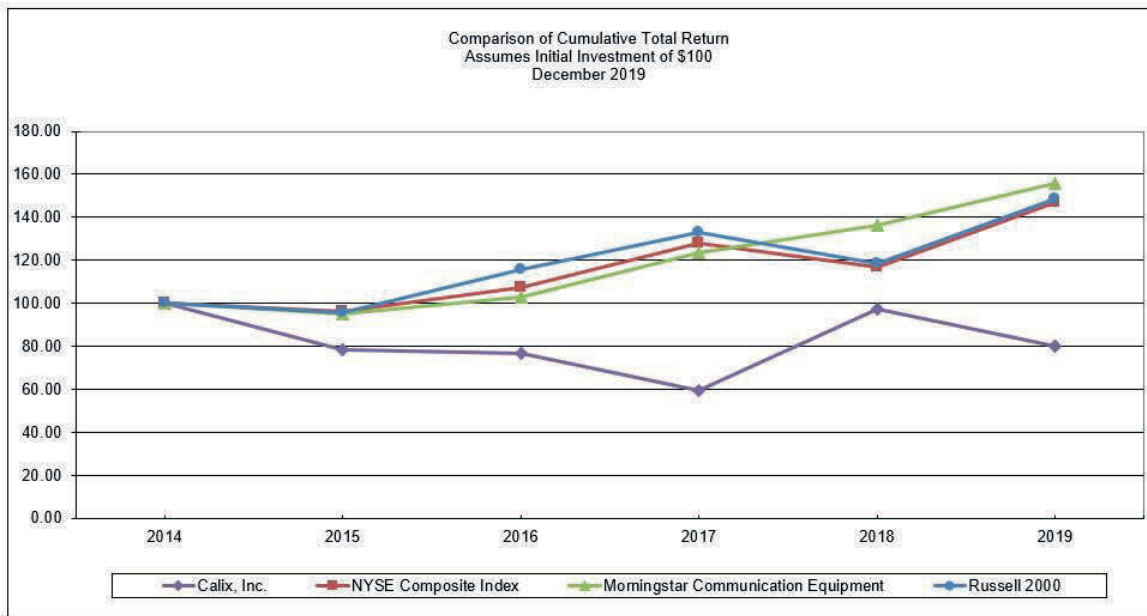
We have never declared or paid any cash dividends on our common stock, and we do not currently intend to pay any cash dividends on our common stock in the foreseeable future. In addition, our BofA Loan Agreement requires BofA's consent before dividends can be declared. See Note 5 “*Credit Agreements*” of Notes to Consolidated Financial Statements included in this Annual Report on Form 10-K.

#### Recent Sales of Unregistered Securities

None.

#### Performance Graph

The following graph shows a comparison of the cumulative total stockholder return on our common stock with the cumulative total returns of the Russell 2000 Index and the Morningstar Communication Equipment Index. The graph tracks the performance of a \$100 investment in our common stock and in each of the indexes during the last five fiscal years ended December 31, 2019. Data for the Russell 2000 Index and the Morningstar Communication Equipment Index assume reinvestment of dividends. Stockholder returns over the indicated period are based on historical data and should not be considered indicative of future stockholder returns.



This performance graph shall not be deemed “soliciting material” or to be “filed” with the SEC for purposes of Section 18 of the Securities Exchange Act of 1934, as amended, or otherwise subject to the liabilities under that Section, and shall not be deemed to be incorporated by reference into any filing of Calix, Inc. under the Securities Act of 1933, as amended.

## ITEM 6. Selected Financial Data

The following selected consolidated financial data should be read in conjunction with our consolidated financial statements and the related notes thereto, of this Annual Report on Form 10-K, the section titled “Management’s Discussion and Analysis of Financial Condition and Results of Operations” and the other financial information and data appearing elsewhere in this Annual Report on Form 10-K. The selected financial data included in this section is not intended to replace and is not a substitute for, the consolidated financial statements and related notes in this Annual Report on Form 10-K.

We derived the statements of operations data for the years ended December 31, 2019, 2018 and 2017 and the balance sheet data as of December 31, 2019 and 2018 from our audited consolidated financial statements and related notes thereto of this Annual Report on Form 10-K. We derived the statements of operations data for the years ended December 31, 2016 and 2015 and the balance sheet data as of December 31, 2017, 2016 and 2015 from our audited consolidated financial statements and related notes which are not included in this Annual Report on Form 10-K. Historical results for any prior period are not necessarily indicative of future results for any period.

	Years Ended December 31,				
	2019	2018	2017	2016	2015
(In thousands, except per share data)					
<b>Statement of Operations Data:</b>					
Revenue	\$ 424,330	\$ 441,320	\$ 510,367	\$ 458,787	\$ 407,163
Cost of revenue <sup>(1)</sup>	236,405	243,938	337,477	257,569	217,034
Gross profit	187,925	197,382	172,890	201,218	190,129
Operating expenses:					
Research and development <sup>(1)</sup>	81,184	89,963	127,541	106,869	89,714
Sales and marketing <sup>(1)</sup>	82,553	86,432	82,781	83,675	78,563
General and administrative <sup>(1)</sup>	37,115	40,500	39,875	41,592	38,454
Loss on asset retirement	2,474	—	—	—	—
Restructuring charges	—	5,705	4,249	—	—
Gain on sale of product line	—	(6,704)	—	—	—
Amortization of intangible assets	—	—	—	1,701	10,208
Litigation settlement gain	—	—	—	(4,500)	—
Total operating expenses	203,326	215,896	254,446	229,337	216,939
Loss from operations	(15,401)	(18,514)	(81,556)	(28,119)	(26,810)
Interest and other income (expense), net	(1,131)	(254)	(233)	1,064	712
Loss before provision for income taxes	(16,532)	(18,768)	(81,789)	(27,055)	(26,098)
Provision for income taxes	1,162	530	1,243	347	535
Net loss	\$ (17,694)	\$ (19,298)	\$ (83,032)	\$ (27,402)	\$ (26,633)
Net loss per common share:					
Basic and diluted	\$ (0.32)	\$ (0.37)	\$ (1.66)	\$ (0.56)	\$ (0.52)
Weighted-average number of shares used to compute net loss per common share:					
Basic and diluted	54,993	52,609	50,155	48,730	51,489
<sup>(1)</sup> Includes stock-based compensation as follows:					
Cost of revenue	\$ 896	\$ 1,248	\$ 749	\$ 672	\$ 709
Research and development	3,913	5,969	4,869	5,125	4,797
Sales and marketing	3,415	5,787	3,433	4,586	4,712
General and administrative	2,957	4,469	3,317	3,902	3,587
	\$ 11,181	\$ 17,473	\$ 12,368	\$ 14,285	\$ 13,805

	December 31,				
	2019	2018	2017	2016	2015
	(In thousands)				
<b>Balance Sheet Data:</b>					
Cash, cash equivalents, restricted cash and marketable securities	\$ 47,457	\$ 50,274	\$ 39,775	\$ 78,107	\$ 73,590
Working capital	28,324	31,079	34,123	97,926	115,561
Total assets	316,823	317,080	295,070	355,475	323,886
Common stock and additional paid-in capital	897,444	877,555	852,475	837,931	820,080
Total stockholders' equity	154,028	151,934	144,963	212,964	235,785

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

*The Management's Discussion and Analysis of Financial Condition and Results of Operations contains forward-looking statements regarding future events and our future results that are subject to the safe harbors created under the Securities Act of 1933 (the "Securities Act") and the Securities Exchange Act of 1934 (the "Exchange Act"). All statements other than statements of historical facts are statements that could be deemed forward-looking statements. These statements are based on current expectations, estimates, forecasts and projections about the industry in which we operate and the beliefs and assumptions of our management. In some cases, forward-looking statements can be identified by the use of words such as "believe," "could," "expect," "may," "estimate," "continue," "anticipate," "intend," "should," "plan," "predict," "will," "would," "project," "potential," or the negative thereof or other comparable terminology. In addition, any statements that refer to projections of our future financial performance, our anticipated growth and trends in our business and industry and other characterizations of future events or circumstances are forward-looking statements. Readers are cautioned that these forward-looking statements are only predictions and are subject to risks, uncertainties and assumptions that are difficult to predict, including those identified in the Risk Factors discussed in Item 1A, in the discussion below, as well as in other sections of this Annual Report on Form 10-K. Therefore, actual results may differ materially and adversely from those expressed in any forward-looking statements. All forward-looking statements and reasons why results may differ included in this report are made as of the date hereof, and we assume no obligation to update these forward-looking statements or reasons why actual results might differ.*

### Overview

We are a leading global provider of cloud and software platforms, systems and services for fiber- and copper-based network architectures and a pioneer in software defined access and cloud products focused on access networks and the subscriber. Our portfolio allows for a broad range of subscriber services to be provisioned and delivered over a single unified network. Our access systems can deliver voice and data services, advanced broadband services, mobile broadband, as well as high-definition video and online gaming. Our most recent generation of premises systems enable CSPs to address the complexity of the smart home and business and offer new services to their device enabled subscribers. We have designed all of our current platforms and related systems so that they can be monitored, analyzed, managed and supported by Calix Cloud.

We market our cloud and software platforms, systems and services to CSPs globally through our direct sales force as well as select resellers. Our customers range from smaller, regional CSPs to some of the world's largest CSPs. We have enabled approximately 1,600 customers to deploy passive optical, Active Ethernet and point-to-point Ethernet fiber access networks.

In the third quarter of 2018, the United States enacted 10% tariffs on certain goods manufactured in China and increased these tariffs to 25% in May 2019. In September 2019, the United States imposed a new 15% tariff covering a broader list of products manufactured in China. As a result of these tariffs, we incurred U.S. tariff and tariff-related costs of \$3.2 million in 2018 and \$6.2 million in 2019. In order to mitigate the impact of the tariffs enacted by the United States, we undertook a broad plan to realign our global supply chain by moving substantially all of our production outside of China in addition to other supply chain improvements in the first half of 2019. As a result of the tariffs imposed in September 2019 covering a broader list of products, we have expanded the scope of our global supply chain realignment plan, which is expected to take until mid-2020 to complete.

Our revenue decreased to \$424.3 million in 2019 from \$441.3 million in 2018 and \$510.4 million in 2017. The decrease in revenue from 2018 to 2019 was primarily due to lower revenue from our legacy incumbent local exchange carrier, or ILEC, customers as well as CenturyLink as they continued to reduce capital investments in response to broadband subscriber losses. Our revenue and potential revenue growth will depend on our ability to sell and license our cloud and software platforms, systems and services to strategically aligned customers, including from market segments such as cable MSOs, WISPs, fiber overbuilders, municipalities and electric cooperatives, in the United States and internationally.

Revenue fluctuations result from many factors, including, but not limited to: increases or decreases in customer orders for our products and services, market, financial or other factors that may delay or materially impact customer purchasing decisions,



non-availability of products due to supply chain challenges, including disruptions from the recent coronavirus outbreak in China, contractual terms with customers that result in delayed revenue recognition and varying budget cycles and seasonal buying patterns of our customers. More specifically, our customers tend to spend less in the first quarter as they are finalizing their annual budgets, and in certain regions, customers are challenged by winter weather conditions that inhibit fiber deployment in outside infrastructure. Our revenue is also dependent upon our customers' timing of purchases, capital expenditure plans and decisions to upgrade their network or adopt new technologies, including adoption of our software and cloud platform solutions, as well as our ability to grow our customer base.

Cost of revenue is strongly correlated to revenue and tends to fluctuate due to all of the above factors that may cause revenue fluctuations. Factors that impacted our cost of revenue for the year ended December 31, 2019, and that we expect will impact cost of revenue in future periods, also include: changes in the mix of products delivered, customer location and regional mix, changes in product warranty and incurrence of retrofit costs, changes in the cost of our inventory, including higher costs due to materials shortages including components, supply constraints or unfavorable changes in trade policies, investments to support expansion of cloud and customer support offerings, tariffs and associated costs to mitigate the impact of tariffs, amortization of intangibles, asset write-offs, silicon support fees and inventory write-downs. Cost of revenue also includes fixed expenses related to our internal operations, which could increase our cost of revenue as a percentage of revenue if there are declines in revenue.

Our gross profit and gross margin fluctuate based on timing of factors such as new product introductions or upgrades to existing products, changes in customer mix and changes in the mix of products demanded and sold (and any related write-downs of existing inventory) and have in the past been negatively impacted by increases in mix of revenue towards professional services, increases in mix of revenue from channel sales rather than direct sales or other unfavorable customer or product mix, shipment volumes and any related volume discounts, changes in our product and services costs, pricing decreases or discounts, customer rebates and incentive programs due to competitive pressure or materials shortages, supply constraints, investments to support expansion of cloud and customer support offerings, tariffs or unfavorable changes in trade policies.

Our operating expenses fluctuate based on the following factors among others: changes in headcount and personnel costs, which comprise a significant portion of our operating expenses; variable compensation due to fluctuations in shipment volumes or level of achievement against performance targets; timing of research and development expenses, including investments in innovative solutions and new customer segments, prototype builds and outsourced development resources; asset write-offs; investments in our business and information technology infrastructure; and fluctuations in stock-based compensation expenses due to timing of equity grants or other factors affecting vesting. For the year ended December 31, 2019 as compared to 2018, our total operating expenses for research and development, sales and marketing and general and administrative decreased by \$16.0 million, largely due to restructuring actions we took in 2017 and early 2018. These restructuring actions were completed in the second quarter of 2018.

Our net loss was \$17.7 million in 2019, \$19.3 million in 2018 and \$83.0 million in 2017. Since our inception, we have incurred significant losses, and as of December 31, 2019, we had an accumulated deficit of \$702.6 million. Further, as a result of factors contributing to the fluctuations described above among other factors, many of which are outside our control, our operating results fluctuate from period to period. Comparing our operating results on a period-to-period basis may not be meaningful, and you should not rely on our past results as an indication of our future performance.

### **Critical Accounting Policies and Estimates**

Our financial statements are prepared in accordance with U.S. GAAP. These accounting principles require us to make certain estimates and judgments that can affect the reported amounts of assets and liabilities as of the date of the financial statements, as well as the reported amounts of revenue and expenses during the periods presented. We base our estimates, assumptions and judgments on historical experience and on various other factors that are believed to be reasonable under the circumstances. To the extent there are material differences between these estimates and actual results, our financial statements may be affected. We evaluate our estimates, assumptions and judgments on an ongoing basis.

We believe the following critical accounting policies affect our significant judgments and estimates used in the preparation of our financial statements.

#### ***Revenue Recognition***

We derive revenue from contracts with customers primarily from the following and categorize our revenue as follows:

- Systems include revenue from the sale of access and premises systems, software platform licenses and cloud-based software subscriptions.
- Services include revenue from professional services, customer support, software- and cloud-based maintenance, extended warranty subscriptions, training and managed services.

Revenue is recognized when a performance obligation is satisfied, which occurs when control of the promised goods or services is transferred to the customer, in an amount that reflects the consideration we expect to be entitled to in exchange for those goods or services. Specifically, revenue from software platform licenses, which provides the customer with a right to use the software as it exists, is generally recognized upfront when made available to the customer. Revenue from cloud-based software subscriptions, customer support, maintenance, extended warranty subscriptions and managed services is generally recognized ratably over the contract term. Revenue from professional services and training is recognized as the services are completed.

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. A contract's transaction price is allocated to each distinct performance obligation and recognized as revenue when, or as, the performance obligation is satisfied. Our hardware products contain both software and non-software components that function together to deliver the products' essential functionality and therefore constitutes a single performance obligation as the promise to transfer the individual software and non-software components is not separately identifiable and, therefore, not distinct. Our contracts may include multiple performance obligations. For such arrangements, we allocate the contract's transaction price to each performance obligation using the relative stand-alone selling price of each distinct good or service in the contract. We generally determine stand-alone selling prices based on the prices charged to customers or our best estimate of stand-alone selling price. Our estimate of stand-alone selling price is established considering multiple factors including, but not limited to, geographies, market conditions, competitive landscape, internal costs, gross margin objectives, characteristics of targeted customers and pricing practices. The determination of estimated stand-alone selling price is made through consultation with and formal approval by management, taking into consideration the go-to-market strategy.

For certain revenue arrangements involving delivery of both systems and professional services, each is considered a distinct performance obligation. Systems revenue is recognized at a point in time when management has determined that control over systems has transferred to the customer, which is generally when legal title has transferred to the customer. For the same revenue arrangements, management believes that the output of the associated professional services is transferred to the customer over time. As such, professional services revenue is recognized over the period in which the services are provided using a cost input measure. We recognize revenue when control of the systems and services has been transferred to the customer, which may be earlier than system installation or customer acceptance, in accordance with the agreed-upon specifications in the contract.

### ***Inventory Valuation***

Inventory, which primarily consists of finished goods purchased from CMs or ODMs, is stated at the lower of cost (determined by the first-in, first-out method) and net realizable value. Inbound shipping costs and tariffs are included in the cost of inventory. In addition, we, from time to time, procure component inventory primarily as a result of manufacturing discontinuation of critical components by suppliers. We regularly monitor inventory quantities on-hand and record write-downs for excess and obsolete inventory based on our estimate of demand for our products, potential obsolescence of technology, product life cycle and whether pricing trends or forecasts indicate that the carrying value of inventory exceeds our estimated selling price. These factors are impacted by market and economic conditions, technology changes and new product introductions and require estimates that may include elements that are uncertain. Actual demand may differ from forecasted demand and may have a material effect on gross profit. If inventory is written down, a new cost basis is established that cannot be increased in future periods. The sale of previously reserved inventory has not had a material impact on our gross margin.

### ***Recent Accounting Pronouncements Not Yet Adopted***

There have been no additional accounting pronouncements or changes in accounting pronouncements that are significant or potentially significant to us.

## **Results of Operations for Years Ended December 31, 2019, 2018 and 2017**

### ***Revenue***

Our revenue is comprised of the following:

- Systems – includes revenue from the sale of access and premises systems, software platform licenses and cloud-based software subscriptions.
- Services – includes revenue from professional services, customer support, software- and cloud-based maintenance, extended warranty subscriptions, training and managed services.

The following table sets forth our revenue (dollars in thousands):

	Years Ended December 31,			2019 vs 2018 Change		2018 vs 2017 Change	
	2019	2018	2017	\$	%	\$	%
<b>Revenue:</b>							
Systems	\$ 393,231	\$ 405,923	\$ 421,890	\$ (12,692)	(3)%	\$ (15,967)	(4)%
Services	31,099	35,397	88,477	(4,298)	(12)%	(53,080)	(60)%
	<u>\$ 424,330</u>	<u>\$ 441,320</u>	<u>\$ 510,367</u>	<u>\$ (16,990)</u>	<u>(4)%</u>	<u>\$ (69,047)</u>	<u>(14)%</u>
<b>Percent of total revenue:</b>							
Systems	93%	92%	83%				
Services	7%	8%	17%				
	<u>100%</u>	<u>100%</u>	<u>100%</u>				

Our revenue is principally derived in the United States. Revenue generated in the United States represented approximately 86% of our total revenue in 2019, 88% in 2018 and 89% in 2017.

The decrease in revenue during 2019 compared with 2018 was due to lower systems revenue of \$12.7 million and lower services revenue of \$4.3 million. The decline in systems revenue was primarily due to reduced demand from CenturyLink, Frontier and our medium-sized ILEC customer base partially offset by growth in our small-sized customers as we continued to see strong demand for our software and cloud platform offerings and the addition of new customers. The decrease in services revenue was primarily due to lower volume of deployment services associated with CAF-funded customer deployments.

CenturyLink accounted for more than 10% of our total revenue in 2019, 2018 and 2017. See Note 12 “Revenue from Contracts with Customers” to the Consolidated Financial Statements set forth in this report for more details on concentration of revenue for the periods presented.

#### **Cost of Revenue, Gross Profit and Gross Margin**

The following table sets forth our cost of revenue (dollars in thousands):

	Years Ended December 31,			2019 vs 2018 Change		2018 vs 2017 Change	
	2019	2018	2017	\$	%	\$	%
<b>Cost of revenue:</b>							
Systems	\$ 211,309	\$ 216,529	\$ 236,137	\$ (5,220)	(2)%	\$ (19,608)	(8)%
Services	25,096	27,409	101,340	(2,313)	(8)%	(73,931)	(73)%
	<u>\$ 236,405</u>	<u>\$ 243,938</u>	<u>\$ 337,477</u>	<u>\$ (7,533)</u>	<u>(3)%</u>	<u>\$ (93,539)</u>	<u>(28)%</u>

The decrease in cost of revenue of \$7.5 million during 2019 as compared with 2018 was primarily attributable to lower revenue for 2019 as compared with 2018 mainly due to the reduced demand from CenturyLink as well as our medium-sized ILEC customer base. Partially offsetting the decrease in systems cost of revenue was an increase in U.S. tariff and tariff-related costs of \$3.0 million in 2019.

The following table sets forth our gross profit and gross margin (dollars in thousands):

	Years Ended December 31,			2019 vs 2018 Change		2018 vs 2017 Change	
	2019	2018	2017	\$	%	\$	%
<b>Gross profit:</b>							
Systems	\$ 181,922	\$ 189,394	\$ 185,753	\$ (7,472)	(4)%	\$ 3,641	2 %
Services	6,003	7,988	(12,863)	(1,985)	(25)%	20,851	(162)%
	<u>\$ 187,925</u>	<u>\$ 197,382</u>	<u>\$ 172,890</u>	<u>\$ (9,457)</u>	<u>(5)%</u>	<u>\$ 24,492</u>	<u>14 %</u>
<b>Gross margin:</b>							
Systems	46.3 %	46.7 %	44.0 %				
Services	19.3 %	22.6 %	(14.5) %				
	44.3 %	44.7 %	33.9 %				

Gross profit decreased by \$9.5 million to \$187.9 million during 2019 from \$197.4 million during 2018. Gross margin decreased to 44.3% during 2019 from 44.7% during 2018. During 2019 and 2018, systems gross margin was negatively impacted by U.S. tariff and tariff-related costs of \$6.2 million and \$3.2 million, or 160 and 70 basis points, respectively. Excluding the impact of U.S. tariff and tariff-related costs, systems gross margin was 47.9% and 47.4% for 2019 and 2018, respectively. This 50 basis

point improvement was mainly due to an increasing mix of our all-platform offerings that have higher gross margin than some of our older traditional systems.

Services gross margin decreased in 2019 primarily due to higher investments in customer success and support personnel to support the expansion of our various services offerings.

### **Operating Expenses**

#### **Research and Development Expenses**

Research and development expenses include personnel costs, outside contractor and consulting services, depreciation on lab equipment, costs of prototypes and overhead allocations. The following table sets forth our research and development expenses (dollars in thousands):

	Years Ended December 31,			2019 vs 2018 Change		2018 vs 2017 Change	
	2019	2018	2017	\$	%	\$	%
Research and development	\$ 81,184	\$ 89,963	\$ 127,541	\$ (8,779)	(10)%	\$ (37,578)	(29)%
Percent of total revenue	19%	20%	25%				

The decrease in research and development expenses during 2019 compared with 2018 was primarily due to lower compensation and employee benefits costs of \$4.9 million, mainly due to restructuring activities during 2017 and the first quarter of 2018, lower stock-based compensation of \$2.1 million and lower outside services of \$1.8 million.

We expect our investments in research and development will be relatively consistent in absolute dollars from our current post-restructuring levels over the near term.

#### **Sales and Marketing Expenses**

Sales and marketing expenses consist of personnel costs, employee sales commissions, marketing programs and events, software tools and travel-related expenses. The following table sets forth our sales and marketing expenses (dollars in thousands):

	Years Ended December 31,			2019 vs 2018 Change		2018 vs 2017 Change	
	2019	2018	2017	\$	%	\$	%
Sales and marketing	\$ 82,553	\$ 86,432	\$ 82,781	\$ (3,879)	(4)%	\$ 3,651	4%
Percent of total revenue	19%	20%	16%				

Sales and marketing expenses decreased by \$3.9 million during 2019 compared with 2018 primarily due to lower personnel costs of \$2.2 million, including commissions which decreased as a result of lower sales, and lower stock-based compensation of \$2.4 million. The decrease was also due to lower facility expenses of \$0.5 million, offset by higher marketing costs of \$1.5 million mainly due to increased investment in our smart, connected home and business marketing programs.

We expect to increase our investments in sales and marketing in absolute dollars in order to extend our market reach and grow our business in support of our key strategic initiatives.

#### **General and Administrative Expenses**

General and administrative expenses consist primarily of personnel costs related to our executive, finance, human resources, information technology and legal organizations, outside consulting services, insurance, allocated facilities and fees for professional services. Professional services consist of outside audit, legal, accounting and tax services. The following table sets forth our general and administrative expenses (dollars in thousands):

	Years Ended December 31,			2019 vs 2018 Change		2018 vs 2017 Change	
	2019	2018	2017	\$	%	\$	%
General and administrative	\$ 37,115	\$ 40,500	\$ 39,875	\$ (3,385)	(8)%	\$ 625	2%
Percent of total revenue	9%	9%	8%				

The decrease in general and administrative expenses of \$3.4 million during 2019 compared with 2018 was primarily due to a decrease in consulting expenses of \$3.3 million and stock compensation of \$1.5 million. These decreases were partially offset by higher local taxes of \$0.4 million, higher office expenses of \$0.3 million and higher personnel costs of \$0.2 million. This decrease in consulting expense was largely a result of our adoption of a new accounting standard in the fourth quarter of 2018, which requires capitalization of certain implementation costs, including consulting and internal personnel expenses, related to our project to migrate our on-premise ERP system to a cloud model. We capitalized internal personnel expenses of \$1.8 million

in 2019 compared to \$0.4 million in 2018 related to our new ERP implementation. In January 2020, we commenced using our cloud-based ERP system and began amortizing the capitalized implementation costs over a period of five years.

Our general and administrative expenses will initially increase in 2020 in absolute dollars as a result of our ERP system being placed in service but are expected to decrease as a percentage of revenue over time.

### ***Loss on Asset Retirement***

During 2019, we recognized a charge of \$2.5 million relating to the retirement of an asset consisting of licensed software. Please refer to Note 4 “*Balance Sheet Details*” of the Notes to Consolidated Financial Statements included in this Annual Report on Form 10-K.

### ***Restructuring Charges***

We adopted a restructuring plan in March 2017. This restructuring plan realigned our business, increasing our focus towards investments in software platforms and cloud products, while reducing our expense structure in the traditional systems business. We began to take actions under this plan beginning in March 2017 and recognized \$4.2 million of restructuring charges during 2017, consisting of severance and other one-time termination benefits. Actions pursuant to this restructuring plan were complete as of December 31, 2017.

In the first quarter of 2018, we established a new restructuring plan to further realign our business resources based on the production releases of our platform offerings. We incurred restructuring charges of \$5.7 million during 2018, consisting primarily of severance and other termination related benefits. Actions pursuant to this restructuring plan were complete as of June 30, 2018.

### ***Gain on Sale of Product Line***

During 2018, we recognized a gain of \$6.7 million relating to the sale of our outdoor cabinet product line to Clearfield, Inc. for \$10.4 million.

### ***Interest and Other Income (Expense), Net***

The following table sets forth our interest and other income (expense), net (dollars in thousands):

	Years Ended December 31,			2019 vs 2018 Change		2018 vs 2017 Change	
	2019	2018	2017	\$	%	\$	%
Interest and other income (expense), net	\$ (1,131)	\$ (254)	\$ (233)	\$ (877)	345 %	\$ (21)	9 %

Interest and other income (expense) increased by \$0.9 million in 2019, compared with 2018, mainly due to higher interest expense related to new financing agreements and reduced foreign currency transaction gains in 2019 as compared to 2018.

### ***Provision for Income Taxes***

The provision for income taxes primarily consist of state and foreign income taxes. The following table sets forth our provision for income taxes (dollars in thousands):

	Years Ended December 31,			2019 vs 2018 Change		2018 vs 2017 Change	
	2019	2018	2017	\$	%	\$	%
Provision for income taxes	\$ 1,162	\$ 530	\$ 1,243	\$ 632	119%	\$ (713)	(57)%
Effective tax rate	(7.0)%	(2.8)%	(1.5)%				

The provision for income taxes increased by \$0.6 million from \$0.5 million in 2018 to \$1.2 million in 2019. The increase was primarily due to a provision for foreign withholding taxes on the repatriation of cash from our foreign subsidiaries.

On December 22, 2017, the U.S. government enacted comprehensive tax legislation commonly referred to as the “*Tax Cuts and Jobs Act*”, or the Tax Act. The significant impacts from the Tax Act include a net, one-time transition tax of \$1.1 million on unrepatriated earnings of foreign subsidiaries, which was offset by our current net operating loss, and a tax expense of \$84.4 million related to the revaluation of our deferred tax assets and liabilities due to the reduction of the U.S. corporate tax rate from 34% to 21%, which was offset by a reduction in our valuation allowance.

As of December 31, 2019, we had unrecognized tax benefits of \$22.3 million, none of which would affect our effective tax rate if recognized.

## 2018 Compared to 2017

For a comparison of our results of operations for the years ended December 31, 2018 and 2017, see Item 7 “*Management’s Discussion and Analysis of Financial Condition and Results of Operations*” of our Annual Report on Form 10-K for the year ended December 31, 2018, filed with the SEC on March 1, 2019.

### Liquidity and Capital Resources

We have funded our operations and investing activities primarily through cash generated from operations, borrowings on our line of credit, financing arrangements for certain lab equipment and consulting services for our ERP migration and sales of our common stock. As of December 31, 2019, we had cash and cash equivalents of \$46.8 million, which consisted of deposits held at banks and money market mutual funds held at major financial institutions. This includes \$2.4 million of cash primarily held by our China subsidiary. As of December 31, 2019, our liability for taxes that would be payable as a result of repatriation of undistributed earnings of our foreign subsidiaries to the United States was not significant and limited to withholding taxes considering our existing net operating loss carryovers.

The following table presents the cash inflows and outflows by activity during 2019, 2018 and 2017 (in thousands):

	Years Ended December 31,		
	2019	2018	2017
Net cash provided by (used in) operating activities	\$ 4,654	\$ 3,560	\$ (62,772)
Net cash provided by (used in) investing activities	(13,353)	(76)	19,734
Net cash provided by financing activities	5,971	7,492	31,990

### Operating Activities

Our operating activities provided cash of \$4.7 million in 2019, provided cash of \$3.6 million in 2018 and used cash of \$62.8 million in 2017. The increase in net cash provided by operating activities during 2019 as compared to 2018 was due primarily to a favorable change in our net operating results of \$5.5 million after adjustment of non-cash charges partially offset by a \$4.4 million net cash outflow resulting from changes in operating assets and liabilities.

In 2019, cash inflows from changes in operating assets and liabilities primarily consisted of a decrease in accounts receivable of \$20.5 million, mainly due to increased linearity of shipments during 2019 resulting in higher collections during the year, a decrease in inventory of \$10.0 million, primarily due to the consumption of transferred raw material inventory as we transitioned our supply chain, and an increase in deferred revenue of \$2.4 million due to increased support contracts, software maintenance and Calix Cloud subscriptions. Cash outflows from changes in operating assets and liabilities primarily consisted of a decrease in accounts payable of \$29.4 million, primarily due to timing of inventory purchases, a decrease in other long-term liabilities of \$3.4 million, mainly due to operating lease liability amortization, and a decrease in accrued liabilities of \$1.8 million, mainly related to incentive compensation payments to employees. Non-cash charges primarily consisted of stock-based compensation of \$11.2 million, depreciation and amortization of \$10.3 million and loss on asset retirements of \$2.6 million.

### Investing Activities

In 2019, net cash used in investing activities consisted of capital expenditures of \$13.4 million for purchases of test equipment, computer equipment and furniture and fixtures.

### Financing Activities

In 2019, net cash provided by financing activities of \$6.0 million primarily consisted of proceeds from the issuance of common stock under our employee stock purchase plans of \$8.4 million and from stock option exercises of \$0.4 million. This was partially offset by payments related to financing arrangements of \$2.7 million.

## 2018 Compared to 2017

For a discussion of our liquidity and capital resources and our cash flow activities for the years ended December 31, 2018 and 2017, see Item 7 “*Management’s Discussion and Analysis of Financial Condition and Results of Operations*”, of our Annual Report on Form 10-K for the year ended December 31, 2018, filed with the SEC on March 1, 2019.

### Working Capital and Capital Expenditure Needs

Our material cash commitments include contractual obligations under our BofA Loan Agreement, obligations from financing arrangements, minimum revenue-share obligations, normal recurring trade payables, compensation-related and expense accruals, operating leases and non-cancelable firm purchase commitments. We believe that our outsourced approach to manufacturing provides us significant flexibility in both managing inventory levels and financing our inventory. In the event

that our revenue plan does not meet our expectations, we may be required to eliminate or curtail expenditures to mitigate the impact on our working capital.

In August 2017, we entered into the SVB Loan Agreement, which provides for a revolving credit facility of up to \$30.0 million based on a customary accounts receivable borrowing base, subject to certain exceptions for accounts originating outside the United States and certain specific accounts, which could reduce the amount available to us under the credit facility. The SVB Loan Agreement includes affirmative and negative covenants and requires us to maintain a liquidity ratio at minimum levels specified in the SVB Loan Agreement. For the month ended November 30, 2017, we were not able to maintain the minimum Adjusted Quick Ratio, or AQR (as defined in the SVB Loan Agreement, as amended) at the level required in the SVB Loan Agreement, which constituted an event of default. Although SVB waived this event of default effective as of November 30, 2017 and, therefore, this default did not change our ability to borrow under the SVB Loan Agreement, we were required to amend certain covenants under the SVB Loan Agreement.

In February 2018, we entered into an amendment to the SVB Loan Agreement that, among other things, amended certain affirmative financial covenants, including reductions to the required minimum level of the AQR and the inclusion of an additional financial covenant related to the maintenance of Adjusted EBITDA (as defined in the SVB Loan Agreement, as amended). In August 2018, we entered into a second amendment to the SVB Loan Agreement that, among other things, extended the maturity date from August 7, 2019 to August 7, 2020, amended certain financial covenants, including covenants with respect to the AQR and Adjusted EBITDA, and changed the compliance requirements for the AQR covenant from a monthly basis to a quarterly basis. In February 2019, we entered into a third amendment to the SVB Loan Agreement to reduce the required minimum level of the AQR for the first half of 2019 and the required minimum Adjusted EBITDA for the first fiscal quarter of 2019 to accommodate the increased costs and use of cash that we anticipate for the first half of 2019 related to activities to mitigate the impact of the U.S. tariffs. As of September 28, 2019 and December 31, 2019, we were not able to maintain the minimum AQR at the level required in the SVB Loan Agreement, which constituted events of default. SVB waived these events of default effective as of September 28, 2019 and December 31, 2019, respectively, therefore, these defaults did not change our ability to borrow under the SVB Loan Agreement. In January 2020, we repaid outstanding borrowings and terminated the SVB Loan Agreement and entered into the BofA Loan Agreement. The BofA Loan Agreement requires us to maintain Availability (as defined in the BofA Loan Agreement) of at least \$5.0 million among other requirements and borrowing base restrictions. The availability of borrowings under the BofA Loan Agreement is subject to certain conditions and requirements, including among others, if at any time our Availability (as defined in the BofA Loan Agreement) is less than \$5.0 million, we must maintain a minimum fixed charge coverage ratio, or FCCR, (as defined in the BofA Loan Agreement) of 1.0 to 1.0. We believe the BofA Loan Agreement is structured to better support our business. Given our current financial position and history of operating losses, it is possible that we may fail the requirement to maintain Availability greater than \$5.0 million in a future period.

As of December 31, 2019, we borrowed the full principal amount under the SVB line of credit of \$30.0 million. Please refer to Note 5 “*Credit Agreements*” and Note 15 “*Subsequent Event*” of the Notes to Consolidated Financial Statements included in this Annual Report on Form 10-K for more details on the SVB Loan Agreement and the BofA Loan Agreement.

During 2018, we entered into financing arrangements to purchase lab equipment for approximately \$5.1 million. Each agreement is to be paid over 36 months with a weighted average interest rate of 6.2%. As of December 31, 2019, we had \$2.9 million outstanding under these financing arrangements.

During 2017, 2018 and 2019, in connection with our ERP implementation, we entered into financing arrangements for consulting services of \$5.4 million. The current amounts due under this agreement are to be paid over a weighted average term of 2.4 years with a weighted average interest rate of 6.5%. As of December 31, 2019, there was \$2.1 million outstanding under this arrangement.

In March 2018, we entered into an agreement with a vendor to develop a software product and related enhancements pursuant to which we will become obligated, if the delivered software product and related enhancements meet our technical requirements for commercial sale, to make minimum revenue-share payments of \$15.8 million over the subsequent three years. The payments are based on a revenue-share rate applied to revenue from the developed product and corresponding hardware sales subject to a minimum and a maximum aggregate amount over the three-year sales period. We had our first sale in August 2019. Revenue-share payments are paid quarterly in arrears. See Note 4 “*Balance Sheet Details*” of the Notes to Consolidated Financial Statements included in this Annual Report on Form 10-K.

We believe, based on our current operating plan and expected operating cash flows, that our existing cash and cash equivalents, along with available borrowings under our BofA Loan Agreement, will be sufficient to meet our anticipated cash needs for at least the next twelve months. Our future capital requirements will depend on many factors including our rate of revenue growth; timing of customer payments and payment terms, particularly of larger customers; the timing and extent of spending to support development efforts, particularly research and development related to growth initiatives such as our software and cloud platforms, and our ability to partner with third parties to outsource our research and development projects; our ability to

manage product cost, including the cost impact of the U.S. tariffs as well as our ability to continue to mitigate the cost impact through supply chain re-engineering, the possibility of additional tariffs that may impact our product costs and higher component costs associated with new technologies; our ability to implement efficiencies and maintain product margin levels; the expansion of sales and marketing activities; the success of revenue share programs; the timing of introductions and timing and rate of customer adoption of new products and enhancements to existing products; the slowdowns or declines in customer purchases of traditional systems; acquisition of new capabilities or technologies; and the continued market acceptance of our products. If we are unable to execute on our current operating plan or generate positive operating income and positive cash flows, our liquidity, results of operations and financial condition will be adversely affected and we may fail to meet the borrowing base requirements or comply with the covenants in the BofA Loan Agreement, in which case we may not be able to borrow under the BofA line of credit. We may need to seek other sources of liquidity, including the sale of equity or incremental borrowings, to support our working capital needs. In addition, we may choose to seek other sources of liquidity even if we believe we have generated sufficient cash flows to support our operational needs. There is no assurance that any other sources of liquidity may be available to us on acceptable terms or at all. If we are unable to generate sufficient cash flows or obtain other sources of liquidity, we will be forced to limit our development activities, reduce our investment in growth initiatives and institute cost-cutting measures, all of which may adversely impact our business and potential growth.

### ***Contractual Obligations and Commitments***

Our principal commitments as of December 31, 2019 consisted of our contractual obligations under the SVB Loan Agreement, financing arrangements, operating leases for office space and non-cancelable outstanding purchase obligations. The following table summarizes our contractual obligations at December 31, 2019 (in thousands):

	Payments Due by Period				
	Total	Less Than 1 Year	1-3 Years	3-5 Years	More Than 5 Years
Line of credit, including interest <sup>(1)</sup>	\$ 31,130	\$ 31,130	\$ —	\$ —	\$ —
Financing arrangements <sup>(2)</sup>	21,239	4,244	16,995	—	—
Operating lease obligations <sup>(3)</sup>	20,681	3,770	7,065	6,965	2,881
Non-cancelable purchase commitments <sup>(4)</sup>	52,511	52,511	—	—	—
	<u>\$ 125,561</u>	<u>\$ 91,655</u>	<u>\$ 24,060</u>	<u>\$ 6,965</u>	<u>\$ 2,881</u>

<sup>(1)</sup> Line of credit contractual obligations include projected interest payments over the term of the SVB Loan Agreement, assuming the interest rate in effect for the outstanding borrowings as of December 31, 2019 of 6.25% and payment of the borrowings on August 7, 2020, the contractual maturity date of the credit facility. See Note 5, “*Credit Agreements*” of the Notes to Consolidated Financial Statements included in this Annual Report on Form 10-K for further discussion regarding our contractual obligations relating to our line of credit.

<sup>(2)</sup> Represents installment payments, including interest, related to financing arrangements and estimated total minimum revenue-share obligations under the program, including imputed interest, of \$15.8 million associated with developed software product and related enhancements by an engineering service provider of which approximately \$12.8 million has been incurred. The schedule reflects our expected revenue-share payments based on our revenue projections for the developed products over a three-year sales period. If the minimum revenue-share payments are not achieved by the end of the three-year sales period, a true-up payment will be due. See Note 4 “*Balance Sheet Details*” of the Notes to Consolidated Financial Statements included in this Annual Report on Form 10-K for further discussion regarding our outstanding liability.

<sup>(3)</sup> Future minimum operating lease obligations in the table above include primarily payments for our office locations, which expire at various dates through 2025. See Note 6 “*Commitments and Contingencies*” of the Notes to Consolidated Financial Statements included in this Annual Report on Form 10-K for further discussion regarding our operating leases.

<sup>(4)</sup> Represents outstanding purchase commitments for inventory to be delivered by our third-party manufacturers. See Note 6 “*Commitments and Contingencies*” of the Notes to Consolidated Financial Statements included in this Annual Report on Form 10-K for further discussion regarding our outstanding purchase commitments.

### ***Off-Balance Sheet Arrangements***

As of December 31, 2019 and 2018, we did not have any off-balance sheet arrangements.



## ITEM 7A. Quantitative and Qualitative Disclosures About Market Risk

### Interest Rate Risk

The primary objectives of our investment activity are to preserve principal, provide liquidity and maximize income without significantly increasing risk. By policy, we do not enter into investments for trading or speculative purposes. As of December 31, 2019, we had cash and cash equivalents of \$46.8 million, which were held primarily in cash and money market funds. Due to the nature of these money market funds, we believe that we do not have any material exposure to changes in the fair value of our cash equivalents as a result of changes in interest rates.

Our exposure to interest rate risk also relates to the amount of interest we must pay on our borrowings under our revolving credit facility pursuant to our SVB Loan Agreement. Borrowings under the SVB Loan Agreement will bear interest through maturity at a variable annual rate based upon an annual rate of either a prime rate or a LIBOR rate, plus an applicable margin between 0.5% to 1.5% for prime rate advances and between 2.0% and 3.0% for LIBOR advances based on our maintenance of an applicable liquidity ratio. As of December 31, 2019, we had \$30.0 million outstanding in borrowings under the SVB Loan Agreement.

In January 2020, we terminated the SVB Loan Agreement and entered into the BofA Loan Agreement. Borrowings under the BofA Loan Agreement will bear interest through maturity at a variable annual rate based upon an annual rate of either a prime rate or a LIBOR rate, plus an applicable margin between 0.5% to 1.25% for prime rate advances and between 1.5% and 2.25% for LIBOR advances based on our FCCR.

### Foreign Currency Exchange Risk

Our primary foreign currency exposures are described below.

#### *Economic Exposure*

The direct effect of foreign currency fluctuations on our sales and expenses has not been material because our sales and expenses are primarily denominated in U.S. dollars, or USD. However, we are indirectly exposed to changes in foreign currency exchange rates related to our use of foreign contract manufacturers whom we pay in USD. Increases in the local currency rates of these vendors in relation to USD could cause an increase in the price of products that we purchase. Additionally, if the USD strengthens relative to other currencies, such strengthening could have an indirect effect on our sales to the extent it raises the cost of our products to non-U.S. customers and thereby reduces demand. A weaker USD could have the opposite effect. The precise indirect effect of currency fluctuations is difficult to measure or predict because our sales are influenced by many factors in addition to the impact of such currency fluctuations.

#### *Translation Exposure*

Our sales contracts are primarily denominated in USD and, therefore, the majority of our revenue is not subject to foreign currency risk. We are directly exposed to changes in foreign exchange rates to the extent such changes affect our expenses related to our foreign assets and liabilities with our active subsidiaries in China and the United Kingdom, whose functional currencies are the Chinese Renminbi, or RMB, and British Pounds Sterling, or GBP.

Our operating expenses are incurred primarily in the United States, in China associated with our research and development operations that are maintained there and in the United Kingdom for our international sales and marketing activities. Our operating expenses are generally denominated in the functional currencies of our subsidiaries in which the operations are located.

The percentages of our operating expenses denominated in the following currencies for the indicated fiscal years were as follows:

	Years Ended December 31,		
	2019	2018	2017
USD	90%	89%	89%
RMB	7	7	7
GBP	3	4	3
Other	—	—	1
	<u>100%</u>	<u>100%</u>	<u>100%</u>

If the currency exchange rates in 2019 had been the same as in 2018, our 2019 operating expenses would have decreased by approximately \$0.9 million. If the U.S. dollar had appreciated or depreciated by 10% relative to RMB and GBP, our operating expenses for 2019 would have decreased or increased by approximately \$1.9 million, or approximately 1%. We do not currently enter into forward exchange contracts to hedge exposure denominated in foreign currencies or any derivative

financial instruments. In the future, we may consider entering into hedging transactions to help mitigate our foreign currency exchange risk.

Foreign exchange rate fluctuations may also adversely impact our financial position as the assets and liabilities of our foreign operations are translated into USD in preparing our Consolidated Balance Sheets. The effect of foreign exchange rate fluctuations on our consolidated financial position for the year ended December 31, 2019 was a net translation loss of approximately \$0.1 million. This loss is recognized as an adjustment to stockholders' equity through accumulated other comprehensive loss.

*Transaction Exposure*

We have certain assets and liabilities, primarily receivables and accounts payable (including inter-company transactions) that are denominated in currencies other than the relevant entity's functional currency. In certain circumstances, changes in the functional currency value of these assets and liabilities create fluctuations in our reported consolidated financial position, cash flows and results of operations. Transaction gains and losses on these foreign currency denominated assets and liabilities are recognized each period within other income (expense), net in our Consolidated Statements of Comprehensive Loss. During the year ended December 31, 2019, we recognized a net gain related to these foreign exchange assets and liabilities of approximately \$0.1 million.

**ITEM 8. Financial Statements and Supplementary Data**

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## Report of Independent Registered Public Accounting Firm

To the Stockholders and Board of Directors  
Calix, Inc.:

### *Opinions on the Consolidated Financial Statements and Internal Control Over Financial Reporting*

We have audited the accompanying consolidated balance sheets of Calix, Inc. and subsidiaries (the Company) as of December 31, 2019 and 2018, the related consolidated statements of comprehensive loss, stockholders' equity, and cash flows for each of the years in the three-year period ended December 31, 2019, and the related notes (collectively, 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".

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 years in the three-year period ended December 31, 2019, in conformity with U.S. generally accepted accounting principles. 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 Committee of Sponsoring Organizations of the Treadway Commission".

### *Change in Accounting Principle*

As discussed in Note 1 to the consolidated financial statements, the Company has changed its method of accounting for leases as of January 1, 2019 due to the adoption of Financial Accounting Standard Board (FASB) Accounting Standard Codification No. 842, *Leases*.

### *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 the accompanying Management's Report on Internal Control Over Financial Reporting under Item 9A. Our responsibility is to express an opinion on the Company's consolidated financial statements and an opinion 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 (1) pertain to the maintenance of records that, in reasonable detail, accurately and fairly reflect the transactions and dispositions of the assets of the company; (2) provide reasonable assurance that transactions are recorded as necessary to permit preparation of financial statements in accordance with generally accepted accounting principles, and that receipts and expenditures of the company are being made only in accordance with authorizations of management and directors of the company; and (3) provide reasonable assurance regarding prevention or timely detection of unauthorized acquisition, use, or disposition of the company's assets that could have a material effect on the financial statements.

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

/s/ KPMG LLP

We have served as the Company's auditor since 2016.

San Francisco, California  
February 21, 2020

**CALIX, INC.**  
**CONSOLIDATED BALANCE SHEETS**  
(In thousands, except par value)

	<b>December 31,</b>	
	<b>2019</b>	<b>2018</b>
<b>ASSETS</b>		
<b>Current assets:</b>		
Cash and cash equivalents	\$ 46,829	\$ 49,646
Restricted cash	628	628
Accounts receivable, net	46,509	67,026
Inventory	40,153	50,151
Prepaid expenses and other current assets	9,698	7,306
Total current assets	<u>143,817</u>	<u>174,757</u>
Property and equipment, net	21,527	24,945
Right-of-use operating leases	15,864	—
Goodwill	116,175	116,175
Other assets	19,440	1,203
	<u>\$ 316,823</u>	<u>\$ 317,080</u>
<b>LIABILITIES AND STOCKHOLDERS' EQUITY</b>		
<b>Current liabilities:</b>		
Accounts payable	\$ 10,789	\$ 40,209
Accrued liabilities	57,546	57,869
Deferred revenue	17,158	15,600
Line of credit	30,000	30,000
Total current liabilities	<u>115,493</u>	<u>143,678</u>
Long-term portion of deferred revenue	18,340	17,496
Operating leases	14,337	—
Other long-term liabilities	14,625	3,972
Total liabilities	<u>162,795</u>	<u>165,146</u>
Commitments and contingencies (See Note 6)		
<b>Stockholders' equity:</b>		
Preferred stock, \$0.025 par value; 5,000 shares authorized; no shares issued and outstanding as of December 31, 2019 and 2018	—	—
Common stock, \$0.025 par value; 100,000 shares authorized; 61,778 shares issued and 56,448 shares outstanding as of December 31, 2019, and 59,285 shares issued and 53,955 shares outstanding as of December 31, 2018	1,545	1,482
Additional paid-in capital	895,899	876,073
Accumulated other comprehensive loss	(854)	(753)
Accumulated deficit	(702,576)	(684,882)
Treasury stock, 5,330 shares as of December 31, 2019 and 2018	(39,986)	(39,986)
Total stockholders' equity	<u>154,028</u>	<u>151,934</u>
	<u>\$ 316,823</u>	<u>\$ 317,080</u>

See accompanying notes to consolidated financial statements.

CALIX, INC.

CONSOLIDATED STATEMENTS OF COMPREHENSIVE LOSS  
(In thousands, except per share data)

	Years Ended December 31,		
	2019	2018	2017
Revenue:			
Systems	\$ 393,231	\$ 405,923	\$ 421,890
Services	31,099	35,397	88,477
Total revenue	424,330	441,320	510,367
Cost of revenue:			
Systems	211,309	216,529	236,137
Services	25,096	27,409	101,340
Total cost of revenue	236,405	243,938	337,477
Gross profit	187,925	197,382	172,890
Operating expenses:			
Research and development	81,184	89,963	127,541
Sales and marketing	82,553	86,432	82,781
General and administrative	37,115	40,500	39,875
Loss on asset retirement	2,474	—	—
Restructuring charges	—	5,705	4,249
Gain on sale of product line	—	(6,704)	—
Total operating expenses	203,326	215,896	254,446
Loss from operations	(15,401)	(18,514)	(81,556)
Interest and other income (expense), net:			
Interest expense, net	(958)	(632)	(160)
Other income (expense), net	(173)	378	(73)
Total interest and other income (expense), net	(1,131)	(254)	(233)
Loss before provision for income taxes	(16,532)	(18,768)	(81,789)
Provision for income taxes	1,162	530	1,243
Net loss	\$ (17,694)	\$ (19,298)	\$ (83,032)
Net loss per common share:			
Basic and diluted	\$ (0.32)	\$ (0.37)	\$ (1.66)
Weighted-average number of shares used to compute net loss per common share:			
Basic and diluted	54,993	52,609	50,155
Net loss	\$ (17,694)	\$ (19,298)	\$ (83,032)
Other comprehensive income (loss), net of tax:			
Unrealized gain on available-for-sale marketable securities, net	—	—	6
Foreign currency translation adjustments, net	(101)	(584)	481
Total other comprehensive income (loss), net of tax	(101)	(584)	487
Comprehensive loss	\$ (17,795)	\$ (19,882)	\$ (82,545)

See accompanying notes to consolidated financial statements.

CALIX, INC.

CONSOLIDATED STATEMENTS OF STOCKHOLDERS' EQUITY  
(In thousands)

	Common Stock		Additional Paid-in Capital	Accumulated Other Comprehensive Loss	Accumulated Deficit	Treasury Stock	Total Stockholders' Equity
	Shares	Amount					
<b>Balance as of December 31, 2016</b>	49,392	\$ 1,368	\$ 836,563	\$ (656)	\$ (584,325)	\$ (39,986)	\$ 212,964
Stock-based compensation	—	—	12,368	—	—	—	12,368
Exercise of stock options	11	—	62	—	—	—	62
Issuance of vested performance restricted stock units and restricted stock units, net of taxes withheld	994	24	(2,788)	—	—	—	(2,764)
Stock issued under employee stock purchase plans	1,112	29	4,849	—	—	—	4,878
Net loss	—	—	—	—	(83,032)	—	(83,032)
Other comprehensive income	—	—	—	487	—	—	487
<b>Balance as of December 31, 2017</b>	51,509	1,421	851,054	(169)	(667,357)	(39,986)	144,963
Stock-based compensation	—	—	17,473	—	—	—	17,473
Exercise of stock options	57	1	383	—	—	—	384
Issuance of vested performance restricted stock units and restricted stock units, net of taxes withheld	913	22	(96)	—	—	—	(74)
Stock issued under employee stock purchase plans	1,476	38	7,259	—	—	—	7,297
Cumulative effect of accounting change	—	—	—	—	1,773	—	1,773
Net loss	—	—	—	—	(19,298)	—	(19,298)
Other comprehensive loss	—	—	—	(584)	—	—	(584)
<b>Balance as of December 31, 2018</b>	53,955	1,482	876,073	(753)	(684,882)	(39,986)	151,934
Stock-based compensation	—	—	11,181	—	—	—	11,181
Exercise of stock options	75	2	440	—	—	—	442
Issuance of vested performance restricted stock units and restricted stock units, net of taxes withheld	611	15	(182)	—	—	—	(167)
Stock issued under employee stock purchase plans	1,807	46	8,387	—	—	—	8,433
Net loss	—	—	—	—	(17,694)	—	(17,694)
Other comprehensive loss	—	—	—	(101)	—	—	(101)
<b>Balance as of December 31, 2019</b>	<u>56,448</u>	<u>\$ 1,545</u>	<u>\$ 895,899</u>	<u>\$ (854)</u>	<u>\$ (702,576)</u>	<u>\$ (39,986)</u>	<u>\$ 154,028</u>

See accompanying notes to consolidated financial statements.

CALIX, INC.

CONSOLIDATED STATEMENTS OF CASH FLOWS  
(In thousands)

	Years Ended December 31,		
	2019	2018	2017
<b>Operating activities:</b>			
Net loss	\$ (17,694)	\$ (19,298)	\$ (83,032)
Adjustments to reconcile net loss to net cash provided by (used in) operating activities:			
Stock-based compensation	11,181	17,473	12,368
Depreciation and amortization	10,316	9,187	10,991
Loss on asset retirements	2,636	326	280
Gain on sale of product line	—	(6,704)	—
Changes in operating assets and liabilities:			
Accounts receivable, net	20,517	13,858	(29,056)
Inventory	9,998	(20,639)	13,016
Prepaid expenses and other assets	(63)	3,579	35,210
Accounts payable	(29,440)	4,596	11,759
Accrued liabilities	(1,836)	2,791	(20,184)
Deferred revenue	2,401	(1,426)	(14,370)
Other long-term liabilities	(3,362)	(183)	246
Net cash provided by (used in) operating activities	4,654	3,560	(62,772)
<b>Investing activities:</b>			
Purchases of property and equipment	(13,353)	(10,426)	(8,026)
Purchases of marketable securities	—	—	(8,732)
Sales of marketable securities	—	—	5,051
Maturities of marketable securities	—	—	31,441
Proceeds from sale of product line	—	10,350	—
Net cash provided by (used in) investing activities	(13,353)	(76)	19,734
<b>Financing activities:</b>			
Proceeds from exercise of stock options	442	384	62
Proceeds from employee stock purchase plans	8,433	7,297	4,878
Taxes paid for awards vested under equity incentive plan	(167)	(74)	(2,764)
Payments related to financing arrangements	(2,737)	—	—
Proceeds from line of credit	143,300	557,915	171,268
Repayments of line of credit	(143,300)	(557,915)	(141,268)
Payments to originate the line of credit	—	(115)	(186)
Net cash provided by financing activities	5,971	7,492	31,990
Effect of exchange rate changes on cash, cash equivalents and restricted cash	(89)	(477)	464
Net increase (decrease) in cash, cash equivalents and restricted cash	(2,817)	10,499	(10,584)
Cash, cash equivalents and restricted cash at beginning of year	50,274	39,775	50,359
Cash, cash equivalents and restricted cash at end of year	\$ 47,457	\$ 50,274	\$ 39,775
<b>Supplemental disclosures of cash flow information:</b>			
Interest paid	\$ 1,123	\$ 649	\$ 313
Income taxes paid	\$ 403	561	915
<b>Non-cash investing activities:</b>			
Changes in accounts payable and accrued liabilities related to purchases of property and equipment	\$ (2,435)	\$ 8,459	\$ (55)

See accompanying notes to consolidated financial statements.



## CALIX, INC.

### NOTES TO CONSOLIDATED FINANCIAL STATEMENTS

#### 1. Description of Business and Significant Accounting Policies

##### *Company*

Calix, Inc. (together with its subsidiaries, “Calix” or the “Company”) was incorporated in August 1999 and is a Delaware corporation. The Company is a leading global provider of cloud and software platforms, systems and services required to deliver the unified access network and smart premises of tomorrow. The Company’s platforms and services help its customers build next generation networks by embracing a DevOps operating model, optimize the subscriber experience by leveraging big data analytics and turn the complexity of the smart home and business into new revenue streams. The Company’s cloud and software platforms, systems and services enable communication service providers (“CSPs”) to provide a wide range of revenue-generating services, from basic voice and data to advanced broadband services, over legacy and next-generation access networks. The Company focuses on CSP access networks, the portion of the network that governs available bandwidth and determines the range and quality of services that can be offered to subscribers.

##### *Basis of Presentation and Accounting Guidance*

The accompanying consolidated financial statements have been prepared in accordance with the requirements of the U.S. Securities and Exchange Commission (“SEC”) and U.S. generally accepted accounting principles (“GAAP”). All significant intercompany balances and transactions have been eliminated in consolidation. Any reference in these notes to applicable accounting guidance (“guidance”) is meant to refer to the authoritative U.S. GAAP as found in the Financial Accounting Standards Board (“FASB”) Accounting Standards Codification (“ASC”).

##### *Use of Estimates*

The preparation of financial statements is in conformity with U.S. GAAP, which requires management to make estimates and assumptions that affect the amounts reported in the consolidated financial statements and accompanying notes. For the Company, these estimates include, but are not limited to: allowances for doubtful accounts and sales returns, excess and obsolete inventory, allowances for obligations to its contract manufacturers, valuation of stock-based compensation, useful lives assigned to long-lived assets, standard and extended warranty costs and contingencies. Actual results could differ from those estimates, and such differences could be material to the Company’s financial position and results of operations.

##### *Revenue Recognition*

The Company derives revenue from contracts with customers primarily from the following and categorizes its revenue as follows:

- Systems include revenue from the sale of access and premises systems, software platform licenses and cloud-based software subscriptions.
- Services include revenue from professional services, customer support, software- and cloud-based maintenance, extended warranty subscriptions, training and managed services.

Revenue is recognized when a performance obligation is satisfied, which occurs when control of the promised goods or services is transferred to the customer, in an amount that reflects the consideration the Company expects to be entitled to in exchange for those goods or services. Specifically, revenue from software platform licenses, which provides the customer with a right to use the software as it exists, is generally recognized upfront when made available to the customer. Revenue from cloud-based software subscriptions, customer support, maintenance, extended warranty subscriptions and managed services is generally recognized ratably over the contract term. Revenue from professional services and training is recognized as the services are completed.

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. A contract’s transaction price is allocated to each distinct performance obligation and recognized as revenue when, or as, the performance obligation is satisfied. The Company’s hardware products contain both software and non-software components that function together to deliver the products’ essential functionality and therefore constitutes a single performance obligation as the promise to transfer the individual software and non-software components is not separately identifiable and, therefore, not distinct. The Company’s contracts may include multiple performance obligations. For such arrangements, the Company allocates the contract’s transaction price to each performance obligation using the relative stand-alone selling price of each distinct good or service in the contract. The Company generally determines stand-alone selling prices based on the prices charged to customers or its best estimate of stand-alone selling price. The Company’s estimate of stand-alone selling price is established considering multiple factors including, but not limited to, geographies, market conditions, competitive landscape, internal costs, gross margin objectives, characteristics of targeted customers and pricing practices. The determination of

estimated stand-alone selling price is made through consultation with and formal approval by management, taking into consideration the go-to-market strategy.

For certain revenue arrangements involving delivery of both systems and professional services, each is considered a distinct performance obligation. Systems revenue is recognized at a point in time when management has determined that control over systems has transferred to the customer, which is generally when legal title has transferred to the customer. For the same revenue arrangements, management believes that the output of the associated professional services is transferred to the customer over time. As such, professional services revenue is recognized over the period in which the services are provided using a cost input measure. The Company recognizes revenue when control of the systems and services has been transferred to the customer, which may be earlier than system installation or customer acceptance, in accordance with the agreed-upon specifications in the contract.

### ***Cost of Revenue***

Cost of revenue consists primarily of finished goods inventory purchased from the Company's contract manufacturers, payroll and related expenses associated with managing the relationships with contract manufacturers, depreciation of manufacturing test equipment, warranty and retrofit costs, excess and obsolete inventory costs, shipping charges and amortization of certain intangible assets. It also includes contractor and other costs of services incurred directly related to the delivery of services to customers.

### ***Warranty and Retrofit***

The Company offers limited warranties for its hardware products for a period of one, three or five years, depending on the product type. The Company recognizes estimated costs related to warranty activities as a component of cost of revenue upon product shipment or upon identification of a specific product failure. Under certain circumstances, the Company also provides fixes on specifically identified performance failures for products that are outside of the standard warranty period and recognizes estimated costs related to retrofit activities as a component of cost of revenue upon identification of such product failures. The Company recognizes estimated warranty and retrofit costs when it is probable that a liability has been incurred and the amount of loss is reasonably estimable. The estimates are based upon historical and projected product failure and claim rates, historical costs incurred in correcting product failures and information available related to any specifically identified product failures. Judgment is required in estimating costs associated with warranty and retrofit activities, and the Company's estimates are limited to information available to the Company at the time of such estimates. In some cases, such as when a specific product failure is first identified or a new product is introduced, the Company may initially have limited information and limited historical failure and claim rates upon which to base its estimates, and such estimates may require revision in future periods. The recorded amount is adjusted from time to time for specifically identified warranty and retrofit exposure. Actual warranty and retrofit expenses are charged against the Company's estimated warranty and retrofit liability when incurred. Factors that affect the Company's warranty and retrofit liability include the number of active installed units and historical and anticipated rates of warranty and retrofit claims and cost per claim.

### ***Stock-Based Compensation***

Stock-based compensation expense associated with stock options, performance stock options ("PSOs"), restricted stock units ("RSUs") and purchase rights under the Amended and Restated Employee Stock Purchase Plan (the "ESPP") and the Amended and Restated 2017 Nonqualified Employee Stock Purchase Plan (the "NQ ESPP") is measured at the grant date based on the fair value of the award, and is recognized, net of forfeitures, as expense over the remaining requisite service period (generally the vesting period) on a straight-line basis.

The fair value of stock option and employee stock purchase right under the ESPP is estimated at the grant date using the Black-Scholes option valuation model. The fair value of RSUs and employee stock purchase right under the Nonqualified ESPP is based on closing market price of the Company's common stock on the date of grant.

Stock-based compensation expense associated with PSOs with graded vesting features and which contain both a performance and a service condition is measured based on fair value of stock options estimated at the grant date using the Black-Scholes option valuation model, and is recognized, net of forfeitures, as expense over the requisite service period using the graded vesting attribution method.

Compensation expense is only recognized if the Company has determined that it is probable that the performance condition will be met. The Company reassesses the probability of vesting at each reporting period and adjusts compensation expense based on its probability assessment.

### ***Loss Contingencies***

From time to time, the Company is involved in legal proceedings arising from the normal course of business activities. The Company evaluates the likelihood of an unfavorable outcome of legal proceedings to which it is a party and accrues a loss

contingency when the loss is probable and reasonably estimable. Assessing legal contingencies involves significant judgment and estimates, and the outcome of litigation is inherently uncertain and subject to numerous factors outside the Company's control. Significant judgment is required when the Company assesses the likelihood of any adverse judgments or outcomes, including the potential range of possible losses, and whether losses are probable and reasonably estimable.

Because of uncertainties related to these matters, the Company bases its estimates of whether a loss contingency is probable or reasonably possible, as well as the reasonable range of possible losses associated with each loss contingency, only on the information available at the time. As additional information becomes available, and at least quarterly, the Company reassesses the potential liability on each significant matter and may revise its estimates. These revisions could have a material impact on the Company's business, operating results or financial condition. The actual outcome of these legal proceedings may materially differ from the Company's estimates of potential liability, which could have a material adverse effect on the Company's business, operating results or financial condition.

### ***Credit Risk and Inventory Supplier Concentrations***

Financial instruments that potentially subject the Company to significant concentrations of credit risk consist primarily of cash and cash equivalents and accounts receivable. Cash equivalents consist of money market funds, which are invested through financial institutions in the United States. Deposits in these financial institutions may, at times, exceed federally insured limits. The Company has not experienced any losses in such accounts. The Company also has approximately \$2.4 million of cash held by its foreign subsidiaries in Brazil, China and the United Kingdom. Management believes that the financial institutions that hold the Company's cash and cash equivalents are financially sound and, accordingly, minimal credit risk exists with respect to these cash and cash equivalents.

The Company depends primarily on a small number of outside contract manufacturers ("CMs") and original design manufacturers ("ODMs") for the bulk of its finished goods inventory. The Company generally purchases its products through purchase orders with its suppliers. While the Company seeks to maintain a sufficient supply of its products, the Company's business and results of operations could be adversely affected by a stoppage or delay in receiving such products, the receipt of defective parts, an increase in price of such products or the Company's inability to obtain lower prices from its CMs, ODMs and other suppliers in response to competitive pressures.

### ***Fair Value of Financial Instruments***

The carrying amounts of cash and cash equivalents, marketable securities, trade receivables, accounts payable, line of credit and other accrued liabilities approximate their fair value due to their relatively short-term nature.

### ***Cash, Cash Equivalents, Restricted Cash and Marketable Securities***

Cash equivalents and marketable securities are stated at amounts that approximate fair value based on quoted market prices.

Restricted cash is cash that is legally restricted as to withdrawal or usage. As of December 31, 2019, the Company had \$0.6 million in restricted cash related to a letter of credit in connection with its San Jose facility lease.

The Company has invested its excess cash primarily in money market funds and highly liquid marketable securities such as corporate debt instruments, commercial paper and U.S. government agency securities. The Company considers all investments with maturities of three months or less when purchased to be cash equivalents. Marketable securities represent highly liquid corporate debt instruments, commercial paper and U.S. government agency securities with maturities greater than 90 days at date of purchase. Marketable securities with maturities greater than one year are classified as current because management considers all marketable securities to be available for current operations.

The Company's investments have been classified and accounted for as available-for-sale. Such investments are recorded at fair value and unrealized holding gains and losses are reported as a separate component of comprehensive loss in the stockholders' equity until realized. Realized gains and losses on sales of marketable securities, if any, are determined on the specific identification method and are reclassified from accumulated other comprehensive loss to results of operations as "Other income (expense), net". The Company had no investments as of December 31, 2019 and 2018.

### ***Allowance for Doubtful Accounts***

The Company maintains an allowance for doubtful accounts for estimated losses resulting from the inability of its customers to make required payments. The Company records a specific allowance based on an analysis of individual past-due balances. Additionally, based on historical write-offs and the Company's collection experience, the Company records an additional allowance based on a percentage of outstanding receivables. The Company performs credit evaluations of its customers' financial condition. These evaluations require judgment and are based on a variety of factors including, but not limited to, current economic trends, payment history and a financial review of the customer. Actual collection losses may differ from management's estimates, and such differences could be material to the Company's financial position and results of operations.

### ***Inventory Valuation***

Inventory, which primarily consists of finished goods purchased from CMs or ODMs, is stated at the lower of cost (determined by the first-in, first-out method) or market value. Inbound shipping costs and U.S. tariffs are included in cost of inventory. In addition, the Company, from time to time, procures component inventory primarily as a result of manufacturing discontinuation of critical components by suppliers. The Company regularly monitors inventory quantities on hand and records write-downs for excess and obsolete inventories based on the Company's estimate of demand for its products, potential obsolescence of technology, product life cycles and whether pricing trends or forecasts indicate that the carrying value of inventory exceeds its estimated selling price. These factors are impacted by market and economic conditions, technology changes and new product introductions and require significant estimates that may include elements that are uncertain. Actual demand may differ from forecasted demand and may have a material effect on gross profit. If inventory is written down, a new cost basis is established that cannot be increased in future periods. Shipments from suppliers before the Company receives them are recorded as in-transit inventory when title and the significant risks and rewards of ownership have passed to the Company.

### ***Contract Costs***

The Company capitalizes sales commissions primarily related to extended warranty and Calix Cloud contracts for which the expected amortization period is greater than one year.

Capitalized commissions are amortized as sales and marketing expenses over the period that the related revenue is recognized, which typically range from three to ten years for extended warranty and cloud offerings. The Company classifies the unamortized portion of deferred commissions as current or noncurrent based on the timing of when the Company expects to recognize the expense. The current and noncurrent portions of deferred commissions are included in prepaid expenses and other current assets and other assets, respectively, in the Company's Consolidated Balance Sheets.

### ***Property and Equipment***

Property and equipment are stated at cost, less accumulated depreciation, and are depreciated using the straight-line method over the estimated useful life of each asset. Generally, computer equipment is depreciated over two years; purchased software is depreciated over three to five years; test equipment is depreciated over three years; furniture and fixtures are depreciated over seven years; and leasehold improvements are depreciated over the shorter of the respective lease term or the estimated useful life of the asset. Maintenance and repairs are charged to expense as incurred.

### ***Goodwill***

Goodwill was recorded as a result of the Company's acquisitions of Occam Networks, Inc. in February 2011 and Optical Solutions, Inc. in February 2006. The Company records goodwill when consideration paid in a business acquisition exceeds the fair value of the net tangible assets and the identified intangible assets acquired. Goodwill is not amortized but instead is subject to an annual impairment test or more frequently if events or changes in circumstances indicate that it may be impaired. The Company evaluates goodwill on an annual basis as of the end of the second quarter of each fiscal year. Management has determined that it operates as a single reporting unit and, therefore, evaluates goodwill impairment at the enterprise level.

In an annual impairment test, the Company first assesses qualitative factors to determine whether it is necessary to perform the two-step quantitative goodwill impairment test. In assessing the qualitative factors, management considers the impact of these key factors: macro-economic conditions, industry and market environment, overall financial performance of the Company, cash flow from operating activities, market capitalization and stock price. If the Company determines as a result of the qualitative assessment that it is more likely than not (that is, a likelihood of more than 50 percent) that the fair value of a reporting unit is less than its carrying amount, then the quantitative test is required. Otherwise, no further testing is required.

In a quantitative test, the Company compares its fair value to its carrying value including goodwill. The Company determines its fair value using both an income approach and a market approach. Under the income approach, the Company determines fair value based on estimated future cash flows, discounted by an estimated weighted-average cost of capital, which reflects the overall level of inherent risk of the Company and the rate of return an outside investor would expect to earn. Under the market-based approach, the Company utilizes information regarding the Company as well as publicly available industry information to determine earnings multiples that are used to value the Company. If the carrying value of the Company exceeds its fair value, the Company will determine the amount of impairment loss by comparing the implied fair value of goodwill with the carrying value of goodwill. An impairment charge is recognized for the excess of the carrying value of goodwill over its implied fair value.

At the end of the second quarter of 2019, the Company completed its annual goodwill impairment test. Based on its assessment of the above qualitative factors, management concluded that the fair value of the Company was more likely than not greater than its carrying amount as of June 30, 2019. As such, it was not necessary to perform the two-step quantitative goodwill impairment test at the time.

There have been no significant events or changes in circumstances subsequent to the 2019 annual impairment test that would more likely than not indicate that the carrying value of goodwill may have been impaired as of December 31, 2019. Therefore, there was no impairment to the carrying value of the Company's goodwill as of December 31, 2019. There were no impairment losses for goodwill for the years ended December 31, 2018 or 2017.

### ***Deferred Revenue***

Deferred revenue results from transactions where the Company billed the customer for products or services and when cash payments are received or due prior to transferring control of the promised goods or services to the customer.

Payment terms to customers typically range from net 30 to net 90 days and vary by the size and location of customer and the products or services offered. The period between the transfer of control of the promised good or service to a customer and when payment is due is not significant.

### ***Income Taxes***

The Company evaluates its tax positions and estimates its current tax exposure along with assessing temporary differences that result from different book to tax treatment of items not currently deductible for tax purposes. These differences result in deferred tax assets and liabilities on the Company's Consolidated Balance Sheets, which are estimated based upon the difference between the financial statement and tax bases of assets and liabilities using the enacted tax rates that will be in effect when these differences reverse. In general, deferred tax assets represent future tax benefits to be received when certain expenses previously recognized in the Company's Consolidated Statements of Comprehensive Loss become deductible expenses under applicable income tax laws or loss or credit carryforwards are utilized. Accordingly, realization of the Company's deferred tax assets is dependent on future taxable income against which these deductions, losses and credits can be utilized.

The Company must assess the likelihood that the Company's deferred tax assets will be recovered from future taxable income, and to the extent the Company believes that recovery is not more likely than not, the Company must establish a valuation allowance. Management judgment is required in determining the Company's provision for income taxes, the Company's deferred tax assets and liabilities and any valuation allowance recorded against the Company's net deferred tax assets. Excluding foreign operations, the Company recorded a full valuation allowance at each balance sheet date presented because, based on the available evidence, the Company believes it is more likely than not that it will not be able to utilize all of its deferred tax assets in the future. The Company intends to maintain the full valuation allowance until sufficient evidence exists to support the reversal of the valuation allowance.

### ***Newly Adopted Accounting Standards***

#### ***Leases***

In February 2016, the FASB issued Accounting Standards Update No. 2016-02, Leases (Topic 842), which requires recognition of an asset and liability for lease arrangements longer than twelve months. The Company adopted the new standard effective January 1, 2019 using the effective date approach which eliminates the need to restate amounts presented prior to that date. The Company also elected the package of practical expedients but not the hindsight practical expedient. The adoption had a material impact on the Company's Consolidated Balance Sheets but did not impact the Company's Consolidated Statements of Comprehensive Loss, Cash Flows or Stockholders' Equity. Upon adoption on January 1, 2019, the Company recognized an operating lease right-of-use asset of \$15.8 million and a lease liability of \$16.7 million.

### ***Recent Accounting Pronouncements Not Yet Adopted***

There have been no accounting pronouncements or changes in accounting pronouncements that are significant or potentially significant to the Company.

## 2. Cash, Cash Equivalents and Restricted Cash

Cash, cash equivalents and restricted cash consisted of the following (in thousands):

	December 31,	
	2019	2018
Cash and cash equivalents:		
Cash	\$ 46,815	\$ 45,806
Money market funds	14	3,840
Total cash and cash equivalents	46,829	49,646
Restricted cash	628	628
	<u>\$ 47,457</u>	<u>\$ 50,274</u>

The carrying amounts of the Company's money market funds approximate their fair values due to their nature, duration and short maturities.

## 3. Fair Value Measurements

The Company measures its cash equivalents and marketable securities at fair value on a recurring basis. Fair value is an exit price, representing the amount that would be received to sell an asset or paid to transfer a liability in an orderly transaction between market participants. As such, fair value is a market-based measurement that should be determined based on assumptions that market participants would use in pricing an asset or liability. The Company utilizes the following three-tier value hierarchy which prioritizes the inputs used in measuring fair value:

Level 1 – Observable inputs that reflect quoted prices (unadjusted) for identical assets or liabilities in active markets.

Level 2 – Observable inputs other than quoted prices included in Level 1 for similar instruments in active markets, quoted prices for identical or similar instruments in markets that are not active, and model-driven valuations in which all significant inputs and significant value drivers are observable in active markets.

Level 3 – Unobservable inputs to the valuation derived from fair valuation techniques in which one or more significant inputs or significant value drivers are unobservable. The fair value hierarchy also requires the Company to maximize the use of observable inputs, when available, and to minimize the use of unobservable inputs when determining inputs and determining fair value.

As of December 31, 2019 and 2018, the Company had money market funds of \$14,000 and \$3.8 million, respectively, and each was classified as a Level 1 financial asset. The fair values of money market funds classified as Level 1 were derived from quoted market prices as active markets for these instruments exist. The Company had no Level 2 or Level 3 financial assets.

## 4. Balance Sheet Details

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

	December 31,	
	2019	2018
Accounts receivable	\$ 46,883	\$ 67,396
Allowance for doubtful accounts	(374)	(370)
	<u>\$ 46,509</u>	<u>\$ 67,026</u>

The table below summarizes the changes in allowance for doubtful accounts and product return liability for the periods indicated (in thousands):

	Balance at Beginning of Year	Additions Charged to Costs or Expenses or Revenue	Deductions and Write Offs	Balance at End of Year
<b>Year Ended December 31, 2019</b>				
Allowance for doubtful accounts	\$ 370	\$ 168	\$ (164)	\$ 374
Product return liability	880	1,620	(1,581)	919
<b>Year Ended December 31, 2018</b>				
Allowance for doubtful accounts	\$ 579	\$ (5)	\$ (204)	\$ 370
Product return liability	822	771	(713)	880
<b>Year Ended December 31, 2017</b>				
Allowance for doubtful accounts	\$ 518	\$ 103	\$ (42)	\$ 579
Product return liability	938	3,682	(3,798)	822

Inventory consisted of the following (in thousands):

	December 31,	
	2019	2018
Raw materials	\$ 656	\$ 10,815
Finished goods	39,497	39,336
	<u>\$ 40,153</u>	<u>\$ 50,151</u>

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

	December 31,	
	2019	2018
Test equipment	\$ 37,001	\$ 39,148
Software	20,646	24,355
Computer equipment	10,835	10,342
Furniture and fixtures	2,342	1,976
Leasehold improvements	2,047	3,559
	72,871	79,380
Accumulated depreciation and amortization	(51,344)	(54,435)
	<u>\$ 21,527</u>	<u>\$ 24,945</u>

Depreciation and amortization expenses were \$10.3 million, \$9.2 million and \$11.0 million for the years ended December 31, 2019, 2018 and 2017, respectively.

#### *Loss on Asset Retirement*

In July 2018, in connection with establishing a direct relationship with Verizon Communications, Inc. (“Verizon”), the Company licensed software from a former partner to support the Company's deployments at Verizon. During the third quarter of 2019, Verizon informed the Company that it no longer required this software. As a result, the Company wrote off the software in the third quarter of 2019, resulting in a \$2.5 million charge in the Company's Consolidated Statements of Comprehensive Income (Loss).

Other long-term assets consisted of the following (in thousands):

	December 31,	
	2019	2018
Intangible asset	\$ 12,148	\$ —
Capitalized cloud implementation costs	6,089	—
Other long-term assets	1,203	1,203
	<u>\$ 19,440</u>	<u>\$ 1,203</u>

### *Intangible Asset Acquisition*

In March 2018, the Company entered into an agreement with a vendor to develop certain software product and related enhancements pursuant to which the Company may be obligated to make minimum revenue-share payments under the program of up to \$15.8 million over the three years following availability for sale. The payments are based on a revenue-share rate applied to revenue from the developed-product and the corresponding hardware sales subject to a minimum and a maximum aggregate amount over the three-year sales period. The Company had its first sale in August 2019, and as a result, the Company capitalized an intangible asset with a value of \$13.2 million in the third quarter of 2019 and also recognized a liability of \$13.2 million (a non-cash investing activity). The balance of \$13.5 million is included in accrued liabilities and other long-term liabilities in the accompanying Consolidated Balance Sheet as of December 31, 2019. The values of the intangible asset and liability were based on the net present value of the expected payments using a 6.5% discount rate. The intangible asset has a five-year useful life and will be amortized using the ratio of current gross revenue for the products to the total of current and anticipated future gross revenue for the products, or the straight-line method, whichever is greater.

Accrued liabilities consisted of the following (in thousands):

	December 31,	
	2019	2018
Compensation and related benefits	\$ 19,010	\$ 19,811
Warranty and retrofit	7,294	8,547
Customer advances or rebates	7,252	6,103
Professional and consulting fees	4,996	6,060
Current portion of financing arrangements	4,044	2,359
Operating leases	2,663	—
Taxes payable	2,021	1,516
Component inventory held by suppliers	1,925	2,667
Operations	1,053	1,059
Product returns	919	880
Insurance	852	917
Freight	808	1,187
Business events	—	1,696
Other	4,709	5,067
	<u>\$ 57,546</u>	<u>\$ 57,869</u>

Changes in the Company's accrued warranty and retrofit liability were as follows (in thousands):

	Years Ended December 31,		
	2019	2018	2017
Balance at beginning of year	\$ 8,547	\$ 8,708	\$ 12,214
Provision for warranty and retrofit charged to cost of revenue	4,425	5,215	8,720
Utilization of reserve	(5,678)	(5,376)	(12,226)
Balance at end of year	<u>\$ 7,294</u>	<u>\$ 8,547</u>	<u>\$ 8,708</u>

### *Accrued Restructuring Charges*

The Company adopted a restructuring plan in March 2017. This restructuring plan realigned the Company's business, increasing its focus towards its investments in software defined access and cloud products, while reducing its expense structure in its traditional systems business. The Company began to take actions under this plan beginning in March 2017 and recognized \$4.2 million of restructuring charges for the year ended December 31, 2017, consisting primarily of severance and other one-time termination benefits. Actions pursuant to this restructuring plan were complete as of December 31, 2017.

The Company established a new restructuring plan in February 2018 to further align its business resources based on the production releases of its platform offerings. The Company incurred restructuring charges of approximately \$5.7 million for the year ended December 31, 2018, consisting primarily of severance and other termination related benefits.



The following table summarizes the activities pursuant to the above restructuring plans (in thousands):

	Severance and Related Benefits	Facilities	Total
Balance as of December 31, 2017	\$ 975	\$ 442	\$ 1,417
Restructuring charges for the year	5,203	502	5,705
Cash payments	(6,178)	(916)	(7,094)
Balance as of December 31, 2018	—	28	28
Cash payments	—	(28)	(28)
Balance as of December 31, 2019	\$ —	\$ —	\$ —

## 5. Credit Agreements

### *Line of Credit*

On August 7, 2017, the Company entered into a loan and security agreement with Silicon Valley Bank (the “SVB Loan Agreement”). The SVB Loan Agreement provides for a senior secured revolving credit facility, pursuant to which SVB agreed to make revolving advances available to the Company in a principal amount of up to \$30.0 million based on a customary accounts receivable borrowing base, subject to certain exceptions for accounts originating outside the United States and certain specific accounts, which could reduce the amount available to the Company under the credit facility.

The credit facility includes affirmative and negative covenants applicable to the Company and its subsidiaries. Furthermore, the SVB Loan Agreement requires the Company to maintain a liquidity ratio at minimum levels set forth in more detail in the SVB Loan Agreement. The credit facility also includes events of default, the occurrence and continuation of which, would provide SVB with the right to demand immediate repayment of any principal and unpaid interest under the credit facility, and to exercise remedies against the Company and the collateral securing the loans under the credit facility. In February 2019, the Company entered into a third amendment to the SVB Loan Agreement to reduce the required minimum level of the Adjusted Quick Ratio (“AQR”) for the first half of 2019 and the required minimum Adjusted EBITDA for the first fiscal quarter of 2019 to accommodate the increased costs and use of cash that the Company anticipated for the first half of 2019 related to activities to mitigate the impact of the U.S. tariffs. As of September 28, 2019 and December 31, 2019, the Company was in compliance with all these requirements except for the minimum AQR covenant. The Company was not able to maintain the minimum AQR at the level required in the SVB Loan Agreement, which constituted events of default. SVB waived the events of default effective as of September 28, 2019 and December 31, 2019, respectively, and, therefore, these defaults did not change the Company’s ability to borrow under the SVB Loan Agreement.

As of December 31, 2019 and 2018, the Company had borrowings outstanding of \$30.0 million under the line of credit, which represents the full capacity available under the facility. The Company’s interest rate on the line of credit was 6.3% as of December 31, 2019 and 7.0% as of December 31, 2018.

In January 2020, the Company replaced the SVB Loan Agreement with a new asset-based credit facility with Bank of America (“BofA”). See Note 15 “*Subsequent Event*”.

### *Financing Arrangements*

During 2018, the Company entered into financing arrangements to purchase lab and test equipment for approximately \$5.1 million, which are non-cash investing activities. Each agreement is to be paid over 36 months with a weighted average interest rate of 6.2%. As of December 31, 2019, there was \$2.9 million outstanding under these financing arrangements, which is included in accrued liabilities and other long-term liabilities in the accompanying Consolidated Balance Sheet.

During 2017, 2018 and 2019, the Company entered into financing arrangements for consulting services of \$5.4 million in connection with the Company’s enterprise resource planning (“ERP”) implementation. These were non-cash investing activities of \$2.0 million, \$1.8 million and \$1.6 million for years ended December 31, 2019, 2018 and 2017, respectively. The current amounts due under this agreement are to be paid over a weighted average term of 2.4 years with a weighted average interest rate of 6.5%. As of December 31, 2019, there was \$2.1 million outstanding under these arrangements, which is included in accrued liabilities and other long-term liabilities in the accompanying Consolidated Balance Sheet.

## 6. Commitments and Contingencies

### Lease Commitments

The Company leases office space under non-cancelable operating leases. Certain of the Company's operating leases contain renewal options and rent acceleration clauses. Future minimum payments under the non-cancelable operating leases consisted of the following as of December 31, 2019 (in thousands):

Year Ending December 31,	Future Minimum Lease Payments
2020	\$ 3,769
2021	3,604
2022	3,461
2023	3,578
2024	3,388
Thereafter	2,881
Total future minimum lease payments	20,681
Less imputed interest	(3,681)
	<u>\$ 17,000</u>

Operating lease liability consisted of the following (in thousands):

	December 31, 2019
Accrued liabilities - current portion of operating leases	\$ 2,663
Operating leases	14,337
	<u>\$ 17,000</u>

Prior to the adoption of Topic 842, future minimum lease payments under the non-cancelable operating leases as of December 31, 2018, which were undiscounted, were as follows (in thousands):

Year Ending December 31,	Future Minimum Lease Payments
2019	\$ 3,750
2020	3,817
2021	3,468
2022	3,300
2023	3,411
Thereafter	6,053
	<u>\$ 23,799</u>

The Company leases its headquarters office space in San Jose, California under a lease agreement that expires in December 2025. The future minimum lease payments under the lease are \$14.0 million and are included in the table for the year ended December 31, 2019 above.

In August 2018, the Company entered into a new office lease agreement in Petaluma, California. The lease commenced in February 2019 for a term of 64 months. The future minimum lease payments of \$2.5 million are included in the table for the year ended December 31, 2019 above. The Company recorded a right-of-use operating lease asset and operating lease liability of \$2.2 million in the first quarter of 2019. The Company's previous lease in Petaluma, California expired in March 2019.

The above tables also include future minimum lease payments for the Company's office facilities in Nanjing, China; Plymouth, Minnesota; Richardson, Texas; and West Jordan, Utah, which expire at various dates through 2025.

The weighted average discount rate for the Company's operating leases as of December 31, 2019 was 7.0%. The weighted average remaining lease term as of December 31, 2019 was 5.1 years.

For the years ended December 31, 2019, 2018 and 2017, total rent expense of the Company was \$4.7 million, \$3.4 million and \$3.7 million, respectively. Cash paid within operating cash flows for operating leases was \$3.7 million for year ended December 31, 2019.

### *Purchase Commitments*

The Company's CMs and ODMs place orders for certain component inventory in advance of the Company's orders based upon the Company's forecasts in order to reduce manufacturing lead times and ensure adequate component supply. The Company generally does not take ownership of the components held by CMs and ODMs. The Company places purchase orders with its CMs and ODMs in order to fulfill its monthly finished product inventory requirements. The Company incurs a liability when the CMs and ODMs convert the component inventory to a finished product subject to purchase orders and takes ownership of the finished goods inventory. In the event of termination of services with a manufacturing partner, the Company has purchased, and may be required to purchase in the future, certain of the remaining components inventory held by the CM or ODM as well as any outstanding orders pursuant to the contractual provisions with such CM or ODM. As of December 31, 2019, the Company had approximately \$52.5 million of outstanding purchase commitments for inventory to be delivered by its suppliers, including CMs and ODMs, within one year.

The Company has, from time to time and subject to certain conditions, purchased from suppliers component inventory when this inventory has been rendered excess or obsolete due to manufacturing and engineering change orders resulting from design changes or manufacturing discontinuation of parts by its suppliers, or in cases where inventory levels greatly exceed projected demand. The estimated excess and obsolete inventory at suppliers was \$1.9 million and \$2.7 million as of December 31, 2019 and 2018, respectively, which is included in accrued liabilities in the accompanying Consolidated Balance Sheets. The Company records the related charges in cost of systems revenue in its Consolidated Statements of Comprehensive Loss.

### *Litigation*

From time to time, the Company is involved in various legal proceedings arising from the normal course of business activities. The Company is not currently a party to any legal proceedings that, if determined adversely to the Company, in management's opinion, are currently expected to individually or in the aggregate have a material adverse effect on the Company's business, operating results or financial condition taken as a whole.

### *Indemnifications*

The Company from time to time enters into contracts that require it to indemnify various parties against claims from third parties. These contracts primarily relate to (i) certain real estate leases, under which the Company may be required to indemnify property owners for environmental and other liabilities, and other claims arising from the Company's use of the applicable premises, (ii) agreements with the Company's officers, directors and certain employees, under which the Company may be required to indemnify such persons for liabilities arising out of their relationship with the Company, (iii) contracts under which the Company may be required to indemnify customers against third-party claims that a Company product infringes a patent, copyright or other intellectual property right and (iv) agreements under which the Company may be required to indemnify the counterparty for certain claims that may be brought against them arising from the Company's acts or omissions with respect to the transactions contemplated by such agreements.

Because any potential obligation associated with these types of contractual provisions are not quantified or stated, the overall maximum amount of the obligation cannot be reasonably estimated. Historically, the Company has not been required to make payments under these obligations, and no liabilities have been recorded for these obligations in the accompanying Consolidated Balance Sheets.

## **7. Stockholders' Equity**

### *Preferred Stock*

The Board of Directors has the authority, without action by stockholders with the exception of stockholders who hold board positions, to designate and issue up to 5.0 million shares of preferred stock in one or more series and to fix the rights, preferences, privileges and restrictions thereof. These rights, preferences and privileges could include dividend rights, conversion rights, voting rights, terms of redemption, liquidation preferences, sinking fund terms and the number of shares constituting any series or the designation of such series, any or all of which may be greater than the rights of common stock. The issuance of the Company's preferred stock could adversely affect the voting power of holders of common stock and the likelihood that such holders will receive dividend payments and payments upon liquidation. In addition, the issuance of preferred stock could have the effect of delaying, deferring or preventing a change in control of the Company or other corporate action. Since the Company's initial public offering, the Board of Directors has not designated any rights, preference or powers of any preferred stock and no shares of preferred stock have been issued.

### *Common Stock*

Holders of the Company's common stock are entitled to receive dividends, if any, as may be declared from time to time by the Board of Directors out of legally available funds. No dividends have been declared or paid as of December 31, 2019. In the

event of the Company's liquidation, dissolution or winding up, holders of the Company's common stock will be entitled to share ratably in the net assets legally available for distribution to stockholders after the payment of all of the Company's debts and other liabilities and the satisfaction of any liquidation preference granted to the holders of any then outstanding shares of preferred stock.

### *Equity Incentive Plans*

#### *2019 Equity Incentive Award Plan*

At the Company's annual meeting of stockholders in May 2019, the stockholders approved the 2019 Equity Incentive Award Plan (the "2019 Plan"). The 2019 Plan supersedes and replaces the 2010 Equity Incentive Award Plan (the "2010 Plan") and preceding plans. No further awards will be granted under the 2010 Plan; however, the terms and conditions of the 2010 Plan will continue to govern any outstanding awards granted under the 2010 Plan.

Employees and consultants of the Company, its subsidiaries and affiliates, as well as members of the Company's Board of Directors, are eligible to receive awards under the 2019 Plan. The 2019 Plan provides for the grant of stock options, stock appreciation rights, restricted stock, RSUs, other stock or cash-based awards and dividend equivalents to eligible individuals.

The number of shares available for issuance under the 2019 Plan includes an initial reserve of 1.7 million shares of common stock, any shares of common stock that are available for issuance under the 2010 Plan as of the effective date of the 2019 Plan and any shares of common stock subject to issued and outstanding awards under the 2010 Plan that expire, are cancelled or otherwise terminate following the effective date of the 2019 Plan. As of December 31, 2019, there were 2.0 million shares available for issuance under the 2019 Plan.

Stock options granted under the 2019 Plan are granted in general at a price not less than 100% of the fair market value of the common stock on the date of grant. Stock options issued under the 2019 Plan generally vest 25% on the first anniversary of the vesting commencement date and on a quarterly basis thereafter for a period of an additional three years. The options have a maximum term of ten years.

Each RSU granted under the 2019 Plan represents a right to receive one share of the Company's common stock (subject to adjustment for certain specified changes in the capital structure of the Company) upon the completion of a specific period of continued service.

In October 2017, in connection with the hiring of its Chief Financial Officer, the Company made an "inducement" award of non-qualified stock options to purchase 0.3 million shares of the Company's common stock with an exercise price of \$5.05 per share, equal to the grant date fair value based upon the closing price of the Company's common stock. The stock option was granted outside the terms of the Company's 2010 Equity Incentive Award Plan (under the employee inducement award exemption under the New York Stock Exchange Listed Company Manual Rule 303A.08). The stock option will vest and become exercisable over four years from the date of grant, with 25% of the shares vesting on the one-year anniversary of the grant date and the remaining shares vesting quarterly thereafter over the next three years, subject to continued employment with the Company.

In December 2017, the Company granted 1.6 million shares of performance-based stock option awards to its executives. These performance-based stock option awards contain a one-year performance period and a subsequent two-year service period. The performance target is based on the Company's non-GAAP operating income during the performance period and accounted for as a performance condition. After the one-year performance period, if the performance target is met and subject to certification by the Compensation Committee of the Company's Board of Directors, each performance-based stock option award shall vest with respect to 50% of the earned shares on January 1, 2019 and 6.25% of the earned shares quarterly thereafter, subject to the executive's continuous service with the Company from the grant date through the respective vesting dates. If the performance target is not met, all such performance-based stock options shall be immediately forfeited and canceled. In November 2018, the Compensation Committee of the Company's Board of Directors modified the performance target. Subsequently, in February 2019, the Compensation Committee of the Company's Board of Directors concluded that the revised performance target was met based on the actual non-GAAP net income achieved for 2018. As such, each stock option was earned subject to the executive's continuous service with the Company from the grant date through the remaining vesting dates.

In February 2019, PSOs exercisable for up to an aggregate of 2.0 million shares of common stock were granted to Company executives with a grant date fair value of \$8.03 per share. These PSOs contain a one-year performance period and a subsequent three-year service period. The actual number of shares earned is contingent upon achievement of both annual and quarterly corporate financial targets for revenue, non-GAAP gross margin and non-GAAP net income per share for 2019 (collectively, the "2019 Performance Targets") during the one-year performance period. These PSOs would vest, subject to certification by the Compensation Committee of the Company's Board of Directors, of the achievement of the 2019 Performance Targets, as to 25% of the shares of common stock earned on the date of such certification, and as to the remaining 75% of the shares of common stock earned, in substantially equal quarterly installments over the subsequent 3 years, subject to the executive's continuous service with the Company through the respective vesting dates. If all of the 2019 Performance targets are met, each

executive receives 100% of their target shares. Furthermore, each executive may receive a number of shares above their target shares for achievement of at least 125% above the non-GAAP net income per share target, up to a maximum of 200% of the target shares for achievement above 125% of the net income per share target. In August 2019, the Compensation Committee of the Company's Board of Directors amended the 2019 Performance Targets to provide for the award of up to 40% of the total number of shares subject to a stock option award in the event the annual corporate financial targets are not met but the quarterly corporate financial targets are met. As a result, the probability of meeting some of the performance conditions related to these PSOs was assessed to be probable, and \$0.5 million of stock-based compensation expense was recognized in 2019.

### Stock Options

The following table summarizes the activity of stock options under the Company's equity incentive plans (in thousands, except per share data):

<b>Stock Options</b>	<b>Number of Shares</b>	<b>Weighted-Average Exercise Price Per Share</b>	<b>Weighted-Average Remaining Contractual Life (in years)</b>	<b>Aggregate Intrinsic Value <sup>(1)</sup></b>
Outstanding as of December 31, 2018	4,442	\$ 7.40		
Granted	2,925	7.97		
Exercised	(74)	5.94		
Canceled	(416)	7.45		
Outstanding as of December 31, 2019	6,877	\$ 7.66	7.3	\$ 5,303
Vested and expected to vest as of December 31, 2019	6,782	\$ 7.66	7.3	\$ 5,235
Options exercisable as of December 31, 2019	3,199	\$ 7.82	5.3	\$ 3,448

(1) Amounts represent the difference between the exercise price and the fair market value of common stock at December 31, 2019 of \$8.00 per share for all in the money options outstanding.

During the years ended December 31, 2019, 2018 and 2017, total intrinsic value of stock options exercised was \$0.2 million, \$0.1 million and \$10 thousand, respectively. Total cash received from employees as a result of stock option exercises in 2019, 2018 and 2017 was \$0.4 million, \$0.4 million and \$0.1 million, respectively. Total fair values of stock options vested during 2019, 2018 and 2017 were \$7.6 million, \$2.7 million and \$2.1 million, respectively.

### Restricted Stock Units and Performance Restricted Stock Units ("PRsUs")

The following table summarizes the activities of the Company's RSUs and PRsUs under the Company's equity incentive plans (in thousands, except per share data):

	<b>RSUs</b>		<b>PRsUs</b>	
	<b>Number of Shares</b>	<b>Weighted-Average Grant Date Fair Value Per Share</b>	<b>Number of Shares</b>	<b>Weighted-Average Grant Date Fair Value Per Share</b>
Outstanding at December 31, 2018	788	\$ 7.26	63	\$ 7.42
Granted	190	6.62	—	—
Vested	(571)	7.39	(63)	7.42
Canceled	(73)	7.10	—	—
Outstanding at December 31, 2019	334	\$ 6.71	—	\$ —

Upon vesting of certain RSUs and PRsUs, the Company withheld shares with value equivalent to the employees' minimum statutory obligation for the applicable income and other employment taxes and remitted the cash to the appropriate taxing authorities. The number of shares withheld was based on the value of the RSUs or PRsUs on their vesting date as determined by the Company's closing stock price. The withheld shares are reserved for future grant and issuance under the 2019 Plan.

### Employee Stock Purchase Plans

The Company maintains two employee stock purchase plans - the ESPP and the NQ ESPP.

The ESPP allows eligible employees to purchase shares of the Company's common stock through payroll deductions of up to 15% of their annual compensation subject to certain Internal Revenue Code limitations. In addition, no participant may purchase more than 2,000 shares of common stock in each offering period.

The offering periods under the ESPP are six-month periods commencing on May 15<sup>th</sup> and November 15<sup>th</sup> of each year. The price of common stock purchased under the ESPP is 85% of the lower of the fair market value of the common stock on the commencement date and the end date of each six-month offering period.

At the Company's annual meeting of stockholders in May 2019, the stockholders approved an increase in the number of shares of common stock issuable under the ESPP by 2.5 million shares. The total shares authorized for issuance under the ESPP increased from 7.3 million shares to 9.8 million shares. For the year ended December 31, 2019, shares totaling 0.9 million were purchased and issued. As of December 31, 2019, there were 3.2 million shares available for future issuance.

The NQ ESPP allows eligible employees to purchase shares of the Company's common stock through payroll deductions of up to 25% of their annual compensation. Eligible employees have the right to (a) purchase the maximum number of whole shares of common stock that can be purchased with the elected payroll deductions during each offering period for which the employee is enrolled at a purchase price equal to the closing price of the Company's common stock on the last day of such offering period and (b) receive an equal number of shares of the Company's common stock that are subject to a risk of forfeiture in the event the employee terminates employment within the one year period immediately following the purchase date. The NQ ESPP provides six-month offering periods commencing June 21<sup>st</sup> and December 21<sup>st</sup> of each year. At the Company's annual meeting of stockholders in May 2018, the stockholders approved an amendment of certain terms and an increase in the number of shares of common stock issuable under the NQ ESPP by 2.5 million shares. The maximum number of shares of common stock currently authorized for issuance under the NQ ESPP as of December 31, 2019 is 3.5 million shares, with a maximum of 0.5 million shares allocated per purchase period. For the year ended December 31, 2019, 0.5 million shares were purchased and issued, with an additional equal number of shares issued subject to a risk of forfeiture. As of December 31, 2019, there were 2.0 million shares available for future issuance.

#### Stock-Based Compensation

During the years ended December 31, 2019, 2018 and 2017, the Company recorded stock-based compensation expense of \$11.2 million, \$17.5 million and \$12.4 million, respectively.

The following table summarizes stock-based compensation expense (in thousands):

	Years Ended December 31,		
	2019	2018	2017
Cost of revenue:			
Products	\$ 507	\$ 885	\$ 473
Services	389	363	276
Research and development	3,913	5,969	4,869
Sales and marketing	3,415	5,787	3,433
General and administrative	2,957	4,469	3,317
	<u>\$ 11,181</u>	<u>\$ 17,473</u>	<u>\$ 12,368</u>

The following table summarizes the weighted-average grant date fair values of the Company's stock-based awards granted in the periods indicated:

	Years Ended December 31,		
	2019	2018	2017
Stock options	\$ 3.66	\$ 3.41	\$ 3.19
RSUs	\$ 6.62	\$ 6.66	\$ 6.75
ESPP	\$ 2.04	\$ 2.21	\$ 1.76
Nonqualified ESPP	\$ 7.24	\$ 7.34	\$ 6.90

The Company values the RSUs and employee stock purchase rights under the Nonqualified ESPP at the closing market price of the Company's common stock on the date of grant.

The probability of meeting the performance condition related to the PSOs granted in December 2017 was assessed as probable as of December 31, 2018. As a result, the Company recognized a stock-based compensation expense of \$6.9 million in 2018 and \$1.6 million in 2019, based on a fair value assessment as of the date of modification. The probability of meeting one of the performance conditions related to the PSOs granted in February 2019 was assessed as probable as of December 31, 2019. As a

result, the Company recognized a cumulative stock-based compensation expense of \$0.5 million in 2019, based on a fair value assessment as of the date of modification.

The Company estimates the fair value of stock options and employee stock purchase right under the ESPP at the grant date using the Black-Scholes option-pricing model. This model requires the use of the following assumptions:

- (i) Expected volatility of the Company's common stock – The Company computes its expected volatility assumption based on a blended volatility (50% historical volatility and 50% implied volatility from traded options on the Company's common stock). The selection of a blended volatility assumption was based upon the Company's assessment that a blended volatility is more representative of the Company's future stock price trend as it weighs the historical volatility with the future implied volatility.
- (ii) Expected life of the option award – Represents the weighted-average period that the stock options are expected to remain outstanding. The Company's computation of expected life utilizes the simplified method in accordance with Staff Accounting Bulletin No. 110 ("SAB 110") due to the lack of sufficient historical exercise data to provide a reasonable basis upon which to estimate expected term. The mid-point between the vesting date and the expiration date is used as the expected term under this method.
- (iii) Expected dividend yield – Assumption is based on the Company's history of not paying dividends and no future expectations of dividend payouts.
- (iv) Risk-free interest rate – Based on the U.S. Treasury yield curve in effect at the time of grant with maturities approximating the grant's expected life.

The following table summarizes the weighted-average assumptions used in estimating the grant-date fair value of stock options and of each employee's purchase right under the ESPP in the periods indicated:

<b>Stock Options</b>	<b>Years Ended December 31,</b>		
	<b>2019</b>	<b>2018</b>	<b>2017</b>
Expected volatility	47%	50%	52%
Expected life (years)	6.11	6.11	5.88
Expected dividend yield	—	—	—
Risk-free interest rate	1.67%	2.83%	2.10%

<b>ESPP</b>	<b>Years Ended December 31,</b>		
	<b>2019</b>	<b>2018</b>	<b>2017</b>
Expected volatility	48%	42%	45%
Expected life (years)	0.49	0.50	0.49
Expected dividend yield	—	—	—
Risk-free interest rate	2.03%	2.21%	1.24%

In addition, the Company applies an estimated forfeiture rate to awards granted and records stock-based compensation expense only for those awards that are expected to vest. Forfeiture rates are estimated at the time of grant based on the Company's historical experience. Further, to the extent the Company's actual forfeiture rate is different from management's estimate, stock-based compensation is adjusted accordingly.

As of December 31, 2019, unrecognized stock-based compensation expenses by award type, net of estimated forfeitures, and their expected weighted-average recognition periods are summarized in the following table (in thousands).

	<b>December 31, 2019</b>		
	<b>Stock Option</b>	<b>RSU</b>	<b>ESPPs</b>
Unrecognized stock-based compensation expense	\$ 5,327	\$ 1,254	\$ 4,208
Weighted-average amortization period (in years)	2.9	0.6	1.1

The Company expects to recognize stock-based compensation expense of \$7.1 million in 2020, \$2.0 million in 2021, \$1.0 million in 2022 and \$0.7 million in 2023.

### Shares Reserved for Future Issuance

The Company had common shares reserved for future issuance as follows (in thousands):

	December 31,	
	2019	2018
Stock options outstanding	6,877	4,442
Restricted stock units outstanding	334	788
Performance restricted stock units outstanding	—	63
Shares available for future grant under 2019 Plan	2,034	2,306
Shares available for future issuance under ESPP	3,178	1,550
Shares available for future issuance under Nonqualified ESPP	2,021	2,764
	14,444	11,913

### 8. Employee Benefit Plan

The Company sponsors a 401(k) tax-deferred savings plan for all employees who meet certain eligibility requirements. Participants may contribute, on a pre-tax basis, a percentage of their annual compensation, but not to exceed a maximum contribution amount pursuant to Section 401(k) of the Internal Revenue Code. The Company, at the discretion of the Board of Directors, may make additional matching contributions on behalf of the participants. The Company made matching contributions totaling \$2.5 million, \$2.5 million and \$3.0 million in 2019, 2018 and 2017, respectively.

### 9. Accumulated Other Comprehensive Loss

The table below summarizes the changes in accumulated other comprehensive loss by component:

	Foreign Currency Translation Adjustments
Balance at December 31, 2017	\$ (169)
Other comprehensive loss	(584)
Balance at December 31, 2018	(753)
Other comprehensive loss	(101)
Balance at December 31, 2019	\$ (854)

Assets and liabilities of the Company's wholly owned foreign subsidiaries are translated from their respective functional currencies at exchange rates in effect at the balance sheet date, and revenue and expenses are translated at the monthly average exchanges rates. These translations result in differences called foreign currency translation adjustments. Realized foreign currency transaction gains or losses were not significant during the years ended December 31, 2019, 2018 and 2017 and are recorded in "Other income (expense), net" in the Company's Consolidated Statements of Comprehensive Loss.

### 10. Income Taxes

The domestic and foreign components of loss before provision for incomes taxes were as follows (in thousands):

	Years Ended December 31,		
	2019	2018	2017
Domestic	\$ (17,935)	\$ (20,463)	\$ (84,387)
Foreign	1,403	1,695	2,598
	\$ (16,532)	\$ (18,768)	\$ (81,789)



Provision for income taxes consisted of the following (in thousands):

	Years Ended December 31,		
	2019	2018	2017
Current:			
State	\$ 313	\$ 105	\$ 115
Foreign	835	360	577
Current income tax	1,148	465	692
Deferred foreign income tax	14	65	551
	<u>\$ 1,162</u>	<u>\$ 530</u>	<u>\$ 1,243</u>

The differences between the statutory tax rate and the effective tax rate, expressed as a percentage of loss before income taxes, were as follows:

	Years Ended December 31,		
	2019	2018	2017
Federal statutory rate	21.0 %	21.0 %	34.0 %
State statutory rate	5.6	5.7	4.5
Foreign operations	(2.8)	0.3	0.5
R&D tax credits	6.2	7.2	2.7
Foreign income inclusion	(1.3)	(1.2)	(0.1)
Non-deductible stock compensation	(5.1)	(4.3)	(3.7)
Other permanent items	(2.0)	(1.6)	(0.4)
Tax true-up	(11.8)	(2.3)	(1.7)
Valuation allowance	(16.9)	(25.6)	67.3
Tax reform	—	—	(104.6)
ASC 606 adjustment	—	(2.0)	—
Effective tax rate	<u>(7.1)%</u>	<u>(2.8)%</u>	<u>(1.5)%</u>

The significant components of the Company's deferred tax assets were as follows (in thousands):

	December 31,	
	2019	2018
Deferred tax assets:		
Net operating loss carryforwards	\$ 135,019	\$ 132,420
Tax credit carryforwards	47,324	46,884
Depreciation and amortization	1,541	1,924
Accruals and reserves	9,316	10,021
Deferred revenue	8,488	7,815
Stock-based compensation	4,761	4,447
Intangible assets	(111)	37
Other	(10)	5
Gross deferred tax assets	206,328	203,553
Valuation allowance	(206,339)	(203,550)
	<u>\$ (11)</u>	<u>\$ 3</u>

All deferred tax assets, along with any related valuation allowance, are classified in the Consolidated Balance Sheet as long-term.

Management reviews the recognition of deferred tax assets to determine if realization of such assets is more likely than not. The realization of the Company's deferred tax assets is dependent upon future earnings. The Company has been in a cumulative loss position since inception, which represents a significant piece of negative evidence. Using the more likely than not criteria specified in the applicable accounting guidance, this negative evidence cannot be overcome by positive evidence currently available to the Company. As a result, the Company has established a full valuation allowance against its deferred tax assets with the exception of certain foreign deferred tax assets. The Company's valuation allowance increased by \$2.8 million and \$4.8 million for the years ended December 31, 2019 and 2018, respectively.

As of December 31, 2019, the Company had U.S. federal and state net operating losses of approximately \$608.9 million and \$216.4 million, respectively. The U.S. federal net operating loss carryforwards have begun to expire and will continue to expire at various dates through 2039 if not utilized. The state net operating loss carryforwards have begun to expire and will continue to expire at various dates through 2039, if not utilized. Additionally, the Company has U.S. federal, California and other U.S. states research and development credits of approximately \$35.0 million, \$36.2 million and \$3.0 million, respectively, as of December 31, 2019. The U.S. federal research and development credits will begin to expire in 2020 and the California research and development credits have no expiration date. The credits related to other various U.S. states have begun to expire and will continue to expire at various dates through 2034.

In 2019, the Company reassessed its plan to continue to reinvest its foreign earnings overseas. The Company no longer asserts ASC 740-30 indefinite reinvestment of its historical non-U.S. earnings or future non-U.S. earnings. As such, the Company recorded a tax expense of \$0.6 million for the estimated withholding, state income tax and foreign income tax associated with repatriating non-U.S. earnings back to the United States.

### Uncertain Tax Positions

ASC 740, "Income Taxes," prescribes a recognition threshold and measurement attribute to the financial statement recognition and measurement of a tax position taken or expected to be taken in a tax return. The guidance also provides guidance on derecognition, classification, accounting in interim periods and disclosure requirements for uncertain tax positions. The standard requires the Company to recognize the financial statement effects of an uncertain tax position when it is more likely than not that such position will be sustained upon audit. The Company recognizes accrued interest and penalties related to unrecognized tax benefits as interest expense and income tax expense, respectively, in statements of comprehensive loss.

The following table reconciles the Company's unrecognized tax benefits (in thousands):

	Years Ended December 31,	
	2019	2018
Balance at beginning of year	\$ 21,998	\$ 20,289
Addition (reduction) for tax positions related to prior year	(382)	516
Additions for tax positions related to current year	648	1,193
Balance at end of year	\$ 22,264	\$ 21,998

As of December 31, 2019 and 2018, the Company had unrecognized tax benefits of \$22.3 million and \$22.0 million, respectively, none of which would affect the Company's effective tax rate if recognized. There were no accrued interest or penalties for uncertain income tax as of December 31, 2019.

The Company files tax returns in the United States and various state jurisdictions, the United Kingdom, China and Brazil. The tax years 2000 through 2019 remain open and subject to examination by the appropriate governmental agencies in the U.S. due to tax attribute carryforwards.

### 11. Net Loss Per Common Share

The following table sets forth the computation of basic and diluted net loss per common share for the periods indicated (in thousands, except per share data):

	Years Ended December 31,		
	2019	2018	2017
<b>Numerator:</b>			
Net loss	\$ (17,694)	\$ (19,298)	\$ (83,032)
<b>Denominator:</b>			
Weighted-average common shares outstanding	54,993	52,609	50,155
Basic and diluted net loss per common share	\$ (0.32)	\$ (0.37)	\$ (1.66)
Potentially dilutive shares, weighted-average	6,607	5,833	3,446

Unvested restricted stock awards are included in the calculation of basic weighted-average shares because such shares are participating securities; however, the impact was immaterial.

Potentially dilutive shares have been excluded from the computation of diluted net loss per common share when their effect is antidilutive. These antidilutive shares were primarily from stock options and RSUs. For each of the periods presented where the Company reported a net loss, the effect of all potentially dilutive securities would be antidilutive, and as a result diluted net loss per common share is the same as basic net loss per common share.

## 12. Revenue from Contracts with Customers

The Company develops, markets and sells communications access systems and software, and there are no segment managers who are held accountable for operations, operating results and plans for levels or components below the Company unit level. Accordingly, the Company is considered to be in a single reporting segment and operating unit structure. The Company's chief operating decision maker is the Company's Chief Executive Officer, who reviews financial information presented on a Company-wide basis, for purposes of allocating resources and evaluating financial performance.

### *Geographic Information:*

The following is a summary of revenue by geographic region based upon the location of the customers (in thousands):

	Years Ended December 31,		
	2019	2018	2017 <sup>(1)</sup>
United States	\$ 365,586	\$ 386,341	\$ 452,956
Middle East	18,664	18,814	18,267
Canada	14,531	10,542	13,105
Europe	11,480	8,858	6,575
Caribbean	5,809	7,075	9,853
Other	8,260	9,690	9,611
	<u>\$ 424,330</u>	<u>\$ 441,320</u>	<u>\$ 510,367</u>

(1) Revenue amounts are accounted for under ASC 605 for 2017.

The Company's property and equipment, net of accumulated depreciation, are located in the following geographical areas (in thousands):

	December 31,	
	2019	2018
United States	\$ 20,510	\$ 23,249
China	1,017	1,696
	<u>\$ 21,527</u>	<u>\$ 24,945</u>

### *Contract Asset*

The primary contract asset is revenue recognized on professional services contracts where the services are transferred to the customer over time, which has yet to be billed, and is classified within accounts receivable. Amounts are billed in accordance with the agreed-upon contractual terms. The balance at December 31, 2018 was \$5.9 million of which \$1.0 million remained in the Company's Consolidated Balance Sheet at December 31, 2019. The closing balance at December 31, 2019 was \$5.0 million of which the Company expects to bill 82% of the balance during 2020. The decrease in the contract asset was driven by the timing and volume of professional services contracts with a major customer in fiscal 2019 partially offset by additional business from other customers.

### *Contract Liability*

Deferred revenue consisted of the following (in thousands):

	December 31,	
	2019	2018
Current:		
Products and services	\$ 12,480	\$ 11,600
Extended warranty	4,678	4,000
	<u>17,158</u>	<u>15,600</u>
Long-term:		
Products and services	790	440
Extended warranty	17,550	17,056
	<u>18,340</u>	<u>17,496</u>
	<u>\$ 35,498</u>	<u>\$ 33,096</u>

The increase in the deferred revenue balance for the year ended December 31, 2019 is primarily driven by cash payments received or due in advance of satisfying the Company's performance obligations, offset by \$15.0 million of revenue recognized that was included in the deferred revenue balance at the beginning of the year.

Revenue allocated to remaining performance obligations represent contract revenue that has not yet been recognized for contracts greater than one year, which includes deferred revenue and amounts that will be invoiced and recognized as revenue in future periods. This amount was \$57.7 million as of December 31, 2019, and the Company expects to recognize 40% of such revenue over the next 12 months and the remainder thereafter.

#### *Contract Costs*

The Company capitalizes certain sales commissions related primarily to extended warranty and Calix Cloud products for which the expected amortization period is greater than one year. As of December 31, 2019, the unamortized balance of deferred commissions was \$0.7 million. For the year ended December 31, 2019, the amount of amortization was \$0.2 million, and there was no impairment loss in relation to the costs capitalized.

#### *Concentration of Customer Risk*

Concentrations of credit risk in relation to customers with an accounts receivable balance of 10% or greater of total accounts receivable and customers with net revenue of 10% or greater of total revenue are presented below for the periods indicated.

	Percentage of Accounts Receivable		Percentage of Revenue		
	December 31,		Years Ended December 31,		
	2019	2018	2019	2018	2017
CenturyLink	17%	16%	15%	18%	31%

### **13. Product Line Divestiture**

In February 2018, the Company sold its outdoor cabinet product line to Clearfield, Inc. (“Clearfield”) for \$10.4 million in cash as well as the assumption by Clearfield of the related product warranty liabilities and open purchase order commitments with a CM. The Company transferred \$2.1 million in net inventory and agreed to solicit orders on Clearfield’s behalf on the newly transferred outdoor cabinets product lines free of charge for 15 months. The Company established a liability of \$1.6 million in deferred revenue for providing this service and amortized this amount to service revenue over the corresponding 15-month period. The Company also recognized a \$6.7 million gain for the year ended December 31, 2018 within operating expenses in the accompanying Consolidated Statements of Comprehensive Loss.

### **14. Quarterly Financial Data—Unaudited**

The Company’s fiscal year begins on January 1st and ends on December 31<sup>st</sup>. Quarterly periods are based on a 4-4-5 fiscal calendar with the first, second and third fiscal quarters ending on the 13<sup>th</sup> Saturday of each fiscal period. As a result, the Company had one fewer day in the first quarter of 2019 and one more day in the fourth quarter of 2019 than in the respective 2018 periods.

The following table presents selected unaudited quarterly financial data of the Company (in thousands, except per share data). The Company's quarterly results of operations for these periods are not necessarily indicative of future results of operations.

	<b>Fiscal Year 2019 Quarter Ended</b>			
	<b>March 30</b>	<b>June 29</b>	<b>September 28</b>	<b>December 31</b>
Revenue	\$ 89,350	\$ 100,304	\$ 114,485	\$ 120,191
Gross profit	38,343	44,668	50,202	54,712
Operating income (loss)	(9,113)	(4,931)	(2,851)	1,494
Net income (loss)	(9,767)	(5,045)	(3,379)	497
Net income (loss) per common share, basic and diluted	\$ (0.18)	\$ (0.09)	\$ (0.06)	\$ 0.01

	<b>Fiscal Year 2018 Quarter Ended</b>			
	<b>March 31</b>	<b>June 30</b>	<b>September 29</b>	<b>December 31</b>
Revenue	\$ 99,403	\$ 111,702	\$ 114,699	\$ 115,516
Gross profit	42,059	50,866	52,833	51,624
Operating income (loss)	(11,109)	(2,926)	676	(5,155)
Net income (loss)	(11,736)	(2,793)	809	(5,578)
Net income (loss) per common share, basic and diluted	\$ (0.23)	\$ (0.05)	\$ 0.02	\$ (0.10)

## 15. Subsequent Event

In January 2020, the Company terminated the SVB Loan Agreement and entered into a new loan and security agreement with Bank of America, N.A. The new loan and security agreement ("BofA Loan Agreement") provides for a revolving facility up to a principal amount of up to \$35.0 million, including a \$10.0 million sublimit for letters of credit. The BofA Loan Agreement matures, and all outstanding amounts become due and payable, in January 2023. The BofA Loan Agreement is secured by substantially all of the Company's assets, including the Company's intellectual property. Loans under the credit facility will bear interest at a rate per annum equal to LIBOR (customarily defined) plus an applicable margin between 1.50% to 2.25% and Prime Rate (customarily defined) plus an applicable margin between 0.50% to 1.25%, in each case largely based on a fixed charge coverage ratio measured at the end of each fiscal quarter. The Availability (as defined in the BofA Loan Agreement) of borrowings under the BofA Loan Agreement is subject to certain conditions and requirements, including among others, if at any time the Company's Availability is less than \$5.0 million, the Company must maintain a minimum fixed charge coverage ratio of 1.0 to 1.0.

## **ITEM 9. Changes in and Disagreements with Accountants on Accounting and Financial Disclosure**

There were no changes in nor any disagreements with accountants on accounting principles or practices, financial statement disclosure, auditing scope or procedures, or other reportable events requiring disclosure pursuant to Item 304(b) of Regulation S-K.

### **ITEM 9A. Controls and Procedures**

#### ***Evaluation of Disclosure Controls and Procedures***

As of the end of the period covered by this report, which we refer to as the evaluation date, we carried out an evaluation under the supervision and with the participation of management, including our principle executive officer and principle financial officer, of our disclosure controls and procedures (as defined in Rules 13a-15(e) and 15d-15(e) under the Exchange Act).

The purpose of this evaluation was to determine whether as of the evaluation date our disclosure controls and procedures were effective to provide reasonable assurance that the information we are required to disclose in our filings with the SEC, (i) is recorded, processed, summarized and reported within the time periods specified in the SEC's rules and forms and (ii) accumulated and communicated to our management, including our principal executive officer and our principal financial officer, as appropriate to allow timely decisions regarding required disclosure. Based upon this evaluation, our principal executive officer and our principal financial officer concluded that our disclosure controls and procedures were effective as of the end of the period covered by this report.

#### ***Management's Report on Internal Control Over Financial Reporting***

Management is responsible for establishing and maintaining adequate internal control over financial reporting. Our internal control over financial reporting is 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. 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. Management has evaluated the effectiveness of our internal control over financial reporting as of December 31, 2019 using the criteria set forth in the Internal Control—Integrated Framework issued by the Committee of Sponsoring Organizations of the Treadway Commission, or COSO, (2013 framework). Based on our evaluation, management has concluded that we maintained effective control over financial reporting as of December 31, 2019 based on the COSO criteria. The effectiveness of our internal control over financial reporting as of December 31, 2019 has been audited by KPMG LLP, an independent registered public accounting firm, as stated in their report included in this Annual Report on Form 10-K.

#### ***Limitations on the Effectiveness of Controls***

Our disclosure controls and procedures provide our principal executive officer and our principal financial officer reasonable assurances that our disclosure controls and procedures will achieve their objectives. However, our management, including our principal executive officer and our principal financial officer, does not expect that our disclosure controls and procedures or our internal control over financial reporting can or will prevent all human error. A control system, no matter how well designed and implemented, can provide only reasonable, not absolute, assurance that the objectives of the control system are met. Furthermore, the design of a control system must reflect the fact that there are internal resource constraints, and the benefit of controls must be weighed relative to their corresponding costs. Because of the limitations in all control systems, no evaluation of controls can provide complete assurance that all control issues and instances of error, if any, within our company are detected. These inherent limitations include the realities that judgments in decision-making can be faulty, and that breakdowns can occur due to human error or mistake. Additionally, controls, no matter how well designed, could be circumvented by the individual acts of specific persons within the organization. The design of any system of controls is also based in part upon certain assumptions about the likelihood of future events, and there can be no assurance that any design will succeed in achieving its stated objectives under all potential future conditions.

#### ***Changes in Internal Control over Financial Reporting***

There was no change in our internal control over financial reporting identified in connection with the evaluation required by Rule 13a-15(d) and 15d-15(d) of the Exchange Act that occurred during the fourth quarter of 2019 that has materially affected, or is reasonably likely to materially affect, our internal control over financial reporting.

### **ITEM 9B. Other Information**

None.

## PART III

### **ITEM 10. Directors, Executive Officers and Corporate Governance**

Information required by this Item 10 relating to our directors is incorporated by reference to the information set forth under the captions “Proposal No. 1—Election of Directors” and “Director Compensation” and in other applicable sections of the Proxy Statement for the 2020 Annual Meeting of Stockholders to be filed with the Securities and Exchange Commission pursuant to Regulation 14A of the Exchange Act, or the Proxy Statement, to be filed within 120 days of the end of the fiscal year covered by this Report. Information required by this Item 10 relating to our officers is incorporated by reference to the information set forth under the captions “Executive Officers” and “Executive Compensation” and in other applicable sections of the Proxy Statement. Information regarding our Section 16 reporting compliance is incorporated by reference to the information set forth under the captions “Security Ownership of Certain Beneficial Owners and Management” and “Section 16(a) Beneficial Ownership Reporting Compliance” of the Proxy Statement.

We have adopted a code of ethics, which applies to all employees, officers and directors of Calix. The Code of Business Conduct and Ethics meets the requirements of a “code of ethics” as defined by Item 406 of Regulation S-K, and applies to our Chief Executive Officer, Chief Financial Officer and all other employees, as indicated above. The Code of Business Conduct and Ethics also meets the requirements of a code of conduct under NYSE listing standards. The Code of Business Conduct and Ethics is posted on our website at [www.calix.com](http://www.calix.com) under the links “About - Investor Relations - Governance - Code of Conduct.” We intend to disclose any amendments to the Code of Business Conduct and Ethics, as well as any waivers for executive officers or directors, on our website at [www.calix.com](http://www.calix.com).

### **ITEM 11. Executive Compensation**

Information required by this Item 11 relating to executive compensation and other matters is incorporated by reference to the information set forth under the caption “Compensation Discussion and Analysis” and in other applicable sections of the Proxy Statement.

### **ITEM 12. Security Ownership of Certain Beneficial Owners and Management and Related Stockholder Matters**

Information required by this Item 12 relating to security ownership of certain beneficial owners and management and related stockholder matters is incorporated by reference to the information set forth under the caption “Security Ownership of Certain Beneficial Owners and Management” and in other applicable sections of the Proxy Statement. Information regarding securities authorized for issuance under our equity compensation plans is incorporated by reference to the information set forth under the caption “Equity Compensation Plan Information” of the Proxy Statement.

### **ITEM 13. Certain Relationships and Related Transactions, and Director Independence**

Information required by this Item 13 relating to certain relationships and related transactions and director independence is incorporated by reference to the information set forth under the caption “Certain Relationships and Related Transactions” and in other applicable sections of the Proxy Statement.

### **ITEM 14. Principal Accountant Fees and Services**

Information required by this Item 14 relating to principal account fees and services is incorporated by reference to the information set forth under the caption “Principal Accountant Fees and Services” of the Proxy Statement.

## PART IV

### ITEM 15. Exhibits, Financial Statement Schedules

(a) The following documents are filed as part of this Report:

#### 1. Consolidated Financial Statements

The consolidated financial statements of Calix and the report of independent registered public accounting firm thereon are set forth under Part II, Item 8 of this report.

Report of Independent Registered Public Accounting Firm	58
Consolidated Balance Sheets, As of December 31, 2019 and 2018	59
Consolidated Statements of Comprehensive Loss, Years Ended December 31, 2019, 2018 and 2017	60
Consolidated Statements of Stockholders' Equity, Years Ended December 31, 2019, 2018 and 2017	61
Consolidated Statements of Cash Flows, Years Ended December 31, 2019, 2018 and 2017	62
Notes to Consolidated Financial Statements	63

#### 2. Consolidated Financial Statement Schedules

All schedules have been omitted because they are not applicable, not required, not presently in amounts sufficient to require submission of the schedule, or the information required to be set forth therein is included in the consolidated financial statements or notes thereto.

#### 3. Exhibits

The following exhibits are filed with or incorporated by reference in this report. Where such filing is made by incorporation by reference to a previously filed registration statement or report, such registration statement or report is identified in parentheses. We will furnish any exhibit upon request to: Calix Investor Relations, Thomas J. Dinges at Tom.Dinges@calix.com.

Exhibit Number	Description
3.1	Amended and Restated Certificate of Incorporation of Calix, Inc. (filed as Exhibit 3.3 to Amendment No. 7 to Calix's Registration Statement on Form S-1 filed with the Securities and Exchange Commission on March 23, 2010 (File No. 333-163252) and incorporated by reference)
3.2	Amended and Restated Bylaws of Calix, Inc. (filed as Exhibit 3.5 to Amendment No. 7 to Calix's Registration Statement on Form S-1 filed with the Securities and Exchange Commission on March 23, 2010 (File No. 333-163252) and incorporated by reference)
4.1	Form of Calix, Inc.'s Common Stock Certificate (filed as Exhibit 4.1 to Amendment No. 7 to Calix's Registration Statement on Form S-1 filed with the Securities and Exchange Commission on March 23, 2010 (File No. 333-163252) and incorporated by reference)
4.2	Description of Securities
10.1*	Calix, Inc. 2010 Equity Incentive Award Plan and related documents (filed as Exhibit 10.4 to Amendment No. 6 to Calix's Registration Statement on Form S-1 filed with the SEC on March 8, 2010 (File No. 333-163252) and incorporated by reference)
10.2	Form of Indemnification Agreement made by and between Calix, Inc. and each of its directors, executive officers and some employees (filed as Exhibit 10.5 to Amendment No. 6 to Calix's Registration Statement on Form S-1 filed with the SEC on March 8, 2010 (File No. 333-163252) and incorporated by reference)
10.3*	Offer Letter between Calix, Inc. and Carl Russo dated November 1, 2006 (filed as Exhibit 10.8 to Amendment No. 1 to Calix's Registration Statement on Form S-1 filed with the SEC on December 31, 2009 (File No. 333-163252) and incorporated by reference)
10.4*	Offer Letter by and between Calix, Inc. and Michael Weening dated May 20, 2016 (filed as Exhibit 10.1 to Calix's Form 10-Q filed with the SEC on August 3, 2016 (File No. 001-34674) and incorporated by reference)
10.5*	Letter Agreement dated November 27, 2019 by and between Calix, Inc. and Michael Weening (filed as Exhibit 10.2 to Calix's Form 8-K filed with the SEC on December 3, 2019 (File No. 001-34674) and incorporated by reference)
10.6*	Calix, Inc. Amended and Restated 2017 Nonqualified Employee Stock Purchase Plan (incorporated by reference to Appendix A to the Registrant's definitive proxy statement on Schedule 14A, filed with the SEC on April 3, 2018 (File No. 001-34674))



Exhibit Number	Description
10.7*	Amendment to Calix, Inc. Amended and Restated 2017 Nonqualified Employee Stock Purchase Plan dated June 24, 2018 (filed as Exhibit 10.1 to Calix's Form 10-Q filed with the SEC on August 8, 2018 (File No. 001-34674) and incorporated by reference)
10.8*	Offer Letter between Calix, Inc. and Cory Sindelar dated September 28, 2017 (filed as Exhibit 10.2 to Calix's Form 10-Q filed with the SEC on August 11, 2017 (File No. 001-34674) and incorporated by reference)
10.9*	Nonstatutory Inducement Stock Option Grant Notice between Calix, Inc. and Cory Sindelar dated October 1, 2017 (filed as Exhibit 10.3 to Calix's Form 10-Q filed with the SEC on August 11, 2017 (File No. 001-34674) and incorporated by reference)
10.10*	Letter Agreement dated November 27, 2019 by and between Calix, Inc. and Cory Sindelar (filed as Exhibit 10.1 to Calix's Form 8-K filed with the SEC on December 3, 2019 (File No. 001-34674) and incorporated by reference)
10.11*	Amended and Restated Executive Change in Control and Severance Plan effective September 6, 2017 (filed as Exhibit 10.1 to Calix's Form 8-K filed with the SEC on September 11, 2017 (File No. 001-34674) and incorporated by reference)
10.12*	Amendment to Amended and Restated Executive Change in Control and Severance Plan effective October 1, 2017 (filed as Exhibit 10.5 to Calix's Form 10-Q filed with the SEC on November 8, 2017 (File No. 001-34674) and incorporated by reference)
10.13*	Second Amendment to Amended and Restated Executive Change in Control and Severance Plan effective August 1, 2018 (filed as Exhibit 10.2 to Calix's Form 10-Q filed with the SEC on August 8, 2018 (File No. 001-34674) and incorporated by reference)
10.14	Net Lease Agreement by and between Calix, Inc. and Orchard Parkway San Jose, LLC dated March 9, 2018 (filed as Exhibit 10.1 to Calix's Form 10-Q filed with the SEC on May 5, 2018 (File No. 001-34674) and incorporated by reference)
10.15	First Amendment to Net Lease Agreement by and between Calix, Inc. and Orchard Parkway San Jose, LLC dated November 14, 2018 (filed as Exhibit 10.30 to Calix's Form 10-K filed with the SEC on March 1, 2019 (File No. 001-34674) and incorporated by reference)
10.16*	Calix, Inc. 2019 Equity Incentive Award Plan (incorporated by reference to Appendix A to the Registrant's definitive proxy statement on Schedule 14A, filed with the SEC on April 2, 2019 (File No. 001-34674))
10.17*	Calix, Inc. 2019 Equity Incentive Award Plan - Form of Notice of Grant of Stock Option and Option Agreement
10.18*	Calix, Inc. 2019 Equity Incentive Award Plan - Form of Restricted Stock Unit Award Grant Notice and Restricted Stock Unit Award Agreement
10.19*	Calix, Inc. Amended and Restated Employee Stock Purchase Plan (incorporated by reference to Appendix B to the Registrant's definitive proxy statement on Schedule 14A, filed with the SEC on April 2, 2019 (File No. 001-34674))
10.20*	Calix, Inc. Non-Employee Director Cash Compensation Policy, as amended May 16, 2019 (filed as Exhibit 10.1 to Calix's Form 10-Q filed with the SEC on July 25, 2019 (File No. 001-34674) and incorporated by reference)
10.21*	Calix, Inc. Non-Employee Director Equity Compensation Policy, as amended May 16, 2019 (filed as Exhibit 10.2 to Calix's Form 10-Q filed with the SEC on July 25, 2019 (File No. 001-34674) and incorporated by reference)
10.22†	Loan and Security Agreement dated January 27, 2020 by and between Bank of America, N.A. and Calix, Inc.
10.23	Waiver Agreement dated January 27, 2020 by and between Silicon Valley Bank and Calix, Inc.
21.1	Subsidiaries of the Registrant
23.1	Consent of KPMG LLP, independent registered public accounting firm
24.1	Power of Attorney (included on signature page to this Annual Report on Form 10-K)
31.1	Certification of Principal Executive Officer of Calix, Inc. Pursuant to Rule 13a-14(a) of the Securities Exchange Act of 1934
31.2	Certification of Principal Financial Officer of Calix, Inc. Pursuant to Rule 13a-14(a) of the Securities Exchange Act of 1934
32.1	Certification of Principal Executive Officer and Principal Financial Officer of Calix, Inc. Pursuant to 18 U.S.C. Section 1350, as adopted pursuant to Section 906 of the Sarbanes-Oxley Act of 2002
101.INS	XBRL Instance Document
101.SCH	XBRL Taxonomy Extension Schema Document
101.CAL	XBRL Taxonomy Extension Calculation Linkbase Document
101.DEF	XBRL Taxonomy Extension Definition Linkbase Document
101.LAB	XBRL Taxonomy Extension Label Linkbase Document
101.PRE	XBRL Taxonomy Extension Presentation Linkbase Document

\* Indicates management contract or compensatory plan or arrangement.

† Information in this exhibit identified by [\*] is confidential and has been excluded pursuant to Item 601(b)(10)(iv) of Regulation S-K because it (i) is not material or (ii) would likely cause competitive harm to Calix if publicly disclosed.

**ITEM 16. Form 10-K Summary**

None.

## SIGNATURES

Pursuant to the requirements 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.

Calix, Inc.  
(Registrant)

Dated: February 21, 2020

By:           /s/ Carl Russo            
**Carl Russo**  
Chief Executive Officer  
(Principal Executive Officer)

Dated: February 21, 2020

By:           /s/ Cory Sindelar            
**Cory Sindelar**  
Chief Financial Officer  
(Principal Financial Officer)

## POWER OF ATTORNEY

Each person whose individual signature appears below hereby authorizes and appoints Carl Russo and Cory Sindelar, and each of them, with full power of substitution and re-substitution and full power to act without the other, as his true and lawful attorney-in-fact and agent to act in his name, place and stead and to execute in the name and on behalf of each person, individually and in each capacity stated below, and to file 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, ratifying and confirming all that said attorneys-in-fact and agents or any of them or their or his substitute or 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 indicated on February 21, 2020.

<u>Signature</u>	<u>Title</u>	<u>Date</u>
<u>/s/ Carl Russo</u> Carl Russo	Chief Executive Officer and Director (Principal Executive Officer)	February 21, 2020
<u>/s/ Cory Sindelar</u> Cory Sindelar	Chief Financial Officer (Principal Financial Officer)	February 21, 2020
<u>/s/ Don Listwin</u> Don Listwin	Chairman of the Board of Directors	February 21, 2020
<u>/s/ Christopher Bowick</u> Christopher Bowick	Director	February 21, 2020
<u>/s/ Kathy Crusco</u> Kathy Crusco	Director	February 21, 2020
<u>/s/ Kevin DeNuccio</u> Kevin DeNuccio	Director	February 21, 2020
<u>/s/ Michael Everett</u> Michael Everett	Director	February 21, 2020
<u>/s/ Kira Makagon</u> Kira Makagon	Director	February 21, 2020
<u>/s/ Michael Matthews</u> Michael Matthews	Director	February 21, 2020
<u>/s/ Kevin Peters</u> Kevin Peters	Director	February 21, 2020
<u>/s/ J. Daniel Plants</u> J. Daniel Plants	Director	February 21, 2020

**DESCRIPTION OF THE REGISTRANT'S SECURITIES  
REGISTERED PURSUANT TO SECTION 12 OF THE  
SECURITIES EXCHANGE ACT OF 1934**

**As of February 14, 2020, Calix, Inc. (“Calix,” the “Company,” “we,” “us,” and “our”) had one class of securities registered under Section 12 of the Securities Exchange Act of 1934, as amended (the “Exchange Act”): our Common Stock.**

**DESCRIPTION OF SECURITIES**

The following description of the capital stock of Calix, Inc., a Delaware corporation (the “Company”), is a summary and is qualified in its entirety by the full text of our Amended and Restated Certificate of Incorporation (“Restated Certificate”), our Amended and Restated Bylaws (“Restated Bylaws”), each of which is an exhibit to our Annual Report on Form 10-K of which this Exhibit 4.2 is a part, and applicable provisions of the Delaware General Corporation Law. We encourage you to read our Restated Certificate, our Restated Bylaws and the applicable provisions of the Delaware General Corporation Law for additional information.

**Capital Stock**

Pursuant to our Restated Certificate, the total number of shares of capital stock the Company is authorized to issue is one hundred five million (105,000,000) shares, of which one hundred million (100,000,000) shares is Common Stock, with a par value of \$0.025 per share, and five million (5,000,000) shares is Preferred Stock, with a par value of \$0.025 per share.

**Common Stock**

*Dividend Rights*

Subject to preferences that may be applicable to any then outstanding Preferred Stock, holders of our Common Stock are entitled to receive dividends, if any, as may be declared from time to time by our board of directors out of legally available funds.

*Voting Rights*

Each holder of our Common Stock is entitled to one vote for each share on all matters submitted to a vote of the stockholders, including the election of directors. Our stockholders do not have cumulative voting rights in the election of directors. Our Restated Certificate may be amended with the affirmative vote of the holders of at least 66 <sup>2</sup>/<sub>3</sub>% of the voting shares.

*Liquidation*

In the event of our liquidation, dissolution or winding up, holders of our Common Stock will be entitled to share ratably in the net assets legally available for distribution to stockholders after the payment of all of our debts and other liabilities and the satisfaction of any liquidation preference granted to the holders of any then outstanding shares of Preferred Stock.

*Rights and Preferences*

Holders of our Common Stock have no preemptive, conversion, subscription or other rights, and there is no redemption or sinking fund provisions applicable to our Common Stock. 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 our Preferred Stock that we may designate in the future.

## **Preferred Stock**

Our board of directors is authorized to issue up to five million (5,000,000) shares of Preferred Stock in one or more series and to fix the rights, preferences, privileges and restrictions thereof. These rights, preferences and privileges could include dividend rights, conversion rights, voting rights, terms of redemption, liquidation preferences, sinking fund terms and the number of shares constituting any series or the designation of such series, any or all of which may be greater than the rights of Common Stock.

## **Anti-Takeover Provisions**

### *Restated Certificate and Restated Bylaws*

Our Restated Certificate provides for our board of directors to be divided into three classes with staggered three-year terms. Only one class of directors will be elected at each annual meeting of our stockholders, with the other classes continuing for the remainder of their respective three-year terms. Because our stockholders do not have cumulative voting rights, our stockholders holding a majority of the shares of Common Stock outstanding will be able to elect all of our directors. Our Restated Certificate and Restated Bylaws provide that all stockholder actions must be effected at a duly called meeting of stockholders and not by a consent in writing, and that only our board of directors, chairman of the board, chief executive officer or president (in the absence of a chief executive officer) may call a special meeting of stockholders.

Our Restated Certificate and Restated Bylaws require a 66<sup>2</sup>/<sub>3</sub>% stockholder vote for the removal of a director without cause or the rescission, alteration, amendment or repeal of the Restated Bylaws by stockholders. The combination of the classification of our board of directors, the lack of cumulative voting and the 66<sup>2</sup>/<sub>3</sub>% stockholder voting requirements will make it more difficult for our existing stockholders to replace our board of directors as well as for another party to obtain control of us by replacing our board of directors. Since our board of directors has the power to retain and discharge our officers, these provisions could also make it more difficult for existing stockholders or another party to effect a change in management. In addition, the authorization of undesignated Preferred Stock makes it possible for our board of directors to issue Preferred Stock with voting or other rights or preferences that could impede the success of any attempt to change our control.

These provisions may have the effect of deterring hostile takeovers or delaying changes in our control or management. These provisions are intended to enhance the likelihood of continued stability in the composition of our board of directors and its policies and to discourage certain types of transactions that may involve an actual or threatened acquisition of us. These provisions are designed to reduce our vulnerability to an unsolicited acquisition proposal. The provisions also are intended to discourage certain tactics that may be used in proxy fights. However, such provisions could have the effect of discouraging others from making tender offers for our shares and, as a consequence, they also may inhibit fluctuations in the market price of our stock that could result from actual or rumored takeover attempts. Such provisions may also have the effect of preventing changes in our management.

### *Section 203 of the Delaware General Corporation Law*

We are subject to Section 203 of the Delaware General Corporation Law, which prohibits a Delaware corporation from engaging in any business combination with any interested stockholder for a period of three years after the date that such stockholder became an interested stockholder, with the following exceptions:

- before such date, the board of directors of the corporation approved either the business combination or the transaction that 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 began, excluding for purposes of determining the voting stock outstanding (but not the outstanding voting stock owned by the interested stockholder) those shares owned (i) by persons who are directors and also officers and (ii) 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
- on or after such date, the business combination is approved by the board of directors and authorized at an annual or special meeting of the stockholders, and not by written consent, by the affirmative vote of at least 66 <sup>2</sup>/<sub>3</sub>% 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, transfer, pledge or other disposition of 10% or more of the assets 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 or 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 an “interested stockholder” as an entity or person who, together with the person’s affiliates and associates, beneficially owns, or within three years prior to the time of determination of interested stockholder status did own, 15% or more of the outstanding voting stock of the corporation.

### **Listing**

Our Common Stock is listed on The New York Stock Exchange under the symbol “CALX.”

End of Document

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## SUBSIDIARIES OF THE REGISTRANT

<u>Entity Name</u>	<u>Jurisdiction</u>
Calix Networks Canada, Inc.	Canada
Calix Network Technology Development (Nanjing) Co. Ltd.	China
Calix Networks UK, Ltd	England, UK
Calix Brasil Servicos Ltda	Brazil

**Consent of Independent Registered Public Accounting Firm**

The Board of Directors  
Calix, Inc.:

We consent to the incorporation by reference in the registration statement (No. 333-234355, 333-230023, 333-226682, 333-223637, 333-218066, 333-216323, 333-209732, 333-202496, 333-194054, 333-185025, 333-172379, 333-166245) on Form S-8 of Calix, Inc. of our report dated February 21, 2020, with respect to the consolidated balance sheets of Calix, Inc. as of December 31, 2019 and 2018, the related consolidated statements of comprehensive loss, stockholders' equity, and cash flows for each of the years in the three-year period ended December 31, 2019, and the related notes, and the effectiveness of internal control over financial reporting as of December 31, 2019, which report appears in the December 31, 2019 annual report on Form 10-K of Calix, Inc. Our report refers to the change in method of accounting for leases as of January 1, 2019 due to the adoption of Financial Accounting Standard Board (FASB) Accounting Standard Codification No. 842, *Leases*.

/s/ KPMG LLP

San Francisco, California  
February 21, 2020

**CERTIFICATION OF PRINCIPAL EXECUTIVE OFFICER  
PURSUANT TO SECTION 302 OF  
THE SARBANES-OXLEY ACT OF 2002**

I, Carl Russo, certify that:

1. I have reviewed this annual report on Form 10-K of Calix, Inc. for the year ended December 31, 2019;
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;
5. The registrant's other certifying officer and I have disclosed, based on our most recent evaluation of internal control over financial reporting, to the registrant's auditors and the audit committee of the registrant's board of directors (or persons performing the equivalent functions):
  - (a) All significant deficiencies and material weaknesses in the design or operation of internal control over financial reporting which are reasonably likely to adversely affect the registrant's ability to record, process, summarize and report financial information; and
  - (b) Any fraud, whether or not material, that involves management or other employees who have a significant role in the registrant's internal control over financial reporting.

Date: February 21, 2020

/s/ Carl Russo

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Carl Russo

Chief Executive Officer  
(Principal Executive Officer)

**CERTIFICATION OF PRINCIPAL FINANCIAL OFFICER  
PURSUANT TO SECTION 302 OF  
THE SARBANES-OXLEY ACT OF 2002**

I, Cory Sindelar, certify that:

1. I have reviewed this annual report on Form 10-K of Calix, Inc. for the year ended December 31, 2019;
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;
5. The registrant's other certifying officer and I have disclosed, based on our most recent evaluation of internal control over financial reporting, to the registrant's auditors and the audit committee of the registrant's board of directors (or persons performing the equivalent functions):
  - (a) All significant deficiencies and material weaknesses in the design or operation of internal control over financial reporting which are reasonably likely to adversely affect the registrant's ability to record, process, summarize and report financial information; and
  - (b) Any fraud, whether or not material, that involves management or other employees who have a significant role in the registrant's internal control over financial reporting.

Date: February 21, 2020

/s/ Cory Sindelar

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Cory Sindelar

Chief Financial Officer  
(Principal Financial Officer)

**CERTIFICATION OF PRINCIPAL EXECUTIVE OFFICER AND PRINCIPAL FINANCIAL OFFICER  
PURSUANT TO 18 U.S.C. SECTION 1350,  
AS ADOPTED PURSUANT TO  
SECTION 906 OF THE SARBANES-OXLEY ACT OF 2002**

I, Carl Russo, certify, pursuant to 18 U.S.C. Section 1350, as adopted pursuant to Section 906 of the Sarbanes-Oxley Act of 2002, that the Annual Report of Calix, Inc. (the “Company”) on Form 10-K for the fiscal year ended December 31, 2019 fully complies with the requirements of Section 13(a) or 15(d) of the Securities Exchange Act of 1934 and that information contained in such Annual Report on Form 10-K fairly presents in all material respects the financial condition and results of operations of the Company.

Date: February 21, 2020

/s/ Carl Russo

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Carl Russo

Chief Executive Officer  
(Principal Executive Officer)

I, Cory Sindelar, certify, pursuant to 18 U.S.C. Section 1350, as adopted pursuant to Section 906 of the Sarbanes-Oxley Act of 2002, that the Annual Report of Calix, Inc. (the “Company”) on Form 10-K for the fiscal year ended December 31, 2019 fully complies with the requirements of Section 13(a) or 15(d) of the Securities Exchange Act of 1934 and that information contained in such Annual Report on Form 10-K fairly presents in all material respects the financial condition and results of operations of the Company.

Date: February 21, 2020

/s/ Cory Sindelar

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Cory Sindelar

Chief Financial Officer  
(Principal Financial Officer)

This certification accompanies the Form 10-K to which it relates, is not deemed filed with the Securities and Exchange Commission and is not to be incorporated by reference into any filing of Calix, Inc. under the Securities Act of 1933, as amended, or the Securities Exchange Act of 1934, as amended (whether made before or after the date of the Form 10-K), irrespective of any general incorporation language contained in such filing.

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