

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

FORM 10-Q

(Mark One)

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

For the quarterly period ended September 30, 2019

or

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

Commission file number: 001-33852



VirnetX Holding Corporation

(Exact name of registrant as specified in its charter)

Delaware
(State or other jurisdiction of incorporation or organization)

77-0390628
(I.R.S. Employer Identification Number)

308 Dorla Court, Suite 206 Zephyr Cove, Nevada
(Address of principal executive offices)

89448
(Zip Code)

Registrant's telephone number, including area code: (775) 548-1785

Former name, former address and former fiscal year, if changed since last report: N/A

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

Title of Class	Trading Symbol	Name of Exchange on Which Registered
Common Stock, par value \$0.0001 per share	VHC	NYSE American LLC

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, 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 Smaller reporting company Non-accelerated filer
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

69,510,097 shares of Registrant's Common Stock were outstanding as of November 6, 2019.

SPECIAL NOTE REGARDING FORWARD LOOKING STATEMENTS

We have included or incorporated by reference in this Quarterly Report on Form 10-Q (including in the section entitled Management's Discussion and Analysis of Financial Condition and Results of Operations), and from time to time we may make statements that may constitute "forward-looking statements" within the meaning of Section 27A of the Securities Act of 1933, as amended, and Section 21E of the Securities Exchange Act of 1934, as amended. These forward-looking statements are based upon our current expectations, estimates, assumptions and beliefs concerning future events and conditions and may discuss, among other things, anticipated future performance (including sales and earnings), expected growth, future business plans and costs and the impact of potential and ongoing litigation. Any statement that is not historical in nature is a forward-looking statement and may be identified by the use of words and phrases such as "anticipates," "believes," "estimates," "expects," "intends," "plans," "predicts," "projects," "will be," "will continue," "will likely result in," and similar expressions. These statements include our beliefs and statements regarding general industry and market conditions and growth rates, as well as general domestic and international economic conditions. Readers are cautioned not to place undue reliance on forward-looking statements. Forward-looking statements are necessarily subject to risks, uncertainties and other factors, many of which are outside our control, which could cause actual results to differ materially from such statements and from our historical results and experience. These risks, uncertainties and other factors include, but are not limited to those described in Item 1A - Risk Factors of this Quarterly Report on Form 10-Q and elsewhere in this Report and those described from time to time in our future reports filed with the Securities and Exchange Commission. Readers are cautioned that it is not possible to predict or identify all the risks, uncertainties and other factors that may affect future results and that the risks described herein should not be considered to be a complete list. Any forward-looking statement speaks only as of the date on which such statement is made, and we undertake no obligation to update or revise any forward-looking statement, whether as a result of new information, future events or otherwise.

Among others, the forward-looking statements appearing in this Quarterly Report that may not occur include statements that:

- We have been awarded damages in the amount of \$439.7 million in the *VirnetX Inc. v. Cisco Systems, Inc. et al.* (Case 6:10-CV-00417-LED) ("Apple I") litigation and \$595.9 million in the *VirnetX Inc. v. Apple, Inc.* (Case 6:12-CV-00855-LED) ("Apple II") litigation. Taken together, these statements may imply that we may soon receive over \$1 billion in cash. The United States Court of Appeals for the Federal Circuit ("USCAFC") issued a Rule 36 order affirming the District Court Judgment in the Apple I case and subsequently denied the request for rehearing and rehearing en-banc filed by Apple. However, (1) Apple may file a petition for a writ of certiorari with the Supreme Court of the United States from the USCAFC decision in Apple I litigation and, if the Supreme Court grants certiorari, the USCAFC's decision may be reversed or vacated, or (2) Apple has appealed the awards in Apple II litigations and the court's or jury's decisions may be reversed or amended upon appeal, or (3) we may be unsuccessful in our appeal of certain actions by the Patent Trial and Appeals Board that have been initiated by Apple or other parties -- if any of these occur, they may have the effect of thwarting entirely, or reducing or delaying payments to us. The continuation of these litigations is distracting to our management and expensive, and this distraction and expense may continue.

- We have undertaken activities to commercialize our products and patent portfolio in and outside the United States. These statements may imply that the worldwide market for our commercialized products is large and will result in significant future revenues for us. However, commercialization of products such as ours are subject to significant obstacles and risks, including but not limited to a perception by some potential partners and customers that they should await the outcome of the Apple I and Apple II litigations before entering or considering to enter any agreement with us, and that or other factors may lead us to be unsuccessful in obtaining further licensing agreements or making arrangements or entering contracts which create significant future revenues for us.

EXCEPT AS REQUIRED BY LAW, WE UNDERTAKE NO OBLIGATION TO UPDATE OR REVISE ANY FORWARD-LOOKING STATEMENT AS A RESULT OF NEW INFORMATION, FUTURE EVENTS OR OTHERWISE.

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PART I — FINANCIAL INFORMATION

ITEM 1. - FINANCIAL STATEMENTS.

VIRNETX HOLDING CORPORATION
CONDENSED CONSOLIDATED BALANCE SHEETS
(in thousands, except share amounts)

	<u>As of</u> <u>September 30,</u> <u>2019</u>	<u>As of</u> <u>December 31, 2018</u>
ASSETS	(unaudited)	
Current assets:		
Cash and cash equivalents	\$ 2,572	\$ 7,611
Investments available for sale	2,621	1,803
Accounts receivables	6	6
Prepaid expenses and other current assets	315	718
Total current assets	<u>5,514</u>	<u>10,138</u>
Other assets	1,721	1,604
Property and equipment, net	5	9
Total assets	<u>\$ 7,240</u>	<u>\$ 11,751</u>
LIABILITIES AND STOCKHOLDERS' EQUITY		
Current liabilities:		
Accounts payable and accrued liabilities	\$ 1,168	\$ 1,050
Accrued payroll and related expenses	292	277
Other current liabilities	140	140
Income tax liability	—	396
Total current liabilities	<u>1,600</u>	<u>1,863</u>
Commitments and contingencies (Note 4)	—	—
Stockholders' equity:		
Preferred stock, par value \$0.0001 per share Authorized: 10,000,000 shares at September 30, 2019 and December 31, 2018 Issued and outstanding: 0 shares at September 30, 2019 and December 31, 2018	—	—
Common stock, par value \$0.0001 per share Authorized: 100,000,000 shares at September 30, 2019 and December 31, 2018 Issued and outstanding: 68,958,301 shares and 66,879,847 shares, at September 30, 2019 and December 31, 2018, respectively	7	7
Additional paid-in capital	218,761	208,317
Accumulated deficit	(213,116)	(198,422)
Accumulated other comprehensive loss	(12)	(14)
Total stockholders' equity	<u>5,640</u>	<u>9,888</u>
Total liabilities and stockholders' equity	<u>\$ 7,240</u>	<u>\$ 11,751</u>

See accompanying notes to condensed consolidated financial statements.

VIRNETX HOLDING CORPORATION
CONDENSED CONSOLIDATED STATEMENTS OF OPERATIONS (Unaudited)
(in thousands, except per share amounts)

	Three Months Ended		Nine Months Ended	
	September 30, 2019	September 30, 2018	September 30, 2019	September 30, 2018
Revenue	\$ 4	\$ 7	\$ 50	\$ 28
Operating expense:				
Research and development	964	932	2,886	3,123
Selling, general and administrative expenses	4,016	4,023	12,326	15,923
Total operating expense	4,980	4,955	15,212	19,046
Loss from operations	(4,976)	(4,948)	(15,162)	(19,018)
Interest and other income, net	20	14	75	34
Loss before taxes	(4,956)	(4,934)	(15,087)	(18,984)
Income tax benefit (expense)	—	—	393	(5)
Net loss	\$ (4,956)	\$ (4,934)	\$ (14,694)	\$ (18,989)
Basic and diluted loss per share	\$ (0.07)	\$ (0.08)	\$ (0.22)	\$ (0.31)
Weighted average shares outstanding basic and diluted	68,943	63,385	68,278	61,691

VIRNETX HOLDING CORPORATION
CONDENSED CONSOLIDATED STATEMENTS OF COMPREHENSIVE LOSS (Unaudited)
(in thousands)

	Three Months Ended		Nine Months Ended	
	September 30, 2019	September 30, 2018	September 30, 2019	September 30, 2018
Net loss	\$ (4,956)	\$ (4,934)	\$ (14,694)	\$ (18,989)
Other comprehensive gain (loss), net of tax:				
Change in unrealized gain (loss) on investments, net of tax	1	(1)	2	(1)
	1	(1)	2	(1)
Comprehensive loss	\$ (4,955)	\$ (4,935)	\$ (14,692)	\$ (18,990)

See accompanying notes to condensed consolidated financial statements.

VIRNETX HOLDING CORPORATION
CONDENSED CONSOLIDATED STATEMENTS OF STOCKHOLDERS' EQUITY (Unaudited)
(in thousands, except per share amounts)

For the Three and Nine Months Ended September 30, 2019

	Common Stock		Additional Paid-in Capital	Accumulated Deficit	Accumulated Other Comprehensive Loss	Total Stockholders' Equity (Deficit)
	Shares	Amount				
Balance, December 31, 2018	<u>66,879,847</u>	<u>\$ 7</u>	<u>\$ 208,317</u>	<u>\$ (198,422)</u>	<u>\$ (14)</u>	<u>\$ 9,888</u>
Stock issued for cash at \$5.05 -\$5.42 per share, net	560,338		2,848			2,848
Stock-based compensation			785			785
Exercise of options	663,816		816			816
Comprehensive loss:						
Net Loss				(5,608)		(5,608)
Other comprehensive income (loss), net of tax					1	1
Comprehensive loss						(5,607)
Balance, March 31, 2019	<u>68,104,001</u>	<u>\$ 7</u>	<u>\$ 212,766</u>	<u>\$ (204,030)</u>	<u>\$ (13)</u>	<u>\$ 8,730</u>
Stock issued for cash at \$6.02 -\$6.49 per share, net	467,928		2,849			2,849
Stock-based compensation			928			928
Stock issued for vested RSUs	182,618					
Comprehensive loss:						
Net Loss				(4,130)		(4,130)
Comprehensive loss						(4,130)
Balance, June 30, 2019	<u>68,754,547</u>	<u>\$ 7</u>	<u>\$ 216,543</u>	<u>\$ (208,160)</u>	<u>\$ (13)</u>	<u>\$ 8,377</u>
Stock issued for cash at \$5.53 -\$6.28 per share, net	203,754		1,219			1,219
Stock-based compensation			999			999
Comprehensive loss:						
Net Loss				(4,956)		(4,956)
Other comprehensive income (loss), net of tax					1	1
Comprehensive loss						(4,955)
Balance, September 30, 2019	<u>68,958,301</u>	<u>\$ 7</u>	<u>\$ 218,761</u>	<u>\$ (213,116)</u>	<u>\$ (12)</u>	<u>\$ 5,640</u>

VIRNETX HOLDING CORPORATION
CONDENSED CONSOLIDATED STATEMENTS OF STOCKHOLDERS' EQUITY (Unaudited)
(in thousands, except per share amounts)

For the Three and Nine Months Ended September 30, 2018

	Common Stock		Additional Paid-in Capital	Accumulated Deficit	Accumulated Other Comprehensive Loss	Total Stockholders' Equity (Deficit)
	Shares	Amount				
Balance, December 31, 2017	<u>59,051,978</u>	<u>\$ 6</u>	<u>\$ 177,076</u>	<u>\$ (175,516)</u>	<u>\$ (13)</u>	<u>\$ 1,553</u>
Cumulative effects of accounting change						
ASC 606				2,500		2,500
Stock issued for cash at \$4.02 per share, net	1,751,689		6,830			6,830
Stock-based compensation			887			887
Stock issued for vested RSUs	20,000					
Comprehensive loss:						
Net Loss				(7,605)		(7,605)
Other comprehensive income (loss), net of tax					1	1
Comprehensive loss						(7,604)
Balance, March 31, 2018	<u>60,823,667</u>	<u>\$ 6</u>	<u>\$ 184,793</u>	<u>\$ (180,621)</u>	<u>\$ (12)</u>	<u>\$ 4,166</u>
Stock issued for cash at \$3.45 - \$4.13 per share, net	1,320,921		4,809			4,809
Stock-based compensation			1,121			1,121
Stock issued for vested RSUs	148,219					
Comprehensive loss:						
Net Loss				(6,450)		(6,450)
Comprehensive loss						(6,450)
Balance, June 30, 2018	<u>62,292,807</u>	<u>\$ 6</u>	<u>\$ 190,723</u>	<u>\$ (187,071)</u>	<u>\$ (12)</u>	<u>\$ 3,646</u>
Stock issued for cash at \$3 - \$4.89 per share, net	4,083,377	1	13,634			13,635
Stock-based compensation			1,018			1,018
Comprehensive loss:						
Net Loss				(4,934)		(4,934)
Other comprehensive income (loss), net of tax					(2)	(2)
Comprehensive loss						(4,936)
Balance, September 30, 2018	<u>66,376,184</u>	<u>\$ 7</u>	<u>\$ 205,375</u>	<u>\$ (192,004)</u>	<u>\$ (14)</u>	<u>\$ 13,363</u>

VIRNETX HOLDING CORPORATION
CONDENSED CONSOLIDATED STATEMENTS OF CASH FLOWS (Unaudited)
(in thousands)

	Nine Months Ended	
	September 30,	September 30,
	2019	2018
Cash flows from operating activities:		
Net loss	\$ (14,694)	\$ (18,989)
Adjustments to reconcile net loss to net cash used in operating activities:		
Depreciation	4	14
Stock-based compensation	2,712	3,026
Changes in assets and liabilities:		
Prepaid expenses and other assets	286	89
Accounts payable and accrued liabilities	118	(18)
Accrued payroll and related expenses	62	(1,882)
Accounts receivable	—	(4)
Income tax liability	(396)	5
Net cash used in operating activities	<u>(11,908)</u>	<u>(17,759)</u>
Cash flows from investing activities:		
Purchase of investments	(5,319)	(1,430)
Proceeds from sale or maturity of investments	4,503	2,219
Net cash (used in) provided by investing activities	<u>(816)</u>	<u>789</u>
Cash flows from financing activities:		
Proceeds from exercise of options	816	—
Proceeds from sale of common stock	6,916	25,273
Payments of taxes on cashless exercise of restricted stock units	(47)	(42)
Net cash provided by financing activities	<u>7,685</u>	<u>25,231</u>
Net increase (decrease) in cash and cash equivalents	<u>(5,039)</u>	<u>8,261</u>
Cash and cash equivalents, beginning of period	7,611	3,135
Cash and cash equivalents, end of period	<u>\$ 2,572</u>	<u>\$ 11,396</u>
Cash paid for income taxes	<u>\$ —</u>	<u>\$ 3</u>
Non-cash transactions		
Deferred revenue reclassified to retained earnings – ASC 606 adoption	<u>\$ —</u>	<u>\$ 2,500</u>

See accompanying notes to condensed consolidated financial statements.

VIRNETX HOLDING CORPORATION**NOTES TO CONDENSED CONSOLIDATED FINANCIAL STATEMENTS**
(in thousands, except share and per share amounts)
(Unaudited)**Note 1 — Business Description and Basis of Presentation**

VirnetX Holding Corporation, which we refer to as “we”, “us”, “our”, “the Company” or “VirnetX”, is engaged in the business of commercializing a portfolio of patents. We seek to license our technology, including GABRIEL Connection Technology™, to various original equipment manufacturers, or OEMs, that use our technologies in the development and manufacturing of their own products within the IP-telephony, mobility, fixed-mobile convergence and unified communications markets. Prior to 2012 our revenue was limited to an insignificant amount of software royalties pursuant to the terms of a single license agreement. Since 2012 we had revenues from settlements of patent infringement disputes whereby we received consideration for past sales of licensees that utilized our technology, where there was no prior patent license agreement, as well as license agreement revenues from settlements providing licensing for the continued use of our technology (see “Revenue Recognition”).

Our portfolio of intellectual property is the foundation of our business model. We currently own approximately 191 total patents and pending applications, including 75 U.S. patents/patent applications and 116 foreign patents/validations/pending applications. Our patent portfolio is primarily focused on securing real-time communications over the Internet, as well as related services such as the establishment and maintenance of a secure domain name registry. Our patented methods also have additional applications in the key areas of device operating systems and network security for Cloud services, Machine-to-Machine (“M2M”), and communications in areas including “Smart City,” “Connected Car” and “Connected Home.” All our U.S. and foreign patents and pending patent applications relate generally to securing communications over the internet and as such, cover all our technology and other products. Our issued U.S. and foreign patents expire at various times during the period from 2019 to 2024. Some of our issued patents and pending patent applications were acquired by our principal operating subsidiary, VirnetX, Inc., from Leidos, Inc. (“Leidos”) (f/k/a Science Applications International Corporation, or SAIC) in 2006 and we are required to make payments to Leidos based on cash or certain other values generated from those patents in certain circumstances. The amount of such payments depends upon the type of value generated and certain categories are subject to maximums and other limitations.

Note 2 — Summary of Significant Accounting Policies***Unaudited Interim Financial Information***

The accompanying Condensed Consolidated Balance Sheet as of September 30, 2019, the Condensed Consolidated Statements of Operations for the three and nine months ended September 30, 2019 and 2018, the Condensed Consolidated Statements of Comprehensive Loss for the three and nine months ended September 30, 2019 and 2018, the Condensed Consolidated Statements of Stockholders’ Equity for each of the three and nine months ended September 30, 2019 and 2018, and the Condensed Consolidated Statements of Cash Flows for the nine months ended September 30, 2019 and 2018 are unaudited. These unaudited interim consolidated financial statements have been prepared in accordance with generally accepted accounting principles in the United States (“U.S. GAAP”). In our opinion, the unaudited interim consolidated financial statements include all adjustments of a normal recurring nature necessary for the fair presentation of our financial position as of September 30, 2019, our results of operations for the three and nine months ended September 30, 2019 and 2018, and our cash flows for the nine months ended September 30, 2019 and 2018. The results of operations for interim periods are not necessarily indicative of the results to be expected for a full year.

These unaudited interim consolidated financial statements should be read in conjunction with the consolidated financial statements and related notes included in our Annual Report on Form 10-K for the fiscal year ended December 31, 2018, filed with the SEC on March 18, 2019.

Use of Estimates

We prepare our consolidated financial statements in accordance with U.S. GAAP. In doing so, we must make estimates and assumptions that affect our reported amounts of assets, liabilities, revenues, and expenses, as well as related disclosure of contingent assets and liabilities. In some cases, we could reasonably have used different accounting policies and estimates. In some cases, changes in our accounting estimates are reasonably likely to occur. Accordingly, actual results could differ materially from our estimates. To the extent that there are material differences between these estimates and actual results, our financial condition or results of operations will be affected. We base our estimates on past experience and other assumptions that we believe are reasonable under the circumstances, at the time they are made, and we evaluate these estimates on an ongoing basis. We refer to accounting estimates of this type as critical accounting policies and estimates, which we discuss further below.

Reclassifications

Certain prior period amounts were reclassified to conform to the current year’s presentation. None of these reclassifications had an impact on reported operating expenses, operating income or net income for any of the periods presented.

Basis of Consolidation

The consolidated financial statements include the accounts of VirnetX Holding Corporation and our wholly owned subsidiaries. All intercompany balances and transactions have been eliminated.

Leases

The Company determines if an arrangement is a lease at inception in accordance with Accounting Standards Codification (“ASC”) Topic 842. Operating lease right-of-use (“ROU”) assets are included in other assets on the Condensed Consolidated Balance Sheet. ROU assets represent the Company’s right to use an underlying asset for the lease term and lease liabilities represent the Company’s obligation to make lease payments arising from the lease. ROU assets and lease liabilities are recognized at the commencement date based on the present value of lease payments over the lease term.

Revenue Recognition

Most of our revenue is derived from licensing and royalty fees from contracts with customers which often span several years. We account for revenue in accordance with ASC Topic 606, Revenue from Contracts with Customers. A performance obligation is a promise in a contract to transfer a distinct good or service to the customer. 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 revenue arrangements may consist of multiple-element arrangements, with revenue for each unit of accounting recognized as the product or service is delivered to the customer.

With the licensing of our patents, performance obligations are generally satisfied at a point in time as work is complete when our patent rights are transferred to our customers. We generally have no further obligation to our customers regarding our technology.

Certain contracts may require our customers to enter into a hosting arrangement with us and for these arrangements, revenue is recognized over time, generally over the life of the servicing contract.

Deferred revenue

From 2013 to 2016, we received contractual payments totaling \$10,000. In accordance with our revenue recognition policy, we deferred and then recognized revenue over the life of the contract, but not ahead of collection. On January 1, 2018, we adopted Topic 606 and applied the modified retrospective approach.

Earnings (Loss) Per Share

Basic earnings (loss) per share are computed by dividing earnings (loss) available to common stockholders by the weighted average number of outstanding common shares during the period. Diluted earnings per share are computed by dividing net income by the weighted average number of shares outstanding during the period increased to include the number of additional shares of common stock that would have been outstanding if the potentially dilutive securities had been issued.

Concentration of Credit Risk and Other Risks and Uncertainties

Our cash and cash equivalents are primarily maintained at two major financial institutions in the United States. A portion of those balances are insured by the Federal Deposit Insurance Corporation. During the nine months ended September 30, 2019 we had funds which were uninsured. We do not believe that we are subject to any unusual financial risk beyond the normal risk associated with commercial banking relationships with major financial institutions. We have not experienced any losses on our deposits of cash and cash equivalents.

Other Assets

Other assets at September 30, 2019 include a right-of-use asset related to a facility lease for corporate promotional and marketing purposes. The facility lease was paid in full at inception and the ROU asset is being amortized over the remaining term of the lease. Other assets also include an ROU asset related to our office operating lease which expires in October 2019, and had subsequently been extended to October 2021 (See Note 8).

Impairment of Long-Lived Assets

On an annual basis, we identify and record impairment losses on long-lived assets when events and changes in circumstances indicate that the carrying amount of an asset might not be recoverable. Recoverability is measured by comparison of the anticipated future net undiscounted cash flows to the related assets’ carrying value. If such assets are impaired, the impairment to be recognized is measured by the amount by which the carrying amount of the assets exceeds the projected discounted future net cash flows arising from the asset.

Fair Value of Financial Instruments

Fair value is the price that would result from an orderly transaction between market participants at the measurement date. A fair value hierarchy prioritizes the inputs used to measure fair value. The hierarchy gives the highest priority to unadjusted quoted prices in active markets for identical assets or liabilities (Level 1 measurement) and the lowest priority to unobservable inputs (Level 3 measurement). Level 2 measurements utilize either directly or indirectly observable inputs in markets other than quoted prices in active markets.

Our financial instruments are stated at amounts that equal, or approximate, fair value. When we estimate fair value, we utilize market data or assumptions that we believe market participants would use in pricing the financial instrument, including assumptions about risk and inputs to the valuation technique. We use valuation techniques, primarily the income and market approach, which maximizes the use of observable inputs and minimize the use of unobservable inputs for recurring fair value measurements.

Mutual Funds: Valued at the quoted net asset value of shares held.

U.S. Agency Securities: Fair value measured at the closing price reported on the active market on which the individual securities are traded.

The following tables show the adjusted cost, gross unrealized gains, gross unrealized losses and fair value of our securities by significant investment category as of September 30, 2019, and December 31, 2018.

	September 30, 2019					
	Adjusted Cost	Unrealized Gains	Unrealized Losses	Fair Value	Cash and Cash Equivalents	Investments Available for Sale
Cash	\$ 1,756	\$ —	\$ —	\$ 1,756	\$ 1,756	\$ —
Level 1:						
Mutual funds	624	—	—	624	624	—
U.S. agency securities	2,811	2	—	2,813	192	2,621
Total investments	3,435	2	—	3,437	816	2,621
Total	\$ 5,191	\$ 2	\$ —	\$ 5,193	\$ 2,572	\$ 2,621

	December 31, 2018					
	Adjusted Cost	Unrealized Gains	Unrealized Losses	Fair Value	Cash and Cash Equivalents	Investments Available for Sale
Cash	\$ 5,048	\$ —	\$ —	\$ 5,048	\$ 5,048	\$ —
Level 1:						
Mutual funds	1,107	—	—	1,107	1,107	—
U.S. agency securities	3,259	—	—	3,259	1,456	1,803
Total investments	4,366	—	—	4,366	2,563	1,803
Total	\$ 9,414	\$ —	\$ —	\$ 9,414	\$ 7,611	\$ 1,803

New Accounting Pronouncements

In June 2016, the Financial Accounting Standards Board (“FASB”) issued Accounting Standards Update (“ASU”) No. 2016-13, Financial Instruments-Credit Losses (Topic 326). The purpose of this ASU is to require a financial asset measured at amortized cost basis to be presented at the net amount expected to be collected. Credit losses relating to available-for-sale debt securities should be recorded through an allowance for credit losses. This ASU is effective for interim and annual reporting periods beginning after December 15, 2019. We will adopt ASU 2016-13 effective January 1, 2020 with any cumulative effect of adoption recorded as an adjustment to retained earnings. The effect on our consolidated financial statements will largely depend on the composition and credit quality of our investment portfolio and the economic conditions and forecasts at the time of adoption. Based on the current composition of our investment portfolio, current market conditions, and historical credit loss activity, the impact on our consolidated financial statements and related disclosures is not expected to be material.

In February 2016, FASB issued ASU No. 2016-02, Leases (Topic 842) as amended and supplemented by subsequent ASU’s, (“ASU 2016-02”). ASU 2016-02 requires an entity to recognize ROU assets and lease liabilities on its balance sheet and disclose key information about leasing arrangements. For public companies, ASU 2016-02 is effective for annual reporting periods beginning after December 15, 2018, including interim periods within that reporting period, and requires a modified retrospective adoption, with early adoption permitted. We adopted this ASU on January 1, 2019 which had no impact on our condensed consolidated statements of operations or cash flow (See Note 8 for impact on our Condensed Consolidated Balance Sheets).

Note 3 - Income Taxes

We had an income tax benefit of \$393 for the nine months ended September 30, 2019, due to a release of a state reserve as the statute of limitation for the tax return expired during the year. We had an income tax expense of (\$5) for the same period in 2018. We had income tax expense of \$0 for the three months ended September 30, 2019 and 2018. During the three and nine-month periods ended September 30, 2019 and 2018, we had net operating losses (“NOLs”) which generated deferred tax assets for NOL carryforwards. We provided valuation allowances against the net deferred tax assets including the deferred tax assets for NOL carryforwards.

In assessing the realization of deferred tax assets, management considers whether it is more likely than not that some portion or all of the deferred tax assets will not be realized. The ultimate realization of the deferred tax assets is dependent upon the generation of future taxable income during the periods in which those temporary differences become deductible. Based on the available objective evidence, management believes it is more likely than not that the net deferred tax assets at September 30, 2019 will not be fully realizable. Accordingly, management has maintained a full valuation allowance against its net deferred tax assets at September 30, 2019. The valuation allowance carried against our net deferred tax assets was approximately \$37,000 at September 30, 2019 and \$36,000 at December 31, 2018.

As of September 30, 2019, we have federal and state net operating loss carryforwards of approximately \$127,000 and \$108,000, respectively, expiring beginning in 2027 and 2028, respectively.

Our policy is to recognize interest and penalties accrued on uncertain tax positions as a component of income tax expense.

Note 4 — Commitments and Related Party Transactions

We lease our offices under an operating lease with a third party which expires in October 2019, and has subsequently been extended to October 2021 (see Note 8).

We entered into a service agreement for the use of an aircraft from K2 Investment Fund LLC (“LLC”) for business travel for employees of the Company. We incurred approximately \$442 and \$1,327 compared to \$579 and \$1,262 in rental fees and reimbursements to the LLC during the three and nine months ended September 30, 2019 and 2018, respectively. We pay for the Company’s usage of the aircraft and have no rights to purchase. Our Chief Executive Officer and Chief Administrative Officer are the managing partners of the LLC and control the equity interests of the LLC. We entered into a 12-month non-exclusive agreement with the LLC for use of the plane at a rate of \$8 per flight hour, with no minimum usage requirement. The agreement contains other terms and conditions normal in such transactions and can be cancelled by either us or the LLC with 30 days’ notice. The agreement renews on an annual basis unless terminated by either party. Neither party has exercised their termination rights.

Note 5 — Stock-Based Compensation

We have a stock incentive plan for employees and others called the VirnetX Holding Corporation 2013 Equity Incentive Plan (the “Plan”), which has been approved by our stockholders. In April 2017, the Board approved an amendment and restatement of the Plan to, among other things, increase the shares reserved under the Plan by 2,500,000 shares (the “Plan Amendment”). Our stockholders approved of the Plan Amendment at the 2017 Annual Meeting of Stockholders held on June 1, 2017. The Plan provides for grants of 16,624,469 shares of our common stock, including stock options and restricted stock units (“RSUs”), and will expire in 2023. As of September 30, 2019, 1,128,903 shares remained available for grant under the Plan.

During the three months ended September 30, 2019, we did not grant any options. During the three months ended September 30, 2018, we granted options totaling 85,000 shares with a weighted average grant date fair value of \$3.16.

During the nine months ended September 30, 2019, we granted options for a total of 345,000 shares. The weighted average fair value at the grant dates for options issued during the nine months ended September 30, 2019 was \$4.63 per option. The fair values of options at the grant date were estimated utilizing the Black-Scholes valuation model with the following weighted average assumptions for the nine months ended September 30, 2019 (i) dividend yield on our common stock of 0 percent (ii) expected stock price volatility of 92 percent (iii) a risk-free interest rate of 2.09 percent and (iv) an expected option term of 6 years.

During the nine months ended September 30, 2018, we granted options for a total of 1,095,000 shares with a weighted average grant date fair value of \$2.58. The fair values of options at the grant date were estimated utilizing the Black-Scholes valuation model with the following weighted average assumptions for the nine months ended September 30, 2018 (i) dividend yield on our common stock of 0 percent (ii) expected stock price volatility of 84 percent (iii) a risk-free interest rate average of 2.73 percent and (iv) an expected option term of 6 years.

During the three months ended September 30, 2019 and 2018, we did not grant any RSUs.

During the nine months ended September 30, 2019 and 2018, we granted 229,996 and 243,997 RSUs, respectively. The weighted average fair values at the grant dates for RSUs issued during the nine months ended September 30, 2019 and 2018 were \$6.06 and \$3.26 per RSU, respectively. RSUs, which are subject to forfeiture if service terminates prior to the shares vesting, are expensed ratably over the vesting period. During the nine months ended September 30, 2019 and 2018, we paid \$47 and \$42 in withholding taxes on shares issued upon conversion of RSUs. The underlying shares were canceled. These amounts are reflected as financing costs in the accompanying condensed consolidated statements of cash flows.

Stock-based compensation expense included in general and administrative expense was \$565 and \$1,437 and in research and development expense was \$434 and \$1,275 for the three and nine months ended September 30, 2019, respectively, and \$592 and \$1,447 for general and administrative expense and \$425 and \$1,580 for research and development expense for the three and nine months ended September 30, 2018, respectively.

As of September 30, 2019, the unrecognized stock-based compensation expense related to non-vested stock options and RSUs was \$5,542 and \$2,139, respectively, which will be amortized over an estimated weighted average period of approximately 2.31 and 2.59 years, respectively.

Note 6 — Equity

Common Stock

On July 30, 2018 we filed a \$100,000 universal shelf registration statement on SEC Form S-3 which was declared effective by the SEC on August 16, 2018. We also entered an at-the-market equity offering sales agreement (“ATM”) with Cowen & Company, LLC on August 31, 2018, under which we can offer and sell shares of our common stock having an aggregate value of up to \$50,000.

We use the ATM proceeds for GABRIEL product development, marketing and general corporate purposes, which may include working capital, capital expenditures, other corporate expenses and acquisitions of complementary products, technologies or businesses. As of September 30, 2019, common stock with an aggregate value of up to \$30,327 remained available for offer and sale under the ATM agreement.

During the three months ended September 30, 2019, we sold 203,754 shares under the ATM. The average sales price per common share was \$6.17 and the aggregate proceeds from the sales totaled \$1,257 during the period. Sales commissions, fees and other costs associated with the ATM totaled \$38. During the nine months ended September 30, 2019, we sold 1,232,020 shares under the ATM. The average sales price per common share was \$5.79 and the aggregate proceeds from the sales totaled \$7,131 during the period. Sales commissions, fees and other costs associated with the ATM totaled \$214.

Warrants

In 2015 we issued warrants for the purchase of 25,000 shares of common stock at an exercise price of \$7 per share, which expire in April 2020. Information about warrants outstanding as of September 30, 2019 is as follows:

Original Number of Warrants Issued	Exercise Price per Common Share	Exercisable at December 31, 2018	Became Exercisable	Exercised	Terminated / Cancelled / Expired	Exercisable at September 30, 2019	Expiration Date
25,000	\$ 7.00	25,000	—	—	—	25,000	April 2020
		25,000	—	—	—	25,000	

Note 7 — Litigation

We have multiple intellectual property infringement lawsuits pending in the United States District Court for the Eastern District of Texas, Tyler Division (“USDC”), and United States Court of Appeals for the Federal Circuit (“USCAFC”).

VirnetX Inc. v. Cisco Systems, Inc. et al. (Case 6:10-CV-00417-LED) (“Apple I”)

On August 11, 2010, we filed a complaint against Aastra USA, Inc. (“Aastra”), Apple Inc. (“Apple”), Cisco Systems, Inc. (“Cisco”), and NEC Corporation (“NEC”) the USDC in which we alleged that these parties infringe on certain of our patents (U.S. Patent Nos. 6,502,135, 7,418,504, 7,921,211 and 7,490,151). We sought damages and injunctive relief. The cases against each defendant were separated by the judge. Aastra and NEC agreed to sign license agreements with us, and we dropped all accusations of infringement against them. A jury in USDC decided that our patents were not invalid and rendered a verdict of non-infringement by Cisco on March 4, 2013. Our motion for a new Cisco trial was denied and the case against Cisco was closed.

On November 6, 2012, a jury in the USDC awarded us over \$368,000 for Apple’s infringement of four of our patents, plus daily interest up to the final judgment.

Apple filed an appeal of the judgment to the USCAFC. On September 16, 2014, USCAFC affirmed the USDC jury’s finding that all four of our patents at issue are valid and confirmed the USDC jury’s finding of infringement of VPN on Demand under many of the asserted claims of our ‘135 and ‘151 patents, and the USDC’s decision to allow evidence about our license and royalty rates regarding the determination of damages. However, the USCAFC vacated the USDC jury’s damages award and some of the USDC’s claim construction with respect to parts of our ‘504 and ‘211 patents and remanded the damages award and determination of infringement with respect to FaceTime back to the USDC for further proceedings.

On September 30, 2016, pursuant to the 2014 remand from the USCAFC, a jury in the USDC awarded us \$302,400 for Apple’s infringement of four of our patents. On September 29, 2017, the USDC entered its final judgement, denied all of Apple’s post-trial motions, granted all our post-trial motions, including our motion for willful infringement and enhanced the royalty rate during the willfulness period from \$1.20 to \$1.80 per device, and awarded us costs, certain attorneys’ fees, and prejudgment interest. The total amount in the final judgement was \$439,700, including \$302,400 (jury verdict), \$41,300 (enhanced damages) and \$96,000 (costs, fees and interest).

On October 27, 2017 Apple filed its notice of appeal of this final judgement to the USCAFC. Apple filed its opening brief on March 19, 2018. We filed our response on April 4, 2018. On April 11, 2018, USCAFC designated **Cases 18-1197-CB, Case 17-1368 and Case 17-1591** as companion cases and assigned to the same merits panel. Events and developments after this order are described below under **VirnetX Inc. v. The Mangrove Partners (USCAFC Case 17-1368) (“Consolidated Appeal”)**.

VirnetX Inc. v. Apple, Inc. (Case 6:12-CV-00855-LED) (“Apple II”)

This case began on November 6, 2012, when we had filed a complaint against Apple in USDC in which we alleged that Apple infringed on certain of our patents, (U.S. Patent Nos. 6,502,135, 7,418,504, 7,921,211 and 7,490,151). We sought damages and injunctive relief. The accused products include the iPhone 5, iPod Touch 5th Generation, iPad 4th Generation, iPad mini, and the latest Macintosh computers; these products were not included in the Apple I case because they were released after the Apple I case was initiated. Post-Trial Motions hearing was held on July 18, 2018. On August 31, 2018, the USDC entered a Final Judgment and issued its Memorandum Opinion and Order regarding post-trial motions, affirming the jury’s verdict of \$502,600 and granting VirnetX’s motions for supplemental damages, a sunset royalty and the royalty rate of \$1.20 per infringing iPhone, iPad and Mac products, pre-judgment and post-judgment interest and costs. On September 20, 2018, pursuant to a Court’s order, attorneys from VirnetX and Apple conferred and agreed, without dispute, to add an amount totaling \$93,300 for Bill of Costs and Prejudgment Interest to the \$502,600 jury verdict. The total amount in the final judgement in the Apple II case is now \$595,900. Apple has filed a notice of appeal with the USCAFC in the Apple II case. On October 9, 2018, USCAFC accepted the notice and docketed it as **Case No. 19-1050 - VirnetX Inc. v. Apple Inc.** All subsequent events and developments in this case are described below under **VirnetX Inc. v. Apple Inc. (USCAFC Case 19-1050) (“Apple II Appeal”)**.

VirnetX Inc. v. The Mangrove Partners (USCAFC Case 17-1368) (“Consolidated Appeal”)

On April 11, 2018, the USCAFC in an order designated the following appeals as companion cases and assigned to the same merits panel;

- **VirnetX Inc. v. The Mangrove Partners (USCAFC Case 17-1368)**

On December 16, 2016, we filed appeals with the USCAFC, appealing the invalidity findings by the Patent Trial and Appeal Board (“PTAB”) in IPR2015-01046, and on December 20, 2016 for IPR2015-1047, involving our U.S. Patent Nos. 6,502,135, and 7,490,151. These appeals also involve Apple and one of them involves Black Swamp IP, LLC. Oral arguments in this case were argued on January 8, 2019.

On July 8, 2019, the USCAFC issued its opinion vacating and remanding both decisions. The court agreed with us that the PTAB misconstrued the patent claims, that many of the PTAB’s invalidity findings lacked substantial evidence, and that the PTAB Board abused its discretion in denying us the opportunity to file a motion for additional discovery as to the real party-in-interest issues. The underlying inter partes review (“IPR”) proceedings are currently pending before the PTAB.

- **VirnetX Inc. v. Cisco Systems, Inc. (USCAFC Case 18-1197-CB) (Appeal of Apple I Case)**

On October 27, 2017, Apple appealed the Final Judgment entered on September 29, 2017 to the USCAFC. Oral arguments in this case were held on January 8, 2019. On January 15, 2019 the Court issued a Rule 36 order affirming the District Court Judgement. Apple filed a request for panel rehearing and rehearing en-banc in this matter on February 21, 2019. On March 12, 2019, the Court invited us to respond to Apple’s petition on or before March 26, 2019. We filed our response on March 22, 2019.

On July 1, 2019 Apple filed a motion for leave to file a supplemental brief regarding the impact of the USCAFC’s decision in **VirnetX Inc. v. Cisco Systems, Inc. (USCAFC Case 18-1751)**, issued on June 28, 2019 (described below). We filed a response to Apple’s motion and a contingent motion for leave to file a responsive supplemental brief on July 11, 2019. On July 17, 2019, the USCAFC granted both motions and ordered Apple’s and our supplemental briefs filed. On August 1, 2019, USCAFC issued an order denying Apple’s petition for panel and en banc rehearing. On August 7, 2019, Apple filed a motion to vacate the August 1, 2019 order and for leave to file a second request for panel rehearing and rehearing en-banc. On October 1, 2019, USCAFC issued an order denying Apple’s motion. Apple subsequently requested an extension for its deadline to petition for a writ of certiorari, and that deadline was extended until December 29, 2019.

- **VirnetX Inc. v. Apple Inc., Cisco Systems, Inc. (USCAFC Case 17-1591)**

On February 7, 2017, we filed appeals with the USCAFC, appealing the invalidity findings by the PTAB in inter-parties’ reexamination nos. 95/001,788, 95/001,789, and 95/001,856 related to our U.S. Patent Nos. 7,921,211 and 7,418,504. Oral arguments in this case were argued on January 8, 2019.

On July 1, 2019 Apple filed a motion for leave to file a supplemental brief regarding the impact of the USCAFC’s decision in **VirnetX Inc. v. Cisco Systems, Inc. (USCAFC Case 18-1751)**, issued on June 28, 2019 (described below). We filed a response to Apple’s motion and a contingent motion for leave to file a responsive supplemental brief on July 11, 2019. On July 15, 2019, we filed a corrected response and a corrected supplemental brief. On July 17, 2019, the USAFC granted both motions and ordered Apple’s and supplemental briefs filed.

On August 1, 2019, the USCAFC issued an opinion in this case agreeing with us that the PTAB could not maintain two of those reexaminations (initiated by Apple) with respect to claims as to which there has been a prior “final decision” on patent validity entered by a federal court. The court instructed PTAB to terminate those reexamination proceedings with respect to claims 1-35 of the ‘504 patent and claims 36-59 of the ‘211 patent. The court affirmed PTAB’s invalidity findings with respect to the remaining patent claims. Apple filed a request for panel rehearing and rehearing en-banc in this matter on August 26, 2019. We filed a separate request for panel rehearing on September 3, 2019. Our request was denied on September 19, 2019, and Apple’s request was denied on October 11, 2019.

VirnetX Inc. v. Apple Inc. (USCAFC Case 19-1050) (“Apple II Appeal”)

On January 24, 2019 Apple filed its opening brief. We filed our response brief on March 1, 2019. Apple filed its reply brief on April 5, 2019. The oral arguments were heard on October 4, 2019. A decision by the USCAFC has not yet been issued.

VirnetX Inc. v. Apple Inc. (USCAFC Case 17-2490)

On August 23, 2017, we filed with the USCAFC appeals of the invalidity findings by the PTAB in IPR2016-00331 and IPR2016-00332 involving our U.S. Patent No. 8,504,696. On December 10, 2018, the USCAFC issued an opinion affirming the PTAB’s invalidity findings.

VirnetX Inc. (USCAFC Case 17-2593)

On September 22, 2017, we filed with the USCAFC appeals of the invalidity findings by the PTAB in IPR2016-00693 and IPR2016-00957 involving our U.S. Patent Nos. 7,418,504 and 7,921,211. The briefing in these appeals has not taken place. The entity that initiated the IPRs, Black Swamp IP, LLC, indicated on October 18, 2017, that it would not participate in the appeals. On November 27, 2017, the USPTO indicated that it would intervene in the appeals. On January 19, 2018, the USCAFC stayed these appeals pending the USCAFC's decision in Case 17-1591. On October 25, 2019, we and the USPTO filed a joint request that the deadline to inform the USCAFC how these appeals should proceed be extended until November 1, 2019.

VirnetX Inc. v. Cisco Systems, Inc. (USCAFC Case 18-1751)

On March 30, 2018, we filed with the USCAFC an appeal of the invalidity findings by the PTAB in inter-partes reexamination no. 95/001,851 involving our U.S. Patent No. 7,418,504. Oral arguments in this case were held on June 4, 2019.

On June 28, 2019, the USCAFC issued its opinion vacating the PTAB's invalidity findings with respect to claims 5, 12, and 13 and remanding to the PTAB for further proceedings. The court affirmed the PTAB's invalidity findings with respect to the remaining patent claims. Cisco filed a request for panel rehearing and rehearing en-banc in this matter on August 12, 2019. Cisco's request was denied on October 1, 2019.

VirnetX Inc. v. Cisco Systems, Inc. (USCAFC Case 19-1043)

On October 1, 2018, we filed with the USCAFC an appeal of the invalidity findings by the PTAB in inter-partes reexamination no. 95/001,746 involving our U.S. Patent No. 6,839,759. We filed our opening brief on March 15, 2019. Cisco filed its response brief on June 19, 2019. We filed our reply brief on August 14, 2019. Cisco filed a motion to submit a sur-reply brief on August 26, 2019, which we opposed. On September 27, 2019, the USCAFC issued an order deferring resolution of Cisco's motion for the merits panel. The oral arguments have not yet been scheduled.

VirnetX Inc. v. Cisco Systems, Inc. (USCAFC Case 19-1671)

On March 18, 2018, we filed with the USCAFC an appeal of the invalidity findings by the PTAB in inter-partes reexamination no. 95/001,679 involving our U.S. Patent No. 6,502,135. We filed a motion to remand on August 23, 2019, which the USCAFC denied on October 1, 2019, directing the parties to address the issues in the merits briefs. Our opening brief is currently due on November 12, 2019.

VirnetX Inc. v. Cisco Systems, Inc. (USCAFC Case 19-1725)

On March 29, 2019, we filed with the USCAFC an appeal of the invalidity findings by the PTAB in inter-partes reexamination no. 95/001,792 involving our U.S. Patent No. 7,188,180. We filed a motion to remand on September 10, 2019, which remains pending.

One or more potential intellectual property infringement claims may also be available to us against certain other companies who have the resources to defend against any such claims. Although we believe these potential claims are likely valid, commencing a lawsuit can be expensive and time-consuming, and there is no assurance that we could prevail on such potential claims if we made them. In addition, bringing a lawsuit may lead to potential counterclaims which may distract our management and our other resources, including capital resources, from efforts to successfully commercialize our products.

Currently, we are not a party to any other pending legal proceedings and are not aware of any proceeding threatened or contemplated against us.

Note 8 — Leases

We determine if an arrangement is a lease at inception. Operating lease ROU assets are included in other assets on the Condensed Consolidated Balance Sheet as of September 30, 2019. ROU assets represent our right to use an underlying asset for the lease term and lease liabilities represent our obligation to make lease payments arising from the lease. ROU assets and lease liabilities are recognized at the commencement date based on the present value of lease payments over the lease term.

We lease office space under an operating lease which initially expired in October 2019. On October 31, 2019, we executed a two-year extension to the lease, extending existing rates through October 31, 2021. Our extended office lease continues as an operating lease. We also entered an operating lease for a facility used for corporate promotional and marketing purposes which was prepaid in full in a prior year and expires in 2024.

As described under New Accounting Pronouncements above, we adopted ASU 2016-02 effective January 1, 2019. As a result of the adoption, on January 1, 2019 we reclassified \$385 of prepaid lease payments for the promotional and marketing facility from current assets to non-current assets. At January 1, 2019 we recorded an ROU asset and lease liability of \$45 for the office lease with a balance of \$4 at September 30, 2019. On October 31, 2019, the lease extension date, we increased our ROU and lease liability by \$111, of which \$9 is due in 2019, \$56 is due in 2020, and \$46 is due in 2021. For the three and nine months ended

September 30, 2019, we recorded lease expense of \$14 and \$41, respectively. Adoption of the ASU had no impact on the Condensed Consolidated Statement of Operations.

Note 9 — Subsequent Events

Between October 1, 2019 and November 6, 2019, we sold 551,795 shares of common stock under the ATM program. The average sales price per common share sold was \$6.09 and the aggregate proceeds from the sales totaled \$3,360. Sales commissions, fees and other costs associated with these ATM transactions totaled \$101.

ITEM 2 — MANAGEMENT’S DISCUSSION AND ANALYSIS OF FINANCIAL CONDITION AND RESULTS OF OPERATIONS

Company Overview

We are an Internet security software and technology company with patented technology for secure communications including 5G and 4G LTE security. Our software and technology solutions, including our Secure Domain Name Registry and GABRIEL Connection Technology™, are designed to facilitate secure communications and provide the security platform required by next-generation Internet-based applications such as instant messaging, or IM, voice over Internet protocol, or VoIP, mobile services, streaming video, file transfer, remote desktop and Machine-to-Machine, or M2M communications. Our technology generates secure connections on a “zero-click” or “single-click” basis, significantly simplifying the deployment of secure real-time communication solutions by eliminating the need for end-users to enter any encryption information. Our portfolio of intellectual property is the foundation of our business model. We currently own approximately 191 total patents and pending applications, including 75 U.S. patents/patent applications and 116 foreign patents/validations/pending applications. Our patent portfolio is primarily focused on securing real-time communications over the Internet, as well as related services such as the establishment and maintenance of a secure domain name registry. Our patented methods also have additional applications in the key areas of device operating systems and network security for Cloud services, M2M communications in the new initiatives like “Smart City”, “Connected Car” and “Connected Home” that would connect everything from social services and citizen engagement to public safety, transportation and economic development to the internet to enable more productivity, features and efficiency in our everyday lives. The subject matter of all our U.S. and foreign patents and pending applications relates generally to securing communication over the internet, and as such covers all our technology and other products. Our issued U.S. and foreign patents expire at various times during the period from 2019 to 2024. Some of our issued patents and pending patent applications were acquired by our principal operating subsidiary, VirnetX, Inc., from Leidos, Inc., or Leidos, (f/k/a Science Applications International Corporation, or SAIC) in 2006 and we are required to make payments to Leidos, based on cash or certain other values generated from those patents. The amount of such payments depends upon the type of value generated, and certain categories are subject to maximums and other limitations.

Our product GABRIEL Secure Communication Platform™, unlike other collaboration and communication products and services on the market today, does not require access to user’s confidential data and reduces the threat of hacking and data mining. It enables individuals and organizations to maintain complete ownership and control over their personal and confidential data, secured within their own private network, while enabling authorized secure encrypted access from anywhere at any time. Our GABRIEL Collaboration Suite™ is a set of applications that run on top of our GABRIEL Secure Communication Platform™. It enables seamless and secure cross-platform communications between user’s devices that have our software installed. Our GABRIEL Collaboration Suite™ is available for download and free trial, for Android, iOS, Windows, Linux and Mac OS X platforms, at <http://www.gabrielsecure.com>. We continue to enhance our products and add new functionality to our products. We will provide updates to new and existing customers as they are released to the general public. Over 80 small and medium businesses have installed our GABRIEL Secure Communication Platform™ and GABRIEL Collaboration Suite™ products in their corporate networks. We intend to continue to expand our customer base with targeted promotions and direct sales initiatives.

We are actively recruiting best-of-breed partners in various vertical markets including, healthcare, finance, government, etc., to help us rapidly expand our enterprise customer base. A number of information sharing and analysis organizations (each, an “ISAO”) in the International Association of Certified ISAO (the “IACI”) including, ISAO’s for Maritime & Ports, ISAO Credit Union ISAO, City of Chicago, ISAO Human Trafficking ISAO have chosen to deploy our software as private and secure e-technology to protect their communications. Several other ISAOs are completing their evaluations before deploying our products within their networks.

We have executed a number of patent and technology licenses and intend to seek further licensees for our technology, including our GABRIEL Connection Technology™ to original equipment manufacturers, or OEMs, of chips, servers, smart phones, tablets, e-Readers, laptops, net books and other devices, within the IP-telephony, mobility, fixed-mobile convergence and unified communications markets including 5G and 4G/LTE Advanced.

We have submitted a declaration with the 3rd Generation Partnership Project, or 3GPP, identifying a group of our patents and patent applications that we believe are or may become essential to certain developing specifications in the 3GPP LTE, Systems Architecture Evolution. We have agreed to make available a non-exclusive patent license under fair, reasonable and non-discriminatory terms and conditions, with compensation, or FRAND, to 3GPP members desiring to implement the technical specifications identified by us. We believe that we are positioned to license our essential security patents to 3GPP members as they move into deploying 5G and 4G/LTE Advanced devices and solutions.

We have an ongoing GABRIEL Licensing Program under which we offer licenses to a portion of our patent portfolio, technology and software, including our secure domain name registry service, to domain infrastructure providers, communication service providers as well as to system integrators. Our GABRIEL Connection Technology™ License is offered to OEM customers who want to adopt the GABRIEL Connection Technology™ as their solution for establishing secure connections using secure domain names within their products. We have developed GABRIEL Connection Technology™ Software Development Kit (“SDK”) to assist with rapid integration of these techniques into existing software implementations with minimal code changes and include object libraries, sample code, testing and quality assurance tools and the supporting documentation necessary for a customer to implement our technology. Customers who want to develop their own implementation of our patented techniques for supporting

secure domain names, or other techniques that are covered by our patent portfolio for establishing secure communication links, can purchase a patent license. These licenses will typically include an initial license fee, as well as an ongoing royalty.

We have signed Patent License Agreements with Avaya Inc., Aastra USA, Inc., Microsoft Corporation, Mitel Networks Corporation, NEC Corporation and NEC Corporation of America, Siemens Enterprise Communications GmbH & Co. KG, and Siemens Enterprise Communications Inc. to license certain of our patents, for a one-time payment and/or an ongoing royalty for all future sales through the expiration of the licensed patents with respect to certain current and future IP-encrypted products. We have also been working with IPVALUE Management Inc. in commercializing our portfolio of patents on securing real-time communications over the Internet with respect to certain third parties.

We believe that the market opportunity for our software and technology solutions is large and expanding as secure domain names are now an integral part of securing the next generation 5G and 4G/LTE Advanced wireless networks and M2M communications in areas including Smart City, Connected Car and Connected Home. We also believe that all 5G and 4G/LTE Advanced mobile devices will require unique secure domain names and become part of a secure domain name registry.

We will continue to license our patent portfolio, technology and software, including our secure domain name registry service, to domain infrastructure providers, communication service providers as well as to system integrators. We intend to seek further license of our technology, including our GABRIEL Connection Technology™ to enterprise customers, developers and original equipment manufacturers, or OEMs, of chips, servers, smart phones, tablets, e-Readers, laptops, net books and other devices, within the IP-telephony, mobility, fixed-mobile convergence and unified communications markets including 5G and 4G/LTE.

Our employees include the core development team behind our patent portfolio, technology and software. This team has worked together for over ten years and is the same team that invented and developed this technology while working at SAIC, now Leidos, on critical notional security projects. Leidos is a FORTUNE 500® scientific, engineering and technology applications company that uses its deep domain knowledge to solve problems of vital importance to the nation and the world, in national security, energy and the environment, critical infrastructure and health. The team has continued its research and development work started at Leidos and expanded the set of patents we acquired in 2006 from Leidos, into a larger portfolio of approximately 191 total patents and pending applications, including 75 U.S. patents/patent applications and 116 foreign patents/validations/pending applications. This portfolio now serves as the foundation of our licensing business and planned service offerings and is expected to generate the majority of our future revenue in license fees and royalties. We intend to continue our research and development efforts to further strengthen and expand our patent portfolio.

We will continue using a primarily outsourced and leveraged model to maintain efficiency and manage costs as we grow our licensing business by, for example, offering incentives to early licensing targets or asserting our rights for use of our patents. We also intend to expand our design pilot in participation with leading 5G and 4G/LTE companies (domain infrastructure providers, chipset manufacturers, service providers and others) and build our secure domain name registry.

New Accounting Pronouncements

In June 2016, the FASB issued ASU No. 2016-13, Financial Instruments-Credit Losses (Topic 326). The purpose of this ASU is to require a financial asset measured at amortized cost basis to be presented at the net amount expected to be collected. Credit losses relating to available-for-sale debt securities should be recorded through an allowance for credit losses. This ASU is effective for interim and annual reporting periods beginning after December 15, 2019. We will adopt ASU 2016-13 effective January 1, 2020 with any cumulative effect of adoption recorded as an adjustment to retained earnings. The effect on our consolidated financial statements will largely depend on the composition and credit quality of our investment portfolio and the economic conditions and forecasts at the time of adoption. Based on the current composition of our investment portfolio, current market conditions, and historical credit loss activity, the impact on our consolidated financial statements and related disclosures is not expected to be material.

In February 2016, FASB issued ASU No. 2016-02, Leases (Topic 842) as amended and supplemented by subsequent ASU's, ("ASU 2016-02"). ASU 2016-02 requires an entity to recognize right-of-use assets and lease liabilities on its balance sheet and disclose key information about leasing arrangements. For public companies, ASU 2016-02 is effective for annual reporting periods beginning after December 15, 2018, including interim periods within that reporting period, and requires a modified retrospective adoption, with early adoption permitted. We adopted this ASU on January 1, 2019 which had no impact on our consolidated statement of operations or cash flow (see Note 8 for impact on our Condensed Consolidated Balance Sheets).

Results of Operations

Three and Nine Months Ended September 30, 2019 Compared with Three and Nine Months Ended September 30, 2018 (in thousands, except per share amounts)

Revenue

We had revenues of \$4 and \$7 for the three months ended September 30, 2019 and 2018, respectively, and revenues of \$50 and \$28 for the nine months ended September 30, 2019 and 2018, respectively.

Research and Development Expenses

Research and development expenses were \$964 and \$932 for the three months ended September 30, 2019 and 2018, respectively, representing an increase of \$32 due primarily to an increase in staff expense. Research and development expenses were \$2,886 and \$3,123 for the nine months ended September 30, 2019 and 2018, respectively, representing a decrease of \$237 due primarily to a decrease in staff expense.

Selling, General and Administrative Expenses

Selling, general and administrative expenses includes wages and benefits of management and administrative personnel, as well as outside legal, accounting, and consulting services.

Our selling, general and administrative expenses for the three months ended September 30, 2019 compared to the same period in 2018 decreased by \$7 to \$4,016. For the nine months ended September 30, 2019 our selling, general and administrative expenses decreased by \$3,597 to \$12,326 compared to the nine months ended September 30, 2018. The change was primarily due to a \$3,955 decrease in legal fees associated with our patent infringement actions. We expect to incur the same levels or decreased levels of legal fees over the foreseeable future and expect to report losses from operations as a result. (see “Legal Proceedings” for additional information regarding these infringement actions).

Other Income and Expenses

Interest income increased by \$6 to \$20 for the three months ended September 30, 2019, from \$14 for the comparable 2018 period, and increased by \$41 to \$75 for the nine months ended September 30, 2019 from \$34 for the nine months ended September 30, 2018. Income tax benefit (expense) changed by \$0 and \$398 for the three and nine months ended September 30, 2019, respectively, (see “Income Taxes” below).

Net loss

Net loss for the three months ended September 30, 2019 and 2018 was \$4,956 and \$4,934, respectively. Net loss for the nine months ended September 30, 2019 and 2018 was \$14,694 and \$18,989, respectively. The changes in the nine months periods are primarily due to decreases in legal fees associated with our patent infringement actions which are reported in our selling, general and administrative expenses.

Liquidity and Capital Resources

As of September 30, 2019, our cash and cash equivalents totaled approximately \$2,572 and our short-term investments totaled approximately \$2,621, compared to cash and cash equivalents of approximately \$7,611 and short-term investments of approximately \$1,803 at December 31, 2018. Working capital was \$3,914 at September 30, 2019, and \$8,275 at December 31, 2018. The decrease in cash and investments during the nine months ended September 30, 2019 was primarily attributed to operating losses incurred during the period.

We expect that our cash and cash equivalents and short-term investments as of September 30, 2019, as well as our ability to obtain cash from sales of common shares under the ATM and the universal shelf registration statement, described below, will be sufficient to fund our current level of selling, general and administration costs, including legal expenses and provide related working capital for the foreseeable future. Over the longer term, we expect to derive the majority of our future revenue from license fees and royalties associated with our patent portfolio, technology, software and secure domain name registry in the United States and other markets around the world.

Universal Shelf Registration Statement and ATM Offering

On July 30, 2018 we filed a \$100,000 universal shelf registration statement on SEC Form S-3 which was declared effective by the SEC on August 16, 2018. We also entered an at-the-market equity offering sales agreement (“ATM”) with Cowen & Company, LLC on August 31, 2018, under which we can offer and sell shares of our common stock having an aggregate value of up to \$50,000.

We use the ATM proceeds for GABRIEL product development, marketing and general corporate purposes, which may include working capital, capital expenditures, other corporate expenses and acquisitions of complementary products, technologies or businesses. As of September 30, 2019, common stock with an aggregate value of up to \$30,327 remained available for offer and sale under the ATM agreement.

During the three months ended September 30, 2019, we sold 203,754 shares under the ATM. The average sales price per common share was \$6.17 and the aggregate proceeds from the sales totaled \$1,257 during the period. Sales commissions, fees and other costs associated with the ATM totaled \$38. During the nine months ended September 30, 2019, we sold 1,232,020 shares under the ATM. The average sales price per common share was \$5.79 and the aggregate proceeds from the sales totaled \$7,131 during the period. Sales commissions, fees and other costs associated with the ATM totaled \$214.

Income Taxes

We had an income tax benefit of \$393 for the nine months ended September 30, 2019, due to a release of a state reserve as the statute of limitation for the tax return expired during the year. We had an income tax expense of \$(5) for the same period in 2018. We had income tax expense of \$0 for the three months ended September 30, 2019 and 2018. During the three and nine-month periods ended September 30, 2019 and 2018, we had net operating losses (“NOLs”) which generated deferred tax assets for NOL carryforwards. We provided valuation allowances against the net deferred tax assets including the deferred tax assets for NOL carryforwards.

In assessing the realization of deferred tax assets, management considers whether it is more likely than not that some portion or all of the deferred tax assets will not be realized. The ultimate realization of the deferred tax assets is dependent upon the generation of future taxable income during the periods in which those temporary differences become deductible. Based on the available objective evidence, management believes it is more likely than not that the net deferred tax assets at September 30, 2019 will not be fully realizable. Accordingly, management has maintained a full valuation allowance against its net deferred tax assets at September 30, 2019. The valuation allowance carried against our net deferred tax assets was approximately \$37,000 at September 30, 2019 and \$36,000 at December 31, 2018.

As of September 30, 2019, we have federal and state net operating loss carryforwards of approximately \$127,000 and \$108,000, respectively, expiring beginning in 2027 and 2028, respectively.

Our policy is to recognize interest and penalties accrued on uncertain tax positions as a component of income tax expense.

Contractual Obligations

There have been no material changes to the contractual obligations disclosed in our Annual Report on Form 10-K for the fiscal year ended December 31, 2018.

Off-Balance Sheet Arrangements

None.

ITEM 3 — QUANTITATIVE AND QUALITATIVE DISCLOSURES ABOUT MARKET RISK.

Interest Rate Risk

We invest our excess cash primarily in highly liquid instruments including money market, mutual funds and U.S. government and U.S. agency securities. We seek to limit the amount of our credit exposure to any one issuer.

Investments in fixed rate instruments carry a degree of interest rate risk. Fixed rate securities may have their fair market value adversely impacted due to a rise in interest rates. Due in part to these factors, our income from investments may decrease in the future.

We considered the historical volatility of short-term interest rates and determined that it was reasonably possible that an adverse change of 100 basis points could be experienced in the near term but would have an immaterial impact in the fair value of our marketable securities, which generally mature within one year of September 30, 2019.

Other Market Risks

We considered the historical volatility of our stock prices and determined that it was reasonably possible that the fair market value of our stock price could increase or decrease substantially in the near term and could have a material impact to our condensed consolidated balance sheets and statement of operations.

ITEM 4 — CONTROLS AND PROCEDURES

Under the supervision and with the participation of our management, including our Chief Executive Officer and Chief Financial Officer, we conducted an evaluation of the effectiveness of the design and operation of our disclosure controls and procedures, as defined in Rules 13a-15(e) and 15d-15(e) under the Securities Exchange Act of 1934, as amended, as of September 30, 2019.

The purpose of this evaluation was to determine whether as of September 30, 2019 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 Chief Executive Officer and Chief Financial Officer, as appropriate to allow timely decisions regarding required disclosure.

Based on their evaluation, our Chief Executive Officer and Chief Financial Officer have concluded that as of September 30, 2019, our disclosure controls and procedures were effective.

Changes in Internal Control Over Financial Reporting

There were no changes in our internal control over financial reporting during the quarter ended September 30, 2019 that have materially affected, or are reasonably likely to materially affect, our internal control over financial reporting.

PART II — OTHER INFORMATION

ITEM 1 — LEGAL PROCEEDINGS

We have multiple intellectual property infringement lawsuits pending in the United States District Court for the Eastern District of Texas, Tyler Division (“USDC”), and United States Court of Appeals for the Federal Circuit (“USCAFC”).

VirnetX Inc. v. Cisco Systems, Inc. et al. (Case 6:10-CV-00417-LED) (“Apple I”)

On August 11, 2010, we filed a complaint against Aastra USA, Inc. (“Aastra”), Apple Inc. (“Apple”), Cisco Systems, Inc. (“Cisco”), and NEC Corporation (“NEC”) the USDC in which we alleged that these parties infringe on certain of our patents (U.S. Patent Nos. 6,502,135, 7,418,504, 7,921,211 and 7,490,151). We sought damages and injunctive relief. The cases against each defendant were separated by the judge. Aastra and NEC agreed to sign license agreements with us, and we dropped all accusations of infringement against them. A jury in USDC decided that our patents were not invalid and rendered a verdict of non-infringement by Cisco on March 4, 2013. Our motion for a new Cisco trial was denied and the case against Cisco was closed.

On November 6, 2012, a jury in the USDC awarded us over \$368,000 for Apple’s infringement of four of our patents, plus daily interest up to the final judgment.

Apple filed an appeal of the judgment to the USCAFC. On September 16, 2014, USCAFC affirmed the USDC jury’s finding that all four of our patents at issue are valid and confirmed the USDC jury’s finding of infringement of VPN on Demand under many of the asserted claims of our ‘135 and ‘151 patents, and the USDC’s decision to allow evidence about our license and royalty rates regarding the determination of damages. However, the USCAFC vacated the USDC jury’s damages award and some of the USDC’s claim construction with respect to parts of our ‘504 and ‘211 patents and remanded the damages award and determination of infringement with respect to FaceTime back to the USDC for further proceedings.

On September 30, 2016, pursuant to the 2014 remand from the USCAFC, a jury in the USDC awarded us \$302,400 for Apple’s infringement of four of our patents. On September 29, 2017, the USDC entered its final judgement, denied all of Apple’s post-trial motions, granted all our post-trial motions, including our motion for willful infringement and enhanced the royalty rate during the willfulness period from \$1.20 to \$1.80 per device, and awarded us costs, certain attorneys’ fees, and prejudgment interest. The total amount in the final judgement was \$439,700, including \$302,400 (jury verdict), \$41,300 (enhanced damages) and \$96,000 (costs, fees and interest).

On October 27, 2017 Apple filed its notice of appeal of this final judgement to the USCAFC. Apple filed its opening brief on March 19, 2018. We filed our response on April 4, 2018. On April 11, 2018, USCAFC designated **Cases 18-1197-CB, Case 17-1368 and Case 17-1591** as companion cases and assigned to the same merits panel. Events and developments after this order are described below under **VirnetX Inc. v. The Mangrove Partners (USCAFC Case 17-1368) (“Consolidated Appeal”)**.

VirnetX Inc. v. Apple, Inc. (Case 6:12-CV-00855-LED) (“Apple II”)

This case began on November 6, 2012, when we had filed a complaint against Apple in USDC in which we alleged that Apple infringed on certain of our patents, (U.S. Patent Nos. 6,502,135, 7,418,504, 7,921,211 and 7,490,151). We sought damages and injunctive relief. The accused products include the iPhone 5, iPod Touch 5th Generation, iPad 4th Generation, iPad mini, and the latest Macintosh computers; these products were not included in the Apple I case because they were released after the Apple I case was initiated. Post-Trial Motions hearing was held on July 18, 2018. On August 31, 2018, the USDC entered a Final Judgment and issued its Memorandum Opinion and Order regarding post-trial motions, affirming the jury’s verdict of \$502,600 and granting VirnetX’s motions for supplemental damages, a sunset royalty and the royalty rate of \$1.20 per infringing iPhone, iPad and Mac products, pre-judgment and post-judgment interest and costs. On September 20, 2018, pursuant to a Court’s order, attorneys from VirnetX and Apple conferred and agreed, without dispute, to add an amount totaling \$93,300 for Bill of Costs and Prejudgment Interest to the \$502,600 jury verdict. The total amount in the final judgement in the Apple II case is now \$595,900. Apple has filed a notice of appeal with the USCAFC in the Apple II case. On October 9, 2018, USCAFC accepted the notice and docketed it as **Case No. 19-1050 - VirnetX Inc. v. Apple Inc.** All subsequent events and developments in this case are described below under **VirnetX Inc. v. Apple Inc. (USCAFC Case 19-1050) (“Apple II Appeal”)**.

VirnetX Inc. v. The Mangrove Partners (USCAFC Case 17-1368) (“Consolidated Appeal”)

On April 11, 2018, the USCAFC in an order designated the following appeals as companion cases and assigned to the same merits panel;

- **VirnetX Inc. v. The Mangrove Partners (USCAFC Case 17-1368)**

On December 16, 2016, we filed appeals with the USCAFC, appealing the invalidity findings by the Patent Trial and Appeal Board (“PTAB”) in IPR2015-01046, and on December 20, 2016 for IPR2015-1047, involving our U.S. Patent Nos. 6,502,135, and 7,490,151. These appeals also involve Apple, and one of them involves Black Swamp IP, LLC. Oral arguments in this case were argued on January 8, 2019.

On July 8, 2019, the USCAFC issued its opinion vacating and remanding both decisions. The court agreed with us that the PTAB misconstrued the patent claims, that many of the PTAB's invalidity findings lacked substantial evidence, and that the PTAB Board abused its discretion in denying us the opportunity to file a motion for additional discovery as to the real party-in-interest issues. The underlying inter partes review ("IPR") proceedings are currently pending before the PTAB.

- **VirnetX Inc. v. Cisco Systems, Inc. (USCAFC Case 18-1197-CB) (Appeal of Apple I Case)**

On October 27, 2017 Apple appealed the Final Judgment entered on September 29, 2017 to the USCAFC. Oral arguments in this case were held on January 8, 2019. On January 15, 2019 the Court issued a Rule 36 order affirming the District Court Judgment. Apple filed a request for panel rehearing and rehearing en-banc in this matter on February 21, 2019. On March 12, 2019, the Court invited us to respond to Apple's petition on or before March 26, 2019. We filed our response on March 22, 2019.

On July 1, 2019 Apple filed a motion for leave to file a supplemental brief regarding the impact of the USCAFC's decision in **VirnetX Inc. v. Cisco Systems, Inc. (USCAFC Case 18-1751)**, issued on June 28, 2019 (described below). We filed a response to Apple's motion and a contingent motion for leave to file a responsive supplemental brief on July 11, 2019. On July 17, 2019, the USCAFC granted both motions and ordered Apple's and our supplemental briefs filed. On August 1, 2019, USCAFC issued an order denying Apple's petition for panel and en banc rehearing. On August 7, 2019, Apple filed a motion to vacate the August 1, 2019 order and for leave to file a second request for panel rehearing and rehearing en-banc. On October 1, 2019, USCAFC issued an order denying Apple's motion. Apple subsequently requested an extension for its deadline to petition for a writ of certiorari, and that deadline was extended until December 29, 2019.

- **VirnetX Inc. v. Apple Inc., Cisco Systems, Inc. (USCAFC Case 17-1591)**

On February 7, 2017, we filed appeals with the USCAFC, appealing the invalidity findings by the PTAB in inter-parties' reexamination nos. 95/001,788, 95/001,789, and 95/001,856 related to our U.S. Patent Nos. 7,921,211 and 7,418,504. Oral arguments in this case were argued on January 8, 2019.

On July 1, 2019 Apple filed a motion for leave to file a supplemental brief regarding the impact of the USCAFC's decision in **VirnetX Inc. v. Cisco Systems, Inc. (USCAFC Case 18-1751)**, issued on June 28, 2019 (described below). We filed a response to Apple's motion and a contingent motion for leave to file a responsive supplemental brief on July 11, 2019. On July 15, 2019, we filed a corrected response and a corrected supplemental brief. On July 17, 2019, the USAFC granted both motions and ordered Apple's and supplemental briefs filed.

On August 1, 2019, the USCAFC issued an opinion in this case agreeing with us that the PTAB could not maintain two of those reexaminations (initiated by Apple) with respect to claims as to which there has been a prior "final decision" on patent validity entered by a federal court. The court instructed PTAB to terminate those reexamination proceedings with respect to claims 1-35 of the '504 patent and claims 36-59 of the '211 patent. The court affirmed PTAB's invalidity findings with respect to the remaining patent claims. Apple filed a request for panel rehearing and rehearing en-banc in this matter on August 26, 2019. We filed a separate request for panel rehearing on September 3, 2019. Our request was denied on September 19, 2019, and Apple's request was denied on October 11, 2019.

- **VirnetX Inc. v. Apple Inc. (USCAFC Case 19-1050) ("Apple II Appeal")**

On January 24, 2019 Apple filed its opening brief. We filed our response brief on March 1, 2019. Apple filed its reply brief on April 5, 2019. The oral arguments were heard on October 4, 2019. A decision by the USCAFC has not yet been issued.

- **VirnetX Inc. v. Apple Inc. (USCAFC Case 17-2490)**

On August 23, 2017, we filed with the USCAFC appeals of the invalidity findings by the PTAB in IPR2016-00331 and IPR2016-00332 involving our U.S. Patent No. 8,504,696. On December 10, 2018, the USCAFC issued an opinion affirming the PTAB's invalidity findings.

- **VirnetX Inc. (USCAFC Case 17-2593)**

On September 22, 2017, we filed with the USCAFC appeals of the invalidity findings by the PTAB in IPR2016-00693 and IPR2016-00957 involving our U.S. Patent Nos. 7,418,504 and 7,921,211. The briefing in these appeals has not taken place. The entity that initiated the IPRs, Black Swamp IP, LLC, indicated on October 18, 2017, that it would not participate in the appeals. On November 27, 2017, the USPTO indicated that it would intervene in the appeals. On January 19, 2018, the USCAFC stayed these appeals pending the USCAFC's decision in Case 17-1591. On October 25, 2019, we and the USPTO filed a joint request that the deadline to inform the USCAFC how these appeals should proceed be extended until November 1, 2019.

VirnetX Inc. v. Cisco Systems, Inc. (USCAFC Case 18-1751)

On March 30, 2018, we filed with the USCAFC an appeal of the invalidity findings by the PTAB in inter-partes reexamination no. 95/001,851 involving our U.S. Patent No. 7,418,504. Oral arguments in this case were held on June 4, 2019.

On June 28, 2019, the USCAFC issued its opinion vacating the PTAB's invalidity findings with respect to claims 5, 12, and 13 and remanding to the PTAB for further proceedings. The court affirmed the PTAB's invalidity findings with respect to the remaining patent claims. Cisco filed a request for panel rehearing and rehearing en-banc in this matter on August 12, 2019. Cisco's request was denied on October 1, 2019.

VirnetX Inc. v. Cisco Systems, Inc. (USCAFC Case 19-1043)

On October 1, 2018, we filed with the USCAFC an appeal of the invalidity findings by the PTAB in inter-partes reexamination no. 95/001,746 involving our U.S. Patent No. 6,839,759. We filed our opening brief on March 15, 2019. Cisco filed its response brief on June 19, 2019. We filed our reply brief on August 14, 2019. Cisco filed a motion to submit a sur-reply brief on August 26, 2019, which we opposed. On September 27, 2019, the USCAFC issued an order deferring resolution of Cisco's motion for the merits panel. The oral arguments have not yet been scheduled.

VirnetX Inc. v. Cisco Systems, Inc. (USCAFC Case 19-1671)

On March 18, 2018, we filed with the USCAFC an appeal of the invalidity findings by the PTAB in inter-partes reexamination no. 95/001,679 involving our U.S. Patent No. 6,502,135. We filed a motion to remand on August 23, 2019, which the USCAFC denied on October 1, 2019, directing the parties to address the issues in the merits briefs. Our opening brief is currently due on November 12, 2019.

VirnetX Inc. v. Cisco Systems, Inc. (USCAFC Case 19-1725)

On March 29, 2019, we filed with the USCAFC an appeal of the invalidity findings by the PTAB in inter-partes reexamination no. 95/001,792 involving our U.S. Patent No. 7,188,180. We filed a motion to remand on September 10, 2019, which remains pending.

One or more potential intellectual property infringement claims may also be available to us against certain other companies who have the resources to defend against any such claims. Although we believe these potential claims are likely valid, commencing a lawsuit can be expensive and time-consuming, and there is no assurance that we could prevail on such potential claims if we made them. In addition, bringing a lawsuit may lead to potential counterclaims which may distract our management and our other resources, including capital resources, from efforts to successfully commercialize our products.

Currently, we are not a party to any other pending legal proceedings and are not aware of any proceeding threatened or contemplated against us.

ITEM 1A — RISK FACTORS

Our operations and financial results are subject to various risks and uncertainties, including those described below, which could adversely affect our business, financial condition, results of operations, cash flows, and the trading price of our common and capital stock. You should carefully consider the risks and uncertainties described below in addition to the other information set forth in this Quarterly Report on Form 10-Q, including the section titled “Management’s Discussion and Analysis of Financial Condition and Results of Operations” and our condensed consolidated financial statements and related notes, before making any investment in our common stock. The risks and uncertainties described below are not the only ones we face. Additional risks and uncertainties not presently known to us or that we currently believe to be immaterial may also adversely affect our business. If any of these risk factors occur, you could lose substantial value or your entire investment in our shares.

Risks Related to Our Business and Our Financial Reporting

We are involved and will continue to be involved in litigation defending our patent portfolio, which can be time-consuming and costly, and we cannot anticipate the results.

We spend a significant amount of our financial and management resources to pursue our current litigation. We believe that this litigation and others that we may pursue in the future could continue for years and consume significant financial and management resources. The counterparties to our litigation include large, well-financed companies with substantially greater resources than us. Patent litigation is risky, and the outcome is uncertain, and we cannot assure you that any of our current or future litigation matters will result in a favorable outcome for us. In addition, even if we obtain favorable interim rulings or verdicts, they may be inconsistent with the ultimate resolution of the dispute. Also, we cannot assure you that we will not be exposed to claims or sanctions against us which may be costly or impossible for us to defend. Unfavorable or adverse outcomes may result in losses, exhaustion of financial resources or other adverse effects, which could encumber our ability to develop and commercialize our products.

We may need to raise additional capital to support our business growth, and this capital will be dilutive, may cause our stock price to drop or may not be available on acceptable terms, if at all.

We may need to raise additional capital, which may not be available to us when needed or may not be available on terms acceptable to us, to support our business growth or to respond to business opportunities, challenges or unforeseen circumstances, including sales under our ATM or our universal shelf registration statement. Our ability to obtain additional capital, if and when required, will depend on our business plans, investor demand, our operating performance, the condition of the capital markets, the terms of our current contractual obligations and other factors. If we raise additional funds through the issuance of equity, equity-linked or debt securities, including those under our ATM or our Universal Shelf Registration Statement, those securities may have rights, preferences, or privileges senior to the rights of our common stock, and our existing stockholders may experience dilution. Additionally, we are unable to predict the future success of our ATM offering or any other offering. Sales of a substantial number of shares of our common stock in the public market, or the perception that these sales or other financings might occur, could depress the market price of our common stock and could also impair our ability to raise capital through the sale of additional equity securities. If we issue debt securities or incur indebtedness, we could experience increased future payment obligations and a need to comply with restrictive covenants, such as limitations on our ability to incur additional debt, limitations on our ability to acquire, sell or license intellectual property rights and other operating restrictions that could adversely impact our ability to conduct our business. If we are unable to obtain additional capital or are unable to obtain additional capital on satisfactory terms, our ability to continue to support our business growth or to respond to business opportunities, challenges, or other circumstances could be adversely affected, and our business may be harmed.

We may not be able to capitalize on market opportunities related to our licensing strategy or our patent portfolio.

Our business strategy includes licensing our patents and technology to other companies in order to reach a larger end-user base than we could reach through direct sales and marketing efforts; as such, our business strategy and revenues will depend on intellectual property licensing fees and royalties for the majority of our revenues. We currently derive minimal revenue from licensing activities, and royalties, and we cannot assure you that we will successfully capitalize on our market opportunities or that our current business strategy will succeed. Factors that may affect our ability to execute our current business strategy include, but are not limited to, the following:

- Although to date we have entered into a limited number of settlement and license agreements, we may not be successful in entering into further licensing relationships, or if we are successful in entering into such relationships, the acquisition of them may be expensive, and they, as well as our existing settlement and our existing and pending license agreements may not generate the financial results we expect;
- Third parties may challenge the validity of our patents;
- The pendency of our various litigations may cause potential licensees not to do business with us;
- We face, and we expect to continue to face, intense competition from new and established competitors who may have superior products and services or better marketing, financial or other capacities than we do; and
- It is possible that one or more of our potential customers or licensees develops or otherwise sources products or technologies similar to, competitive

with or superior to ours.

If we are not able to adequately protect our patent rights, our business would be negatively impacted.

We believe our patents are valid, enforceable and valuable. Notwithstanding this belief, third parties may make claims of infringement or invalidity claims with respect to our patents and such claims could give rise to material cost for defense or settlement or both, jeopardize or substantially delay a successful outcome of litigation we are or may become involved in, divert resources away from our other activities, limit or cease our revenues related to such patents, or otherwise materially and adversely affect our business. Similar challenges could also prevent us from obtaining additional patents in the future. Additionally, several of our patents are currently, and other patents may in the future be, subject to United States Patent and Trademark Office (“USPTO”) post-grant inter partes review proceedings (“IPR”) which may result in all or part of these patents being invalidated, or the claims of our patents being limited. Unfavorable or adverse outcomes in our litigation or IPRs may result in losses, exhaustion of financial resources, reduction in our ability to enforce our intellectual property rights, or other adverse effects, which could encumber our ability to develop and commercialize our products. Even if we are successful in enforcing our intellectual property rights, our patents may not ultimately provide us with any competitive advantages and may be less valuable than we currently expect. These risks may be heightened in countries other than the United States where laws regarding patent protection are less developed and may be negatively affected by the fact that legal standards in the United States and elsewhere for protection of intellectual property rights in Internet-related businesses are uncertain and still evolving. In addition, there are a significant number of United States and foreign patents and patent applications in our areas of interest, and we expect that significant litigation in these areas will continue and will add uncertainty to the value of certain patents and other intellectual property rights in our areas of interest. If we are unable to protect our intellectual property rights or otherwise realize value from them, our business would be negatively affected.

We can provide no assurances that the licensing of our essential security patents under FRAND will be successful.

At the request of the European Telecommunications Standards Institute (“ETSI”), and the Alliance for Telecommunications Industry Solutions (“ATIS”), we agreed to update our licensing declaration to ETSI and ATIS under their respective Intellectual Property Rights policies. This was in response to our Statement of Patent Holder identifying a group of our patents and patent applications that we believe are or may become essential to certain developing specifications in the 3rd Generation Partnership Project Long Term Evolution (“LTE”), Systems Architecture Evolution project. We will make available a non-exclusive patent license under FRAND (fair, reasonable and non-discriminatory terms and conditions, with compensation) for the patents identified by us that are or become essential, to applicants desiring to implement the Technical Specifications identified by us, as set forth in the updated licensing declaration under the ATIS and ETSI Intellectual Property Rights policies. Our licensing declarations under the ATIS and ETSI Intellectual Property Rights policies may limit our flexibility in determining royalties and license terms for certain of our patents. Consequently, we cannot assure you that the licensing of the essential security patents will be successful or that third parties will be willing to enter into licenses with us on reasonable terms or at all, which could have an adverse effect on our business and harm our competitive position.

Because our business is conducted or expected to be conducted in an environment that is subject to rapid change, we may be subject to various developments in regulation, law and consumer preferences to which we may not be able to adapt successfully.

The current regulatory environment for our products and services remains unclear. We can give no assurance that our planned product offerings will be in compliance with laws and regulations of local, state, United States federal or foreign authorities. Further, we can give no assurance that we will not unintentionally violate such laws or regulations or that such laws or regulations will not be modified, or that new laws or regulations will be enacted in the future which would cause us to be in violation of such laws or regulations. For example, Voice-Over-Internet Protocol (“VoIP”) services are not currently subject to all the same regulations that apply to traditional telephony, but it is possible that similar regulations may be applied to VoIP in the future and that these could result in substantial costs to us which could adversely affect the marketability of our products and planned products related to VoIP. For further example, the use of the Internet and private Internet Protocol (“IP”) networks for communication is largely unregulated within the United States, but may become regulated in the future; additionally, several foreign governments have enacted measures that could restrict or prohibit voice communications services over the Internet or private IP networks.

Our business depends on the growth of instant messaging, VoIP, mobile services, streaming video, file transfer and remote desktop and other next-generation Internet-based applications. A decline in the use of these applications due to complexity or cost of these applications relative to alternate traditional or newly developed communications channels, or development of alternative technologies, could cause a material decline in the number of users in these areas.

More aggressive domestic or international regulation of the Internet in general, and Internet telephony providers and services specifically may materially and adversely affect our business, financial condition, operating results and future prospects.

Our exposure to outside influences beyond our control, including new legislation, court rulings or actions by the United States Patent and Trademark Office, could adversely affect our licensing and enforcement activities and results of operations.

Our licensing and enforcement activities are subject to numerous risks from outside influences, including the following:

- New legislation, regulations or rules related to obtaining patents or enforcing patents could significantly increase our operating costs and decrease our revenue. For instance, the United States Supreme Court has recently modified some tests used by the USPTO in granting patents during the past 20 years which may decrease the likelihood that we will be able to obtain patents and increase the likelihood of challenge of any patents we obtain or license. In addition, the United States recently enacted sweeping changes to the United States patent system under the Leahy-Smith America Invents Act, including changes that transition the United States from a “first-to-invent” system to a “first to file” system and alter the processes for challenging issued patents;
- More patent applications are filed each year resulting in longer delays in getting patents issued by the USPTO;
- Federal courts are becoming more crowded, and as a result, patent enforcement litigation is taking longer; and
- As patent enforcement becomes more prevalent, it may become more difficult for us to voluntarily license our patents.

New legislation, regulations or court rulings related to enforcing patents could harm our business and operating results.

Intellectual property is the subject of intense scrutiny by the courts, legislatures and executive branches of governments around the world. Various patent offices, governments or intergovernmental bodies may implement new legislation, regulations or rulings that impact the patent enforcement process, or the rights of patent holders and such changes could negatively affect licensing efforts and/or litigations. For example, limitations on the ability to bring patent enforcement claims, limitations on potential liability for patent infringement, lower evidentiary standards for invalidating patents, increases in the cost to resolve patent disputes and other similar developments could negatively affect our ability to assert our patent or other intellectual property rights.

It is impossible to determine the extent of the impact of any new laws, regulations or initiatives that may be proposed, or whether any of the proposals will become enacted as laws. Compliance with any new or existing laws or regulations could be difficult and expensive, affect the manner in which we conduct our business and negatively impact our business, prospects, financial condition and results of operations.

If we experience security breaches, we could be exposed to liability and our reputation and business could suffer.

We expect to retain certain confidential and proprietary customer information in our secure data centers and secure domain name registry, as well as personal data and other confidential and proprietary information relating to our business. It will be critical to our business strategy that our facilities and infrastructure remain secure and are perceived by the marketplace to be secure. Our secure domain name registry operations will also depend on our ability to maintain our computer and telecommunications equipment in effective working order and to reasonably protect our systems against interruption, and potentially depend on protection by other registrars in the shared registration system. The secure domain name servers that we will operate will be critical hardware to our registry services operations. Therefore, we expect to have to expend significant time and money to maintain or increase the security of our products, facilities and infrastructure. Security technologies are constantly being tested by computer professionals, academics and “hackers.” Advances in computer capabilities and the techniques for attacking security solutions, new discoveries in the field of cryptography or other events or developments could result in compromises or breaches of our security measures and could make some or all our products obsolete or unmarketable. Likewise, if any of our products are found to have significant security vulnerabilities, then we may need to dedicate engineering and other resources to eliminate the vulnerabilities and to repair or replace products already sold or licensed to our customers. Despite the security measures that we and our service providers utilize, our infrastructure and that of our service providers may be vulnerable to physical break-ins, computer viruses, attacks by hackers, phishing attacks, social engineering, or similar disruptive problems. It is possible that we may have to expend additional financial and other resources to address such problems. As a provider of Internet security software and technology, we may be the target of dedicated efforts by hackers and other third parties to overcome or defeat our security measures. Any physical or electronic break-in or other security breach or compromise of the information stored at our secure data centers and domain name registration systems, including any compromise due to human error or employee or contractor malfeasance, may jeopardize the security of information stored on our premises or in the computer systems and networks of our customers. In such an event, we could face significant liability and current or potential customers could be reluctant to use our services. Additionally, any such data security incident, or the perception that one has occurred could also result in adverse publicity, harm to our reputation and competitive position, and therefore adversely affect the market’s perception of the security of electronic commerce and communications over IP networks as well as the security or reliability of our services.

A security breach or other security incident could require a substantial level of financial resources to rectify and otherwise respond to, may be difficult to identify or address in a timely manner, and could result in claims, investigations, and inquiries by private parties or governmental entities that may divert management’s attention and require the expenditure of significant time and resources, and which may cause us to incur substantial fines, penalties, or other liability and related legal and other costs. Any actual or perceived security breach or other security incident may also harm our reputation and make it more difficult or impossible for us to successfully market to others. Any of the foregoing matters could harm our operating results and financial condition.

Privacy and data security concerns, and data collection and transfer restrictions and related domestic or foreign regulations may limit the use and adoption of our solutions and adversely affect our business.

Personal privacy, information security, and data protection are significant issues in the United States, Europe and many other jurisdictions where we have operations or offer our products. The regulatory framework governing the collection, processing, storage and use of confidential and proprietary business information and personal data is rapidly evolving. The United States federal and various state and foreign governments have adopted or proposed requirements regarding the collection, distribution, use, security and storage of personally identifiable information and other data relating to individuals, and federal and state consumer protection laws are being applied to enforce regulations related to the online collection, use and dissemination of data.

Further, many foreign countries and governmental bodies, including the European Union (“EU”), where we conduct business, have laws and regulations concerning the collection and use of personal data obtained from their residents or by businesses operating within their jurisdiction. These laws and regulations often are more restrictive than those in the United States. Laws and regulations in these jurisdictions apply broadly to the collection, use, storage, disclosure and security of data that identifies or may be used to identify or locate an individual, such as names, email addresses and, in some jurisdictions, IP addresses.

We also expect that there will continue to be new proposed laws, regulations and industry standards concerning privacy, data protection and information security in the United States, the EU, and other jurisdictions. For example, the European Commission adopted a General Data Protection Regulation (the “GDPR”) that became fully effective on May 25, 2018, superseding prior EU data protection legislation, imposing more stringent EU data protection requirements, and providing for greater penalties for noncompliance. The United Kingdom enacted a Data Protection Act in 2018 that substantially implements the GDPR. We are evaluating obligations imposed on us by the GDPR and we may be required to incur substantial expense in order to make significant changes to our product and business operations in connection with obtaining and maintaining compliance with the GDPR and similar legislation, such as the UK Data Protection Act, all of which may adversely affect our revenue and product sales. Additionally, California recently enacted legislation, the California Consumer Privacy Act (the “CCPA”) that will, among other things, require covered companies to provide new disclosures to California consumers, and afford such consumers new abilities to opt-out of certain sales of personal information, when it goes into effect on January 1, 2020. We cannot fully predict the impact of the CCPA on our business or operations, but it may require us to modify our data processing practices and policies and to incur substantial costs and expenses in an effort to comply. More generally, we cannot yet fully determine the impact these or future laws, regulations and standards may have on our business. Privacy, data protection and information security laws and regulations are often subject to differing interpretations, may be inconsistent among jurisdictions, and may be alleged to be inconsistent with our current or future practices. Additionally, we may be bound by contractual requirements applicable to our collection, use, processing, and disclosure of various types of data, including personal data, and may be bound by, or voluntarily comply with, self-regulatory or other industry standards relating to these matters. These and other requirements could reduce demand for our products, increase our costs, impair our ability to grow our business, or restrict our ability to store and process data or, in some cases, impact our ability to offer our service in some locations and may subject us to liability. Any failure or perceived failure to comply with applicable laws, regulations, industry standards, and contractual obligations may adversely affect our business. Further, in view of new or modified federal, state or foreign laws and regulations, industry standards, contractual obligations and other legal obligations, or any changes in their interpretation, we may find it necessary or desirable to fundamentally change our business activities and practices or to expend significant resources to modify our product and otherwise adapt to these changes. We may be unable to make such changes and modifications in a commercially reasonable manner or at all, and our ability to develop new products and features could be limited.

The costs of compliance with and other burdens imposed by laws, regulations and standards may limit the use and adoption of our service and reduce overall demand for it, or lead to significant fines, penalties or liabilities for any noncompliance. Privacy, information security, and data protection concerns, whether valid or not valid, may inhibit market adoption of our platform, particularly in certain industries and foreign countries.

We expect that we will experience long and unpredictable sales cycles, which may impact our operating results.

The sales cycle between initial customer contact and execution of a contract or license agreement with a customer or purchaser of our products can vary widely. We expect that our sales cycles will be long and unpredictable due to several factors, including but not limited to:

- The need to educate potential customers about our patent rights and our product and service capabilities;
- Our customers’ willingness to invest potentially substantial resources and modify their network infrastructures to take advantage of our products;
- Our customers’ budgetary constraints;
- The timing of our customers’ budget cycles;
- Delays caused by customers’ internal review processes; and
- Long sales cycles that may increase the risk that our financial resources are exhausted before we are able to generate significant revenue.



In addition, potential customers of our products include local, state, federal and foreign government authorities. Sales to government authorities can be extended and unpredictable. Government authorities generally have complex budgeting, purchasing, and regulatory processes that govern their capital spending, and their spending is likely to be adversely impacted by economic conditions. In addition, in many instances, sales to government authorities may require field trials and may be delayed by the time it takes for government officials to evaluate multiple competing bids, negotiate terms, and award contracts.

For these reasons the sales cycle associated with our products is subject to a number of significant risks that are beyond our control. Consequently, if our forecasted customer orders are not realized or delayed, our revenues and results of operations could be materially and adversely affected.

If we are unable to expand our revenue sources or establish, sustain, grow or replace relationships with a diversified customer base, our revenues may be limited.

We currently generate revenue from a limited number of customers that have entered Settlement and License Agreements. Our GABRIEL Collaboration Suite™ is currently generating limited revenue, it will take time for us to grow our installed user base and generate new customers. Additionally, there is no guarantee that we will be able to derive revenue from new customers, sustain or increase revenue from existing customers or replace customers from whom we currently generate revenue. As a result, our revenue may be limited or static.

We have limited technical resources and are at an early stage in commercialization of our GABRIEL Collaboration Suite™.

Part of our business includes the internal development of commercial products we seek to monetize. This aspect of our business may require significant capital, time and resources and we cannot guarantee that it will be successful or meet our expectations. We currently have only one commercial product, the GABRIEL Collaboration Suite™. As such, we have a small technical team, which may limit our ability to rapidly adapt our product to customer requirements or add new product features to maintain our competitive edge and drive adoption. Based on the scale of our technical resources, our limited historical financial data upon which to base our projected revenue or planned operating expenses related to our GABRIEL Collaboration Suite™, we may not be able to effectively:

- Generate revenues or profit from product sales;
- Drive adoption of our products;
- Attract and retain customers for our products;
- Provide appropriate levels of customer training and support for our products;
- Implement an effective marketing strategy to promote awareness of our products;
- Focus our research and development efforts in areas that generate returns on our efforts;
- Anticipate and adapt to changes in our market; or
- Protect our products from any system failures or other breaches.

In addition, a high percentage of our expenses are and will continue to be fixed. Accordingly, if we do not generate revenue as and when anticipated, our losses may be greater than expected and our operating results will suffer.

Our products are highly technical and may contain undetected errors, which could cause harm to our reputation and adversely affect our business.

Our products are highly technical and complex and, when deployed, may contain errors or defects. Despite testing, some errors in our products may only be discovered after a product has been installed and used by customers. Any errors or defects discovered in our products after commercial release could result in failure to achieve market acceptance, loss of revenue or delay in revenue recognition, loss of customers and increased service and warranty cost, any of which could adversely affect our business, operating results and financial condition. In addition, we could face claims for product liability, tort or breach of warranty, including claims relating to changes to our products made by our channel partners. The performance of our products could have unforeseen or unknown adverse effects on the networks over which they are delivered as well as on third-party applications and services that utilize our services, which could result in legal claims against us, harming our business. Furthermore, we expect to provide implementation, consulting and other technical services in connection with the implementation and ongoing maintenance of our products, which typically involves working with sophisticated software, computing and communications systems. We expect that our contracts with customers will 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.

Malfunctions of third-party communications infrastructure, hardware and software expose us to a variety of risks that we cannot control.

Our business will depend upon, among other things, the capacity, reliability, security and unimpeded access of the infrastructure owned by third parties that we will use to deploy our offerings. We have no control over the operation, quality or maintenance of a significant portion of that infrastructure or whether those third parties will upgrade or improve their equipment. We depend on these companies to maintain the operational integrity of our connections. If one or more of these companies is unable or unwilling to supply or expand its levels of service to us in the future, our operations could be severely interrupted. Also, to the extent that the number of users of networks utilizing our current or future products suddenly increases, the technology platform and secure hosting services which will be required to accommodate a higher volume of traffic may result in slower response times or service interruptions. System interruptions or increases in response time could result in a loss of potential or existing users and, if sustained or repeated, could reduce the appeal of the networks to users. In addition, users depend on real-time communications; outages caused by increased traffic could result in delays and system failures. These types of occurrences could cause users to perceive that our solution does not function properly and could therefore adversely affect our ability to attract and retain licensees, strategic partners and customers.

System failure or interruption or our failure to meet increasing demands on our systems could harm our business.

The success of our license and service offerings will depend on the uninterrupted operation of various systems, secure data centers and other computer and communication networks that we establish. To the extent, the number of users of networks utilizing our future products suddenly increases, the technology platform and hosting services which will be required to accommodate a higher volume of traffic may result in slower response times, service interruptions or delays or system failures. Our systems and operations will also be vulnerable to damage or interruption from, among other things:

- Power loss, transmission cable cuts and other telecommunications failures;
- Damage or interruption caused by fire, earthquake, and other natural disasters;
- Computer viruses or software defects; and
- Physical or electronic break-ins, sabotage, intentional acts of vandalism, terrorist attacks and other events beyond our control.

System interruptions or failures and increases or delays in response time could result in a loss of potential or existing users and, if sustained or repeated, could reduce the appeal of the networks to users. These types of occurrences could cause users to perceive that our solution does not function properly and could therefore adversely affect our ability to attract and retain licensees, strategic partners and customers.

Any significant problem with our systems or operations could result in lost revenue, customer dissatisfaction or lawsuits against us. A failure in the operation of our secure domain name registration system could result in the inability of one or more registrars to register and maintain secure domain names for a period of time. A failure in the operation or update of the master directory that we plan to maintain could result in deletion or discontinuation of assigned secure domain names for a period of time. The inability of the registrar systems we establish, including our back-office billing and collections infrastructure, and telecommunications systems to meet the demands of an increasing number of secure domain name requests could result in substantial degradation in our customer support service and our ability to process registration requests in a timely manner.

Our ability to sell our solutions will be dependent on the quality of our technical support, and our failure to deliver high-quality technical support services could have a material adverse effect on our sales and results of operations.

If we do not effectively assist our customers in deploying our products, succeed in helping our customers quickly resolve post-deployment issues and provide effective ongoing support, or if potential customers perceive that we may not be able to achieve the foregoing, our ability to sell our products would be adversely affected, and our reputation with current and potential customers could be harmed. In addition, as we expand our operations internationally, our technical support team will face additional challenges, including those associated with delivering support, training and documentation in languages other than English. Our failure to deliver and maintain high-quality technical support services to our customers could result in customers choosing to use our competitors' products and support services instead of ours in the future.

Telephone carriers have petitioned governmental agencies to enforce regulatory tariffs, which, if granted, would increase the cost of online communication, and such increase in cost may impede the growth of online communication and adversely affect our business.

Use of the Internet has over-burdened existing telecommunications infrastructures, and many high traffic areas have begun to experience interruptions in service. As a result, certain local telephone carriers have petitioned governmental agencies to enforce regulatory tariffs on IP telephony traffic that crosses over their traditional telephone networks. If the relief sought in these petitions is granted, the costs of communicating via online could increase substantially, potentially adversely affecting the growth in the use of online secure communications. Any of these developments could have an adverse effect on our business.

The departure of Kendall Larsen, our Chief Executive Officer and President, and/or other key personnel could compromise our ability to execute our strategic plan and may result in additional severance costs to us.

Our success largely depends on the skills, experience and performance of our key personnel. Due to the specialized nature of our business and limited staff, we are particularly dependent on Kendall Larsen, our Chief Executive Officer and President. We have no employment agreements with any of our key executives that prevent them from leaving us at any time. In addition, we do not maintain key person life insurance for any of our officers or key employees. The loss of Mr. Larsen, or our failure to retain other key personnel or failure to adequately plan for the succession of key personnel, would jeopardize our ability to execute our strategic plan and materially harm our business.

We will need to recruit and retain additional qualified personnel to successfully grow our business.

Our future success will depend, in part, on our ability to attract and retain qualified engineering, operations, marketing, sales and executive personnel. Inability to attract and retain such personnel could adversely affect our business. Competition for engineering, operations, marketing, sales and executive personnel is intense, particularly in the technology and Internet sectors and in the regions where we conduct our business. We may need to invest significant amounts of cash and equity to attract and retain employees and expend significant time and resources to identify, recruit, train and integrate such employees, and we may never realize returns on these investments. Additionally, we can provide no assurance that we will attract or retain such personnel.

Our international expansion will subject us to additional costs and risks, and our plans may not be successful.

We expect to expand our presence internationally in Japan and elsewhere through, for example, international partnerships, joint ventures and other arrangements with third parties and the possibility of establishing international subsidiaries and offices. Our international expansion may present challenges and risks, including those inherent in international operations, to us and may require significant attention from management. We may not be successful in our international partnerships, expansion efforts, and we may incur significant operating expenses. For instance, as previously disclosed in our public filings, we terminated certain agreements with Public Intelligence Technology Associates in March 2018.

We have incurred and will continue to incur significant increased costs as a result of operating as a public company, and our management will be required to continue to devote substantial time to various compliance initiatives.

The Sarbanes-Oxley Act of 2002, the Dodd-Frank Wall Street Reform and Consumer Protection Act of 2010, as well as other rules implemented by the SEC and the New York Stock Exchange (“NYSE”), impose various requirements on public companies, including requiring changes in corporate governance practices. These and proposed corporate governance laws and regulations under consideration may further increase our compliance costs. If compliance with these various legal and regulatory requirements diverts our management’s attention from other business concerns, it could have a material adverse effect on our business, financial condition and operating results. The Sarbanes-Oxley Act requires, among other things, that we assess the effectiveness of our internal control over financial reporting annually and disclosure controls and procedures quarterly. If we are unable to assert in any future reporting periods that our internal control over financial reporting is effective (or if our independent registered public accounting firm is unable to express an opinion on the effectiveness of our internal controls), we could lose investor confidence in the accuracy and completeness of our financial reports, which would have an adverse effect on our share price.

Although we believe that we currently maintain effective control over our disclosures and procedures and internal control over financial reporting, we may in the future identify deficiencies regarding the design and effectiveness of our system of internal control over financial reporting. If we experience any material weaknesses in our internal control over financial reporting in the future or are unable to provide unqualified management or attestation reports about our internal controls, we may be unable to meet financial and other reporting deadlines and may incur costs associated with remediation, and any of which could cause our share price to decline. Moreover, if we identify deficiencies in our internal control over financial reporting that are deemed to be material weaknesses in future periods, the market price of our ordinary shares could decline, and we could be subject to potential delisting by the NYSE and review by the NYSE, the SEC, or other regulatory authorities, which would require the expenditure by us of additional financial and management resources. As a result, our shareholders could lose confidence in our financial reporting, which would harm our business and the market price of our ordinary shares.

There are inherent uncertainties involved in estimates, judgments and assumptions used in the preparation of financial statements in accordance with U.S. GAAP. Any changes in estimates, judgments and assumptions could have a material adverse effect on our business, financial condition and operating results.

The preparation of financial statements in accordance with U.S. GAAP involves making estimates, judgments and assumptions that affect reported amounts of assets (including intangible assets), liabilities and related reserves, revenues, expenses and income. Estimates, judgments and assumptions are inherently subject to change in the future, and any such changes could result in corresponding changes to the amounts of assets, liabilities, revenues, expenses and income. Any such changes could have a material adverse effect on our business, financial condition and operating results.

Our results of operations and financial condition could be materially affected by the enactment of legislation implementing changes in the U.S. or foreign taxation of international business activities or the adoption of other tax reform policies.

As we expand the scale of our international business activities, any changes in the U.S. or foreign taxation of such activities may increase our worldwide effective tax rate and harm our business, results of operations, and financial condition. For example, in December 2017, the legislation commonly referred to as the Tax Cuts and Jobs Act (the “Tax Act”) was enacted, which contained significant changes to U.S. tax law, including, but not limited to, a reduction in the corporate tax rate and a transition to a new territorial system of taxation. The impact of the Tax Act is subject to ongoing technical guidance and accounting interpretation, which we will continue to monitor and assess. However, there are still some areas of the Tax Act that may not be clarified for some time.

Risks Related to Our Common Stock

Trading in our common stock is limited and the price of our common shares may be subject to substantial volatility.

Our common stock is listed on the NYSE American LLC (formerly the NYSE MKT LLC). Over the past years, the market price of our common stock has experienced significant fluctuations. Between July 1, 2018, and September 30, 2019, the reported last adjusted closing price on NYSE American LLC for our common stock ranged between \$2.40 and \$7.63 per share. The price of our common stock may continue to be volatile as a result of several factors, some of which are beyond our control. These factors include, but not limited to, the following:

- Developments or lack thereof in any then-outstanding litigation;
- Quarterly variations in our operating results;
- Large purchases or sales of common stock or derivative transactions related to our stock;
- Actual or anticipated announcements of new products or services by us or competitors;
- General conditions in the markets in which we compete; and
- General social, political, economic and financial conditions, including the significant volatility in the global financial markets.

In addition, we believe there has been and may continue to be substantial trading in derivatives of our stock, including short selling activity or related similar activities, which are beyond our control and which may be beyond the full control of the SEC and Financial Institutions Regulatory Authority or “FINRA”. While the SEC and FINRA rules prohibit some forms of short selling and other activities that may result in stock price manipulation, such activity may nonetheless occur without detection or enforcement. We have held conversations with regulators concerning trading activity in our stock; however, there can be no assurance that should there be any illegal manipulation in the trading of our stock, it will be detected, prosecuted or successfully eradicated. Significant short selling or other types of market manipulation could cause our stock trading price to decline, to become more volatile, or both.

The market price of our common stock has been and may continue to be volatile, and you could lose all or part of your investment.

The trading price of our common stock has been volatile since our initial public offering and is likely to continue to be volatile. Factors that could cause fluctuations in the market price of our common stock include, but are not limited to the following:

- Price and volume fluctuations in the overall stock market from time to time;
- Volatility in the market prices and trading volumes of companies in our industry or companies that investors consider comparable;
- Changes in operating performance and stock market valuations of other companies generally, or those in our industry;
- Sales of shares of our common stock by us or our stockholders;
- Failure of securities analysts to maintain coverage of us, changes in financial estimates by securities analysts who follow us, or our failure to meet these estimates or the expectations of investors;
- The financial projections we may provide to the public, any changes in those projections or our failure to meet those projections;
- Announcements by us or our competitors of new products or services;

- The public's reaction to our press releases, other public announcements and filings with the SEC;
- Rumors and market speculation involving us or other companies in our industry;
- Actual or anticipated changes in our results of operations;
- Actual or anticipated developments in our business, our competitors' businesses or the competitive landscape generally;
- Litigation involving us, our industry or both, or investigations by regulators into our operations or those of our competitors;
- Announced or completed acquisitions of businesses or technologies by us or our competitors;
- New laws or regulations or new interpretations of existing laws or regulations applicable to our business;
- Changes in accounting standards, policies, guidelines, interpretations or principles;
- Any significant change in our management; and
- General economic conditions and slow or negative growth of our markets.

Further, in recent years the stock markets have experienced extreme price and volume fluctuations that have affected and continue to affect the market prices of equity securities of many companies. These fluctuations often have been unrelated or disproportionate to the operating performance of those companies. In addition, the stock prices of many technology companies have experienced wide fluctuations that have often been unrelated to the operating performance of those companies. These broad market and industry fluctuations, as well as general economic, political and market conditions such as recessions, government shutdowns, interest rate changes the stability of the EU and the exit of the United Kingdom or international currency fluctuations, may cause the market price of our common stock to decline. 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.

We do not currently pay dividends on our common stock and thus stockholders must look to appreciation of our common stock to realize a gain on their investments.

Our dividend policy is within the discretion of our Board of Directors and will depend upon various factors, including our business, financial condition, results of operations, capital requirements, and investment opportunities. We therefore cannot make assurances that our Board of Directors will determine to pay regular or special dividends in the future. Accordingly, unless our Board of Directors determines to pay dividends, stockholders will be required to look to appreciation of our common stock to realize a gain on their investment. This appreciation may not occur.

The exercise of our outstanding stock options, RSUs and issuance of new shares would result in a dilution of our current stockholders' voting power and an increase in the number of shares eligible for future resale in the public market which may negatively impact the market price of our stock.

The exercise of our outstanding vested stock options would dilute the ownership interests of our existing stockholders. As of September 30, 2019, we had outstanding options to purchase an aggregate of 5,680,021 shares of common stock representing approximately 8% of our total shares outstanding of which 3,900,534 were vested and therefore exercisable. To the extent outstanding stock options are exercised, additional shares of common stock will be issued, existing stockholders' percentage voting interests will decline and the number of shares eligible for resale in the public market will increase. Such increase may have a negative effect on the value or market trading price of our common stock.

The market price of our common stock may decline because our operating results may not be consistent and may be difficult to predict.

Our reported net income has fluctuated in the past due to several factors. We expect that our future operating results may also fluctuate due to the same or similar factors. We had a net loss of \$17.3 million for the year ended December 31, 2017, a net loss of \$25.4 million for the year ended December 31, 2018, and a net loss of \$14.7 million for the nine months ended September 30, 2019, with an accumulated deficit of \$213 million. The following include some of the factors that may cause our operating results to fluctuate:

- The outcome of actions to enforce our intellectual property rights currently in progress or that we may undertake in the future, and the timing thereof;
- The amount and timing of receipt of license fees from potential infringers, licensees or customers;
- The rate of adoption of our patented technologies;

- The number of new license arrangements we may execute, or that may expire, within a particular period and the scope of those licenses, including the number of our patents which are licensed, the extent of prior infringement of our patent rights, royalty rates, timing of payment obligations, expiration date etc.;
- The success of a licensee in selling products that use our patented technologies; and
- The amount and timing of expenses related to our patent filings and enforcement proceedings, including litigation, related to our intellectual property rights.

These fluctuations may make our business particularly difficult to manage, adversely affect our business and operating results, make our operating results difficult for investors to predict and, further, cause our results to fall below investor's expectations and adversely affect the market price of our common stock.

Because ownership of our common stock is concentrated, investors may have limited influence on stockholder decisions.

As of September 30, 2019, our executive officers and directors beneficially owned approximately 13.2% of our outstanding common stock. In addition, a group of stockholders that, as of December 31, 2007, held 4,766,666 shares, or approximately 8% of our outstanding common stock, have entered into a voting agreement with us that requires them to vote all of their shares of our voting stock in favor of the director nominees approved by our Board of Directors at each director election going forward, and in a manner that is proportional to the votes cast by all other voting shares as to any other matters submitted to the stockholders for a vote. However, we cannot be certain how many shares of our common stock this group of stockholders currently owns. Because of their beneficial ownership interest, our officers and directors could significantly influence stockholder actions of which you disapprove or that are contrary to your interests. This ability to exercise significant influence could prevent or significantly delay another company from acquiring or merging with us.

Our protective provisions in our amended and restated certificate of incorporation and bylaws could make it difficult for a third party to successfully acquire us even if you would like to sell your stock to them.

We have a number of protective provisions in our amended and restated certificate of incorporation and bylaws that could delay, discourage or prevent a third party from acquiring control of us without the approval of our Board of Directors. These protective provisions include:

- **A staggered Board of Directors:** This means that only one or two directors (since we have a five-person Board of Directors) will be up for election at any given annual meeting. This has the effect of delaying the ability of stockholders to affect a change in control of us because it would take two annual meetings to effectively replace a majority of the Board of Directors.
- **Blank check preferred stock:** Our Board of Directors has the authority to establish the rights, preferences and privileges of our 10,000,000 authorized, but unissued, shares of preferred stock. Therefore, this stock may be issued at the discretion of our Board of Directors with preferences over your shares of our common stock in a manner that is materially dilutive to you. In addition, blank check preferred stock can be used to create a "poison pill" which is designed to deter a hostile bidder from buying a controlling interest in our stock without the approval of our Board of Directors. We have not adopted such a "poison pill;" but our Board of Directors has the ability to do so in the future, very rapidly and without stockholder approval.
- **Advance notice requirements for director nominations and for new business to be brought up at stockholder meetings:** Stockholders wishing to submit director nominations or raise matters to a vote of the stockholders must provide notice to us within very specific date windows and in very specific form in order to have the matter voted on at a stockholder meeting. This has the effect of giving our Board of Directors and management more time to react to stockholder proposals generally and could also have the effect of disregarding a stockholder proposal or deferring it to a subsequent meeting to the extent such proposal is not raised properly.
- **No stockholder actions by written consent:** No stockholder or group of stockholders may take actions rapidly and without prior notice to our Board of Directors and management or to the minority stockholders. Along with the advance notice requirements described above, this provision also gives our Board of Directors and management more time to react to proposed stockholder actions.
- **Super majority requirement for stockholder amendments to the bylaws:** Stockholder proposals to alter or amend our bylaws or to adopt new bylaws can only be approved by the affirmative vote of at least 66 2/3% of the outstanding shares of our common stock.

- **No ability of stockholders to call a special meeting of the stockholders:** Only the Board of Directors or management can call special meetings of the stockholders. This could mean that stockholders, even those who represent a significant percentage of our shares of common stock, may need to wait for the annual meeting before nominating directors or raising other business proposals to be voted on by the stockholders.

In addition, the provisions of Section 203 of the Delaware General Corporate Law govern us. These provisions may prohibit large stockholders, particularly those owning 15% or more of our outstanding voting stock, from merging or combining with us for a certain period of time.

These and other provisions in our amended and restated certificate of incorporation, our bylaws and under Delaware law could discourage potential takeover attempts, reduce the price that investors might be willing to pay for shares of our common stock in the future and result in the market price being lower than it would be without these provisions

ITEM 6 —EXHIBITS.

The documents listed in the Exhibit Index of the Quarterly Report on Form 10-Q are incorporated by reference or are filed with this Quarterly Report on Form 10-Q, in each case as indicated therein (numbered in accordance with Item 601 of Regulation S-K).

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.

VIRNETX HOLDING CORPORATION

By: /s/ Kendall Larsen

Name Kendall Larsen

Title Chief Executive Officer (Principal Executive Officer)

By: /s/ Richard H. Nance

Name Richard H. Nance

Title Chief Financial Officer (Principal Financial Officer and Principal Accounting Officer)

Date: November 8, 2019

EXHIBIT INDEX

Exhibit Number	Description
31.1**	Certification of the President and Chief Executive Officer pursuant to Exchange Act Rules 13a – 14(a) and 15d – 14(a), as adopted pursuant to Section 302 of the Sarbanes-Oxley Act of 2002.
31.2**	Certification of the Chief Financial Officer pursuant to Exchange Act Rules 13a – 14(a) and 15d – 14(a), as adopted pursuant to Section 302 of the Sarbanes-Oxley Act of 2002.
32.1***	Certification of the President and Chief Executive Officer pursuant to 18 U.S.C. Section 1350, as adopted pursuant to Section 906 of the Sarbanes-Oxley Act of 2002.
32.2***	Certification of the Chief Financial Officer pursuant to 18 U.S.C. Section 1350, as adopted pursuant to Section 906 of the Sarbanes-Oxley Act of 2002.
101	Interactive Data Files

** Filed herewith.

*** The certifications attached as Exhibit 32.1 and Exhibit 32.2 that accompany this Quarterly Report on Form 10-Q are deemed furnished and not filed with the Securities and Exchange Commission and are not to be incorporated by reference into any filing of VirnetX Holding Corporation 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 this Quarterly Report on Form 10-Q, irrespective of any general incorporation language contained in such filing.

**CERTIFICATIONS PURSUANT TO SECTION 302
OF THE SARBANES-OXLEY ACT OF 2002**

I, Kendall Larsen, certify that:

1. I have reviewed this Quarterly Report on Form 10-Q of VirnetX Holding Corporation for the quarter ended September 30, 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; and
5. The registrant's other certifying officer and I have disclosed, based on our most recent evaluation of internal control over financial reporting, to the registrant's auditors and the audit committee of the registrant's board of directors (or persons performing the equivalent functions):
 - (a) All significant deficiencies and material weaknesses in the design or operation of internal control over financial reporting which are reasonably likely to adversely affect the registrant's ability to record, process, summarize and report financial information; and
 - (b) Any fraud, whether or not material, that involves management or other employees who have a significant role in the registrant's internal control over financial reporting.

/s/ Kendall Larsen

Kendall Larsen
President and Chief Executive Officer
(Principal Executive Officer)

Date: November 8, 2019

**CERTIFICATIONS PURSUANT TO SECTION 302
OF THE SARBANES-OXLEY ACT OF 2002**

I, Richard H. Nance, certify that:

1. I have reviewed this Quarterly Report on Form 10-Q of VirnetX Holding Corporation for the quarter ended September 30, 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; and
5. The registrant's other certifying officer and I have disclosed, based on our most recent evaluation of internal control over financial reporting, to the registrant's auditors and the audit committee of the registrant's board of directors (or persons performing the equivalent functions):
 - (a) All significant deficiencies and material weaknesses in the design or operation of internal control over financial reporting which are reasonably likely to adversely affect the registrant's ability to record, process, summarize and report financial information; and
 - (b) Any fraud, whether or not material, that involves management or other employees who have a significant role in the registrant's internal control over financial reporting.

/s/ Richard H. Nance

Richard H. Nance

Chief Financial Officer

(Principal Financial Officer and Principal Accounting Officer)

Date: November 8, 2019

**CERTIFICATION PURSUANT TO
18 U.S.C. SECTION 1350,
AS ADOPTED PURSUANT TO
SECTION 906 OF THE SARBANES-OXLEY ACT OF 2002**

In connection with the Quarterly Report of VirnetX Holding Corporation (the "Company") on Form 10-Q for the quarter ended September 30, 2019 as filed with the Securities and Exchange Commission on November 8, 2019 (the "Report"), I, Kendall Larsen, President and Chief Executive Officer of the Company, certify, pursuant to 18 U.S.C. Section 1350, as adopted pursuant to Section 906 of the Sarbanes-Oxley Act of 2002, that, to my knowledge:

- (1) The Report fully complies with the requirements of Section 13(a) or 15(d) of the Securities Exchange Act of 1934, as amended; and
- (2) The information contained in the Report fairly presents, in all material respects, the financial condition and result of operations of the Company.

/s/ Kendall Larsen

Kendall Larsen
President and Chief Executive Officer
(Principal Executive Officer)

Date: November 8, 2019

**CERTIFICATION PURSUANT TO
18 U.S.C. SECTION 1350,
AS ADOPTED PURSUANT TO
SECTION 906 OF THE SARBANES-OXLEY ACT OF 2002**

In connection with the Quarterly Report of VirnetX Holding Corporation (the "Company") on Form 10-Q for the quarter ended September 30, 2019 as filed with the Securities and Exchange Commission on November 8, 2019 (the "Report"), I, Richard H. Nance, Chief Financial Officer of the Company, certify, pursuant to 18 U.S.C. Section 1350, as adopted pursuant to Section 906 of the Sarbanes-Oxley Act of 2002, that, to my knowledge:

- (1) The Report fully complies with the requirements of Section 13(a) or 15(d) of the Securities Exchange Act of 1934, as amended; and
- (2) The information contained in the Report fairly presents, in all material respects, the financial condition and result of operations of the Company.

/s/ Richard H. Nance

Richard H. Nance

Chief Financial Officer

(Principal Financial Officer and Principal Accounting Officer)

Date: November 8, 2019
