

**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 March 31, 2019

OR

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

For the transition period from _____ to

000-32743

(Commission File Number)

DASAN ZHONE SOLUTIONS, INC.

(Exact name of registrant as specified in its charter)

Delaware

(State or other jurisdiction of
incorporation or organization)

7195 Oakport Street
Oakland, California

(Address of principal executive offices)

22-3509099

(I.R.S. Employer
Identification Number)

94621

(Zip code)

(510) 777-7000

(Registrant's telephone number, including area code)

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

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

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

Large accelerated filer

Non-accelerated filer

Accelerated filer

Smaller reporting company

Emerging growth company

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

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

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

Title of each class	Trading Symbol(s)	Name of each exchange on which registered

Common stock, \$0.001 par value	DZSI	The Nasdaq Stock Market LLC
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As of May 5, 2019, there were 16,607,157 shares outstanding of the registrant's common stock, \$0.001 par value.

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PART I. FINANCIAL INFORMATION

Item 1. Financial Statements

DASAN ZHONE SOLUTIONS, INC. AND SUBSIDIARIES

Unaudited Condensed Consolidated Balance Sheets

(In thousands, except par value)

	<u>March 31,</u> <u>2019</u>	<u>December 31,</u> <u>2018</u>
Current assets:		
Cash and cash equivalents	\$ 20,872	\$ 27,709
Restricted cash	9,165	7,003
Accounts receivable, net		
Third parties	68,747	71,034
Related parties	898	583
Other receivables		
Suppliers and others	13,053	12,923
Related parties	4	65
Inventories	39,718	33,868
Contract assets	17,160	11,381
Prepaid expenses and other current assets	4,706	4,185
Total current assets	<u>174,323</u>	<u>168,751</u>
Property, plant and equipment, net	6,124	5,518
Right-of-use assets from operating leases	21,193	—
Goodwill	3,977	3,977
Intangible assets, net	16,530	5,649
Deferred tax assets	2,685	2,752
Long-term restricted cash	611	936
Other assets	3,883	2,424
Total assets	<u>\$ 229,326</u>	<u>\$ 190,007</u>
Liabilities, Stockholders' Equity and Non-controlling Interest		
Current liabilities:		
Accounts payable - trade		
Third parties	\$ 37,199	\$ 36,865
Related parties	592	1,743
Short-term debt - bank and trade facilities	25,081	31,762
Other payables		
Third parties	1,905	1,792
Related parties	2,119	1,281
Contract liabilities - current	3,563	8,511
Operating lease liabilities - current	4,261	—
Accrued and other liabilities	13,056	11,517
Total current liabilities	<u>87,776</u>	<u>93,471</u>
Long-term debt		
Bank and trade facilities	21,201	—
Related party	9,118	14,142
Contract liabilities - non-current	1,875	1,801
Deferred tax liabilities	1,041	—
Operating lease liabilities - non-current	18,103	—
Pension liabilities	12,394	—
Other long-term liabilities	1,721	2,739
Total liabilities	<u>153,229</u>	<u>112,153</u>
Commitments and contingencies (Note 14)		
Stockholders' equity and non-controlling interest:		
Common stock, authorized 36,000 shares, 16,596 and 16,587 shares outstanding as of March 31, 2019 and December 31, 2018 at \$0.001 par value	16	16
Additional paid-in capital	94,017	93,192
Accumulated other comprehensive loss	(1,316)	(192)
Accumulated deficit	(17,415)	(15,777)
Total stockholders' equity	<u>75,302</u>	<u>77,239</u>
Non-controlling interest	795	615
Total stockholders' equity and non-controlling interest	<u>76,097</u>	<u>77,854</u>
Total liabilities, stockholders' equity and non-controlling interest	<u>\$ 229,326</u>	<u>\$ 190,007</u>

See accompanying notes to unaudited condensed consolidated financial statements.

DASAN ZHONE SOLUTIONS, INC. AND SUBSIDIARIES
Unaudited Condensed Consolidated Statements of Comprehensive Income (Loss)
(In thousands, except per share data)

	Three Months Ended March 31,	
	2019	2018
Net revenue:		
Third parties	\$ 73,234	\$ 57,906
Related parties	855	1,598
Total net revenue	74,089	59,504
Cost of revenue:		
Products and services - third parties	48,172	36,206
Products and services - related parties	639	1,410
Amortization of intangible assets	408	153
Total cost of revenue	49,219	37,769
Gross profit	24,870	21,735
Operating expenses:		
Research and product development	10,184	8,977
Selling, marketing, general and administrative	15,039	12,394
Amortization of intangible assets	472	131
Total operating expenses	25,695	21,502
Operating income (loss)	(825)	233
Interest income	88	86
Interest expense	(871)	(323)
Other income (loss), net	228	140
Income (loss) before income taxes	(1,380)	136
Income tax (benefit) provision	77	(5)
Net income (loss)	(1,457)	141
Net income attributable to non-controlling interest	181	34
Net income (loss) attributable to DASAN Zhone Solutions, Inc.	\$ (1,638)	\$ 107
Foreign currency translation adjustments	(1,124)	318
Comprehensive income (loss)	(2,581)	459
Comprehensive income attributable to non-controlling interest	180	64
Comprehensive income (loss) attributable to DASAN Zhone Solutions, Inc.	\$ (2,761)	\$ 395
Basic and diluted net income (loss) per share attributable to DASAN Zhone Solutions, Inc.	\$ (0.10)	\$ 0.01
Weighted average shares outstanding used to compute basic net income (loss) per share	16,593	16,416
Weighted average shares outstanding used to compute diluted net income (loss) per share	16,593	16,626

See accompanying notes to unaudited condensed consolidated financial statements.

DASAN ZHONE SOLUTIONS, INC. AND SUBSIDIARIES
Unaudited Condensed Consolidated Statements of Stockholders' Equity and Non-Controlling Interest
(In thousands, except per share data)

	Common stock		Additional	Accumulated	Accumulated	Total	Non-	Total
	Shares	Amount	paid-in capital	other comprehensive income (loss)	deficit	stockholders' equity	controlling interest	stockholders' equity and non-controlling interest
For the Three-Month Period								
Ended March 31, 2019:								
Balance as of December 31, 2018	16,587	\$ 16	\$ 93,192	\$ (192)	\$ (15,777)	\$ 77,239	\$ 615	\$ 77,854
Exercise of stock options and restricted stock grant	9	—	97	—	—	97	—	97
Stock-based compensation	—	—	728	—	—	728	—	728
Net loss	—	—	—	—	(1,638)	(1,638)	181	(1,457)
Other comprehensive loss	—	—	—	(1,124)	—	(1,124)	(1)	(1,125)
Balance as of March 31, 2019	<u>16,596</u>	<u>\$ 16</u>	<u>\$ 94,017</u>	<u>\$ (1,316)</u>	<u>\$ (17,415)</u>	<u>\$ 75,302</u>	<u>\$ 795</u>	<u>\$ 76,097</u>
For the Three-Month Period								
Ended March 31, 2018:								
Balance as of December 31, 2017	16,410	\$ 16	\$ 90,198	\$ 1,871	\$ (18,852)	\$ 73,233	\$ 534	\$ 73,767
ASC 606 opening balance adjustment	—	—	—	—	342	342	—	342
Exercise of stock options and restricted stock grant	21	—	111	—	—	111	—	111
Stock-based compensation	—	—	363	—	—	363	—	363
Net income	—	—	—	—	107	107	34	141
Other comprehensive loss	—	—	—	257	—	257	30	287
Balance as of March 31, 2018	<u>16,431</u>	<u>\$ 16</u>	<u>\$ 90,672</u>	<u>\$ 2,128</u>	<u>\$ (18,403)</u>	<u>\$ 74,413</u>	<u>\$ 598</u>	<u>\$ 75,011</u>

See accompanying notes to unaudited condensed consolidated financial statements.

DASAN ZHONG SOLUTIONS, INC. AND SUBSIDIARIES
Unaudited Condensed Consolidated Statements of Cash Flows
(In thousands)

	Three Months Ended March 31,	
	2019	2018
Cash flows from operating activities:		
Net income (loss)	\$ (1,457)	\$ 141
Adjustments to reconcile net income (loss) to net cash provided by (used in) operating activities:		
Depreciation and amortization	1,417	699
Amortization of deferred financing costs	73	—
Bargain purchase gain on acquisition	(334)	—
Stock-based compensation	825	363
Provision for inventory write-down	14	434
Allowance for doubtful accounts	223	(130)
Provision for sales returns	218	185
Unrealized loss (gain) on foreign currency transactions	(95)	20
Deferred taxes	19	(183)
Changes in operating assets and liabilities:		
Accounts receivable	7,930	(9,184)
Inventories	3,828	(7,781)
Contract assets	(6,967)	—
Prepaid expenses and other assets	(207)	(1,918)
Accounts payable	(3,966)	6,013
Accrued and other liabilities	(1,331)	(1,484)
Contract liabilities	(5,166)	(703)
Net cash used in operating activities	(4,976)	(13,528)
Cash flows from investing activities:		
Proceeds from disposal of property, plant and equipment and other assets	—	1
Purchases of property, plant and equipment	(109)	(86)
Acquisition of business, net of cash acquired	(4,697)	—
Net cash used in investing activities	(4,806)	(85)
Cash flows from financing activities:		
Repayments of short-term borrowings	(17,052)	(8,250)
Repayments of related party term loan	(5,000)	—
Proceeds from short-term borrowings and line of credit	4,324	18,849
Proceeds from long-term borrowings	25,000	—
Proceeds from related party term loan	—	6,064
Deferred financing costs	(2,184)	—
Proceeds from issuance of common stock	—	111
Net cash provided by financing activities	5,088	16,774
Effect of exchange rate changes on cash, cash equivalents, and restricted cash	(306)	110
Net increase (decrease) in cash and cash equivalents and restricted cash	(5,000)	3,271
Cash and cash equivalents and restricted cash at beginning of period	35,648	31,412
Cash and cash equivalents and restricted cash at end of period	\$ 30,648	\$ 34,683
Reconciliation of cash, cash equivalents and restricted cash to statement of financial position		
Cash and equivalents	\$ 20,872	\$ 23,158
Restricted cash	9,165	10,118
Long-term restricted cash	611	1,407
	\$ 30,648	\$ 34,683

See accompanying notes to unaudited condensed consolidated financial statements.

Notes to Unaudited Condensed Consolidated Financial Statements

(1) Organization and Summary of Significant Accounting Policies

(a) Description of Business

DASAN Zhone Solutions, Inc. (referred to, collectively with its subsidiaries, as “DZS” or the “Company”) is a global provider of ultra-broadband network access solutions and communications platforms deployed by advanced Tier 1, 2 and 3 service providers and enterprise customers. The Company provides a wide array of reliable, cost-effective networking technologies, including broadband access, Ethernet switching, mobile backhaul, Passive Optical LAN and software-defined networks, to a diverse customer base that includes more than 900 customers in more than 80 countries worldwide.

DZS was incorporated under the laws of the state of Delaware in June 1999, under the name Zhone Technologies, Inc. On September 9, 2016, the Company acquired Dasan Network Solutions, Inc., a California corporation (“DNS”), through the merger of a wholly owned subsidiary of the Company with and into DNS, with DNS surviving as a wholly owned subsidiary of the Company (the “Merger”). At the effective time of the Merger, all issued and outstanding shares of capital stock of DNS held by DASAN Networks, Inc. (“DNI”) were canceled and converted into the right to receive shares of the Company's common stock in an amount equal to 58% of the issued and outstanding shares of the Company's common stock immediately following the Merger. In connection with the Merger, the Company changed its name from Zhone Technologies, Inc. to DASAN Zhone Solutions, Inc.

The Company is headquartered in Oakland, California with flexible in-house production facilities in Seminole, Florida and Hanover, Germany (acquired as part of the Keymile Acquisition in January 2019), and contract manufacturers located in China, India, Korea and Vietnam. The Company also maintains offices to provide sales and customer support at global locations.

(b) Risks and Uncertainties

The accompanying consolidated financial statements have been prepared in conformity with generally accepted accounting principles in the United States (“U.S. GAAP”), assuming the Company will continue as a going concern.

Although the Company had net income of \$2.8 million and \$1.2 million for the years ended December 31, 2018 and 2017, the Company had a net loss of \$1.5 million for the quarter ended March 31, 2019 and has incurred significant losses in prior years. As of March 31, 2019, the Company had an accumulated deficit of \$17.4 million and working capital of \$86.5 million. As of March 31, 2019, the Company had \$20.9 million in cash and cash equivalents, which included \$12.2 million in cash balances held by its international subsidiaries, and \$57.5 million in aggregate principal amount of short-term debt obligations, other long-term debt and long-term related-party borrowings. In addition, as of March 31, 2019, the Company had \$12.3 million committed as security for letters of credit under its revolving credit facilities, leaving \$21.7 million in aggregate borrowing availability under these facilities.

The Company's current lack of liquidity could harm the Company by:

- Increasing its vulnerability to adverse economic conditions in its industry or the economy in general;
- Requiring substantial amounts of cash to be used for debt servicing, rather than other purposes, including operations;
- Limiting its ability to plan for, or react to, changes in its business and industry; and
- Influencing investor and customer perceptions about its financial stability and limiting its ability to obtain financing or acquire customers.

The Company's ability to meet its obligations as they become due in the ordinary course of business for the next twelve (12) months will depend on its ability to (i) achieve forecasted results, (ii) access capital under its existing or new credit facilities and/or raise additional capital through debt or equity financing from public and/or private capital markets and (iii) effectively manage inventory procurement. If the Company cannot access or raise additional capital when needed, its operations and prospects could be negatively affected.

Management's belief that the Company will be able to achieve forecasted results assumes that, among other things, the Company will continue to be successful in implementing its business strategy and that there will be no material adverse development in its business, liquidity or capital requirements. If one or more of these factors do not occur as expected, it could cause the Company to fail to meet its obligations as they come due.

Based on the Company's current plans and current business conditions, the Company believes that its existing cash, cash equivalents and available credit facilities will be sufficient to satisfy its anticipated cash requirements for at least the next twelve (12) months.

(c) DNI Ownership

DNI owned approximately 57.2% of the outstanding shares of the Company's common stock as of March 31, 2019. As long as DNI and its affiliates hold shares of the Company's common stock representing at least a majority of the votes, DNI will be able to freely nominate and elect all the members of the Company's board of directors, subject to applicable requirements under Nasdaq listing rules and applicable laws. The directors elected by DNI will have the authority to make decisions affecting the Company's capital structure, including the issuance of additional capital stock or options, the incurrence of additional indebtedness, the implementation of stock repurchase programs, and the declaration of dividends. The interests of DNI may not coincide with the interests of the Company's other stockholders or with holders of the Company's indebtedness. DNI's ability to control all matters submitted to the Company's stockholders for approval limits the ability of other stockholders to influence corporate matters and, as a result, the Company may take actions that the Company's other stockholders or holders of the Company's indebtedness do not view as beneficial. See Note 11 and Note 14 to the unaudited condensed consolidated financial statements for additional information.

(d) Basis of Presentation

For a complete description of what the Company believes to be the critical accounting policies and estimates used in the preparation of its unaudited condensed consolidated financial statements, refer to the Company's Annual Report on Form 10-K for the year ended December 31, 2018.

The accompanying unaudited condensed consolidated financial statements have been prepared in accordance with U.S. GAAP for interim financial information and with the instructions to Form 10-Q and Article 10 of Regulation S-X. Accordingly, they do not include all of the information and footnotes required by U.S. GAAP for complete financial statements.

The unaudited condensed consolidated financial statements reflect all adjustments (consisting only of normal recurring adjustments) that, in the opinion of management, are necessary for a fair presentation of the results for the interim periods presented. All intercompany transactions and balances have been eliminated in consolidation. The results of operations for the current interim period are not necessarily indicative of results to be expected for the current year or any other period. These unaudited condensed consolidated financial statements should be read in conjunction with the consolidated financial statements of the Company and notes thereto included in the Company's Annual Report on Form 10-K for the year ended December 31, 2018 filed with the Securities and Exchange Commission.

(e) Use of Estimates

The preparation of the condensed consolidated financial statements in conformity with U.S. GAAP requires management to make estimates and assumptions that affect the reported amounts of assets and liabilities and disclosure of contingent assets and liabilities at the date of the consolidated financial statements and the reported amounts of revenue and expenses during the reporting period. Actual results could differ materially from those estimates.

(f) Revenue Recognition

The following table presents the revenues by source (in thousand):

Three Months Ended	
March 31,	
2019	2018

Revenue by products and services:

Products	\$ 69,582	\$ 56,726
Services	<u>4,507</u>	<u>2,778</u>
Total	<u>\$ 74,089</u>	<u>\$ 59,504</u>

The following summarizes required disclosures about geographical concentrations and revenue by products and services (in thousands):

	Three Months Ended	
	March 31,	
	2019	2018
Revenue by geography:		
United States	\$ 9,578	\$ 16,551
Canada	923	971
Total North America	<u>10,501</u>	<u>17,522</u>
Latin America	6,585	7,958
Europe, Middle East, Africa	18,414	7,486
Korea	15,851	12,124
Other Asia Pacific	<u>22,738</u>	<u>14,414</u>
Total International	<u>63,588</u>	<u>41,982</u>
Total	<u>\$ 74,089</u>	<u>\$ 59,504</u>

(g) Concentration of Risk

Financial instruments, which potentially subject the Company to concentrations of credit risk, consist primarily of cash and cash equivalents which totaled \$20.9 million at March 31, 2019, as well as the Company's PNC Facility (defined below), under which the Company had aggregate borrowing availability of \$15.0 million as of March 31, 2019. Cash and cash equivalents consist principally of financial deposits and money market accounts. Cash and cash equivalents are principally held with various domestic and international financial institutions with high credit standing.

The Company's customers include competitive and incumbent local exchange carriers, competitive access providers, internet service providers, wireless carriers and resellers serving these markets. The Company performs ongoing credit evaluations of its customers and generally does not require collateral. Allowances are maintained for potential doubtful accounts.

For the three months ended March 31, 2019 and 2018, no single customer accounted for 10% or more of net revenue.

As of March 31, 2019, no single customer represented 10% or more of net accounts receivable. As of December 31, 2018, two (2) customers represented 11% and 10% of net accounts receivable, respectively.

As of March 31, 2019 and December 31, 2018, receivables from customers in countries other than the United States represented 92% and 88%, respectively, of net accounts receivable.

(h) Business Combination

The Company allocates the fair value of purchase consideration to the tangible assets acquired, liabilities assumed and intangible assets acquired based on their estimated fair values. The excess of the fair value of purchase consideration over the fair values of these identifiable assets and liabilities is recorded as goodwill. When determining the fair values of assets acquired and liabilities assumed, management makes significant estimates and assumptions, especially with respect to intangible assets and certain tangible assets such as inventory.

Critical estimates in valuing certain tangible and intangible assets include but are not limited to future expected cash flows from the underlying assets and discount rates. Management's estimates of fair value are based upon assumptions believed to be reasonable, but which are inherently uncertain and unpredictable and, as a result, actual results may differ from estimates.

(i) ***Defined Benefit Plans and Plan Assumptions***

The Company provides certain defined benefit pension plans to employees in Germany. Pension accounting is intended to reflect the recognition of future benefit costs over the employees' average expected future service to the Company based on the terms of the plans and investment and funding decisions. To estimate the impact of these future payments and the Company's decisions concerning funding of these obligations, the Company is required to make assumptions using actuarial concepts within the framework of U.S. GAAP. Two critical assumptions are the discount rate and the expected long-term return on plan assets. Other important assumptions include expected future salary increases, expected future increases to benefit payments, expected retirement dates, employee turnover, retiree mortality rates and portfolio composition. The Company evaluates these assumptions at least annually.

(j) ***Recent Accounting Pronouncements***

Recent Accounting Pronouncements Adopted

Leases

In February 2016, the Financial Accounting Standards Board ("FASB") issued Accounting Standards Update ("ASU") 2016-02, *Leases* as modified subsequently by ASUs 2018-01, 2018-10, 2018-11, 2018-20 and 2019-01 ("ASC 842"), which introduces the recognition of lease assets and lease liabilities by lessees for those leases classified as operating leases under previous guidance. ASU 2016-02 requires that lease arrangements longer than 12 months' result in an entity recognizing an asset and liability, among other changes.

The Company adopted the new standard on January 1, 2019, the first day of fiscal 2019 using the modified retrospective approach whereby the cumulative effect of adoption was recognized on the adoption date and prior periods were not restated. There was no net cumulative effect adjustment to retained earnings as of January 1, 2019 as a result of this adoption. ASC 842 sets out the principles for the recognition, measurement, presentation and disclosure of leases.

The Company has elected a certain package of practical expedients permitted under the transition guidance within ASC 842. Those practical expedients are as follows:

- The Company did not reassess (i) whether expired or existing contracts contain leases under the new definition of a lease; (ii) lease classification for expired or existing leases; and (iii) whether previously capitalized initial direct costs would qualify for capitalization under ASC 842.
- The Company did not reassess a lease whose term is 12 months or less and does not include a purchase option that the lessee is reasonably certain to exercise.
- The Company did not elect to use hindsight for transition when considering judgments and estimates such as assessments of lessee options to extend or terminate a lease or purchase the underlying asset.
- For all asset classes, the Company elected to not recognize a right-of-use asset and lease liability for leases with a term of 12 months or less.
- For all asset classes, the Company elected to not separate non-lease components from lease components to which they relate and have accounted for the combined lease and non-lease components as a single lease component.

The Company applies significant judgment in considering all relevant factors that create an economic benefit (e.g., contract-based, asset-based, entity-based, and market-based, among others) as of the commencement date in determining the initial lease term and future lease payments. For example, the Company exercises judgment in determining whether renewal periods will be exercised during the initial measurement process. If the Company believes it will exercise the renewal option, and the lease payments associated with the renewal periods are known or calculable, such renewal lease payments would be included in the initial measurement of the lease liability. Otherwise, even if the Company believes that it will exercise the renewal period, if the renewal payments are unknown or not calculable, they would not be included until they become known or calculable at which time the Company would remeasure the remaining lease payments similar to a lease modification.

Adoption of the standard resulted in the balance sheet recognition of right of use assets and lease liabilities of approximately \$21.2 million and \$22.4 million, respectively as of January 1, 2019. Adoption of the standard did not materially impact the Company's unaudited condensed consolidated statements of comprehensive income (loss) and cash flows. See Note 13 in the notes to unaudited condensed consolidated financial statements.

Income Tax Effects within Accumulated Other Comprehensive Income

In February 2018, the FASB issued ASU 2018-02, *Reclassification of Certain Tax Effects from Accumulated Other Comprehensive Income*. The amendments in this update allow a reclassification from accumulated other comprehensive income to retained earnings for stranded tax effects resulting from the Tax Cuts and Jobs Act (the “Tax Act”). The adoption of this standard on January 1, 2019 did not have a material impact on the Company’s condensed consolidated financial statements, since the Company did not elect to reclassify the income tax effects of 2017 Tax Act from accumulated other comprehensive income to retained earnings.

Improving the Presentation of Net Periodic Pension Cost and Net Periodic Post-Retirement Benefit Cost

In March 2017, the FASB issued ASU 2017-07, *Improving the Presentation of Net Periodic Pension Cost and Net Periodic Post-Retirement Benefit Cost*. The ASU requires the Company to disaggregate the service cost component from the other components of net periodic benefit costs and requires the Company to present the other components of net periodic benefit cost in other income, net. The standard is effective for annual and interim periods beginning after December 31, 2017, and retrospective application is required. The Company adopted this guidance during the first quarter of 2019 without any retrospective adjustments since the underlying pension obligations were acquired through Keymile Acquisition in 2019. The interest cost, which is the only component of net period post-retirement cost, is recognized in Other income (loss), net in the condensed consolidated statement of comprehensive income (loss).

Other Recent Accounting Pronouncements Not Yet Adopted

In January 2017, FASB issued ASU 2017-04, *Simplifying the Test for Goodwill Impairment*, which simplifies the accounting for goodwill impairment. The updated guidance is effective for the Company on January 1, 2020, and will be adopted accordingly. Early adoption is permitted. The Company is currently assessing the potential impact of adopting this new guidance on its consolidated financial statements.

On August 28, 2018, the FASB issued ASU 2018-13, *Fair Value Measurement (Topic 820)*, which removes, modifies, and adds certain disclosure requirements related to fair value measurements in ASC 820. The Company is currently assessing the potential impact of adopting this new guidance on its consolidated financial statements.

In August 2018, the FASB issued ASU 2018-14, *Disclosure Framework-Changes to the Disclosure Requirements for Defined Benefit Plans*, which amends ASC 715 to add, remove, and clarify disclosure requirements related to defined benefit pension and other postretirement plans. The updated guidance is effective for the Company on January 1, 2021, with early adoption permitted. The Company is currently assessing the potential impact of adopting this new guidance on its consolidated financial statements.

(2) Business Combination

Keymile Acquisition

On January 3, 2019, ZTI Merger Subsidiary III Inc., a Delaware corporation and a wholly owned subsidiary of the Company (“ZTI”), acquired all of the outstanding shares of Keymile GmbH (“Keymile”), a limited liability company organized under the laws of Germany, from Riverside KM Beteiligung GmbH (“Riverside”), a limited liability company organized under the laws of Germany, pursuant to a share purchase agreement (the “Keymile Acquisition”).

The allocation of the purchase price was based upon a preliminary valuation, and the Company’s estimates and assumptions are subject to refinement, within the measurement period (up to one year from the Acquisition Date). Measurement period adjustments, with the corresponding adjustment to the bargain purchase, will be recorded in the reporting period in which the adjustment to the provisional amounts are determined.

The aggregate cash purchase price paid for all of the shares of Keymile and certain of its subsidiaries, was €10,250,000 (approximately \$11.8 million). The Company also assumed pension obligations of approximately \$12.7 million, net of pension assets of \$3.5 million. Following the closing of the Keymile Acquisition, Keymile

became the Company's wholly owned subsidiary. The Keymile Acquisition agreement also provides for a lockbox mechanism such that normal operations are observed by Keymile management and any excess cash flows generated from operating activities for the period from October 1, 2018 to December 31, 2018 remains with Keymile, with the Company as the beneficiary, as the purchaser of Keymile. At December 31, 2018, cash received from the lockbox mechanism amounted to \$2.5 million.

On October 1, 2018, as a condition for the Keymile Acquisition, Riverside extended a €4.0 million (\$4.6 million, which represents the cash and cash equivalents and short-term debt, in the table below) as working capital loan to Keymile. The working capital loan bears interest at a rate of 3.5% per annum and is scheduled for repayment in two equal installments in April and November 2019.

Keymile is a leading solution provider and manufacturer of telecommunication systems for broadband access. The Company believes Keymile strengthens its portfolio of broadband access solutions, which now includes a series of multi-service access platforms for FTTx network architectures, including ultra-fast broadband copper access based on VDSL/Vectoring and G. Fast technology.

A summary of the preliminary estimated purchase price allocation to the fair value of assets acquired and liabilities assumed is as follows (in thousands):

Purchase consideration		
Cash consideration	\$	11,776
Working capital adjustment: cash received from lockbox mechanism		(2,497)
Adjusted purchase consideration	\$	<u>9,279</u>

The following summarizes the preliminary estimated fair values of the assets acquired and liabilities assumed at the date of acquisition for the acquisition consummated during the three-month period ended March 31, 2019 (in thousands):

Allocation of purchase consideration		
Current assets		
Cash and cash equivalents	\$	4,582
Accounts receivable - trade, net		6,820
Other receivables		798
Inventories		9,943
Property, plant and equipment		983
Other assets		163
Intangible assets		12,030
Accounts payable - trade		(3,303)
Short-term debt		(4,582)
Contract liabilities		(364)
Accrued liabilities		(3,614)
Deferred tax liabilities		(1,071)
Pension obligations		(12,656)
Other long term liabilities		(116)
Bargain purchase gain		(334)
Total purchase consideration	\$	<u>9,279</u>

The purchase price allocation resulted in the recognition of a gain on bargain purchase of approximately \$0.3 million, which was included in the unaudited condensed consolidated statements of comprehensive income (loss) for the quarter ended March 31, 2019. The gain on bargain purchase was the result of the fair value of the identifiable net assets acquired exceeding the purchase price paid for the Keymile Acquisition which was reduced by the lockbox mechanism.

The estimated weighted average useful lives of the acquired property, plant and equipment is 5 years. Depreciation is calculated using straight-line method.

The following table represents the preliminary estimated fair value and useful lives of identifiable intangible assets acquired:

	<u>Estimated Fair Value (in thousands)</u>	<u>Estimated Useful Life</u>
Intangible assets acquired		
Customer relationship	\$ 3,667	5 years
Trade name	3,208	5 years
Technology - developed core	<u>5,155</u>	5 years

Total intangible assets

\$ 12,030

The Company valued the customer relationships using the Income Approach, specifically the Multi-Period Excess Earnings Method (“MPEEM”). As of the valuation date, there was value attributable to Keymile’s existing customer relationships. Keymile’s key customer base is made up of independent telecommunication service providers and network operators, a base of customers that have seen growth since 2012. Keymile is seen as a market leader and historically has had low customer attrition. In addition, switching costs are considered to be high due to the disruption of switching platforms as well as the additional training necessary.

The Company utilized the Relief from Royalty Method (“RFRM”) to value the tradename and developed technology. The RFRM assumes that the value of the asset equals the amount a third party would pay to use the asset and capitalize on the related benefits of the asset. Therefore, a revenue stream for the asset is estimated, and then an appropriate royalty rate is applied to the forecasted revenue to estimate the pre-tax income associated with the asset. The pre-tax income is then tax-effected to estimate the after-tax net income associated with the asset. Finally, the after tax net income is discounted to the present value using an appropriate rate of return that considers both the risk of the asset and the associated cash flow estimates.

Pro Forma Financial Information

The unaudited pro forma information for the periods set forth below gives effect to the Keymile Acquisition as if it had occurred as of January 1, 2018. The unaudited pro forma financial information has been prepared by management for illustrative purposes only and does not purport to represent what the results of operations, financial condition or other financial information of the Company would have been if the Keymile Acquisition had occurred on January 1, 2018 or what such results or financial condition will be for any future periods. The unaudited pro forma financial information is based on estimates and assumptions and on the information available at the time of the preparation thereof. These estimates and assumptions may change, be revised or prove to be materially different, and the estimates and assumptions may not be representative of facts existing at the time of the Keymile Acquisition. The pro forma adjustments primarily relate to acquisition related costs, amortization of acquired intangibles and interest expense related to financing arrangements. Below is the pro forma financial information (in thousands):

	Pro Forma Three Months Ended March 31,	
	2019	2018
Pro forma net revenues	\$ 74,089	\$ 69,835
Pro forma net income (loss) attributable to DASAN Zhone Solutions, Inc.	(1,301)	121

(3) Fair Value Measurement

The Company utilizes a fair value hierarchy that is intended to increase consistency and comparability in fair value measurements and related disclosures. The fair value hierarchy is based on inputs to valuation techniques that are used to measure fair value that are either observable or unobservable. Observable inputs reflect assumptions market participants would use in pricing an asset or liability based on market data obtained from independent sources while unobservable inputs reflect a reporting entity’s pricing based upon their own market assumptions. The fair value hierarchy consists of the following three levels:

- Level 1 Inputs are quoted prices in active markets for identical assets or liabilities.
- Level 2 Inputs are quoted prices for similar assets or liabilities in an active market, quoted prices for identical or similar assets or liabilities in markets that are not active, inputs other than quoted prices that are observable and market-corroborated inputs which are derived principally from or corroborated by observable market data.
- Level 3 Inputs are derived from valuation techniques in which one or more significant inputs or value drivers are unobservable.

The following financial instruments are not measured at fair value on the Company’s condensed consolidated balance sheet as of March 31, 2019 and the consolidated balance sheet as of December 31, 2018, but require disclosure of their fair values: cash and cash equivalents, short-term investments, accounts receivable, accounts payable and debt. The carrying values of financial instruments (Level 3) such as cash and cash equivalents, short-term investments, accounts receivable and accounts payable approximate their fair values based on their short-term

nature. The carrying value of the Company's debt (Level 3) approximates their fair values based on the current rates available to the Company for debt of similar terms and maturities.

(4) Cash, Cash Equivalents and Restricted Cash

As of March 31, 2019 and December 31, 2018, the Company's cash and cash equivalents comprised financial deposits. Restricted cash consisted primarily of cash restricted for performance bonds, warranty bonds and collateral for borrowings.

(5) Balance Sheet Details

Accounts receivable, net as of March 31, 2019 and December 31, 2018 was as follows (in thousands):

	<u>March 31, 2019</u>	<u>December 31, 2018</u>
Gross accounts receivable	\$ 70,189	\$ 71,945
Less: allowance for doubtful accounts	(544)	(328)
Total accounts receivable, net	<u>\$ 69,645</u>	<u>\$ 71,617</u>

Inventories as of March 31, 2019 and December 31, 2018 were as follows (in thousands):

	<u>March 31, 2019</u>	<u>December 31, 2018</u>
Raw materials	\$ 17,492	\$ 15,688
Work in process	3,490	2,429
Finished goods	18,736	15,751
Total inventories	<u>\$ 39,718</u>	<u>\$ 33,868</u>

Inventories provided as collateral for borrowings from Export-Import Bank of Korea amounted to \$8.2 million and \$9.5 million as of March 31, 2019 and December 31, 2018, respectively.

(6) Property, Plant and Equipment

Property, plant and equipment as of March 31, 2019 and December 31, 2018 were as follows (in thousands):

	<u>March 31, 2019</u>	<u>December 31, 2018</u>
Furniture and fixtures	\$ 9,838	\$ 8,029
Machinery and equipment	2,262	3,553
Leasehold improvements	4,047	3,715
Computers and software	1,203	922
Other	747	982
	<u>18,097</u>	<u>17,201</u>
Less: accumulated depreciation and amortization	(11,611)	(11,271)
Less: government grants	(362)	(412)
Total property and equipment, net	<u>\$ 6,124</u>	<u>\$ 5,518</u>

Depreciation expense associated with property and equipment for the three months ended March 31, 2019 and March 31, 2018 was \$0.5 million and \$0.4 million, respectively.

The Company receives grants from various government entities mainly to support capital expenditures. Such grants are deferred and are generally refundable to the extent the Company does not utilize the funds for qualifying expenditures. Once earned, the Company records the grants as a contra amount to the assets and amortizes such amount over the useful lives of the related assets as a reduction to depreciation expense.

(7) Goodwill and Intangible Assets

Goodwill as of March 31, 2019 and December 31, 2018 was as follows (in thousands):

	<u>March 31, 2019</u>	<u>December 31, 2018</u>
Beginning balance	\$ 3,977	\$ 3,977
Less: accumulated impairment	<u>—</u>	<u>—</u>
Ending balance	<u>\$ 3,977</u>	<u>\$ 3,977</u>

The Company did not recognize impairment loss on goodwill during the three months ended March 31, 2019 and 2018.

Intangible assets as of March 31, 2019 and December 31, 2018 were as follows (in thousands):

	<u>March 31, 2019</u>		
	<u>Gross Carrying Amount</u>	<u>Accumulated Amortization</u>	<u>Net</u>
Developed technology	\$ 8,109	\$ (1,822)	\$ 6,287
Customer relationships	8,830	(1,572)	7,258
Backlog	2,179	(2,179)	—
Trade name	<u>3,142</u>	<u>(157)</u>	<u>2,985</u>
Total intangible assets	<u>\$ 22,260</u>	<u>\$ (5,730)</u>	<u>\$ 16,530</u>

	<u>December 31, 2018</u>		
	<u>Gross Carrying Amount</u>	<u>Accumulated Amortization</u>	<u>Net</u>
Developed Technology	\$ 3,060	\$ (1,428)	\$ 1,632
Customer Relationships	5,240	(1,223)	4,017
Backlog	<u>2,179</u>	<u>(2,179)</u>	<u>—</u>
Total intangible assets, net	<u>\$ 10,479</u>	<u>\$ (4,830)</u>	<u>\$ 5,649</u>

Intangible assets as of March 31, 2019 includes the technology acquired through Keymile Acquisition (Note 2).

Amortization expense associated with intangible assets for the three months ended March 31, 2019 and 2018 was \$0.9 million and \$0.3 million, respectively.

(8) Debt

The following tables summarize the Company's debt as of March 31, 2019 and December 31, 2018 (in thousands):

	<u>As of March 31, 2019</u>		
	<u>Short-term</u>	<u>Long-term</u>	<u>Total</u>
PNC Bank Facility	\$ 2,500	\$ 22,500	\$ 25,000
Working Capital Loan	4,488	—	4,488
Bank and Trade Facilities - Foreign Operations	18,905	—	18,905
Related Party	<u>—</u>	<u>9,118</u>	<u>9,118</u>
	\$ 25,893	\$ 31,618	\$ 57,511
Less: unamortized deferred financing costs on the PNC Bank Facility	<u>(812)</u>	<u>(1,299)</u>	<u>(2,111)</u>
	<u>\$ 25,081</u>	<u>\$ 30,319</u>	<u>\$ 55,400</u>

	<u>As of December 31, 2018</u>		
	<u>Short-term</u>	<u>Long-term</u>	<u>Total</u>
Wells Fargo Bank Facility	\$ 7,000	—	\$ 7,000

Bank and Trade Facilities - Foreign Operations
Related Party

24,762	—	24,762
—	14,142	14,142
<u>\$ 31,762</u>	<u>\$ 14,142</u>	<u>\$ 45,904</u>

PNC Bank Facility

On February 27, 2019, the Company and ZTI (collectively, the “Borrowers”), and certain direct and indirect subsidiaries of the Borrowers, as guarantors, entered into that certain Revolving Credit, Term Loan, Guaranty and Security Agreement (the “Domestic Credit Agreement”) and that certain Export-Import Revolving Credit, Guaranty and Security Agreement (the “Ex-Im Credit Agreement,” and together with the Domestic Credit Agreement, the “Credit Agreements”), in each case with PNC Bank, National Association (“PNC”) and Citibank, N.A. as lenders, and PNC as agent for the lenders (the “PNC Facility”), which replaced the Company’s former senior secured credit facilities with Wells Fargo Bank (the “Former WFB Facility”).

The Credit Agreements provide for a \$25.0 million term loan and a \$15.0 million revolving line of credit (including subfacilities for Ex-Im transactions, letters of credit and swing loans). The amount the Company is able to borrow on the revolving line of credit at any time is based on eligible accounts receivable and other conditions, less certain reserves. Borrowings under the PNC Facility bear interest at the Company’s option, at either (i) a base rate equal to the highest of the federal funds rate plus 0.50%, PNC’s prime rate, or the daily LIBOR rate plus 1.00%, or (ii) the LIBOR rate for the applicable interest period, subject to a floor of 1.00% (with respect to the term loans only), plus in each case, an applicable margin. The applicable margin for term loans is 5.00% for base rate loans and 6.00% for LIBOR rate loans, and the applicable margin for borrowings under the revolving line of credit is 1.50% for base rate loans and 2.50% for LIBOR rate loans.

The Company used a portion of the funds borrowed from the term loan under the Credit Agreements to (i) repay \$5.0 million in principal amount of existing related-party indebtedness with DNI plus accrued interest, (ii) repay \$1.5 million in outstanding borrowings under the Company’s former revolving line of credit plus accrued interest and fees and cash collateralize \$3.6 million in outstanding letters of credit under the Former WFB Facility, and (iii) repay \$5.6 million short-term debt in Korea and Japan. The Company intends to use the remaining funds for ongoing working capital needs. Obligations under the Credit Agreements are secured by substantially all of the personal property assets of the Borrowers and the subsidiaries that guarantee the Credit Agreements, including their intellectual property.

The maturity date under the Credit Agreements is February 27, 2022. The term loan under the Credit Agreements is repayable in eight quarterly installments of \$625,000 beginning June 30, 2019, followed by quarterly installments of \$937,500 beginning on June 30, 2021, with all remaining unpaid principal and accrued interest due on the maturity date.

The Credit Agreements contain certain covenants, limitations, and conditions with respect to the Borrowers and their subsidiaries, including a maximum leverage ratio, a minimum fixed charge coverage ratio, and a minimum liquidity covenant, as well as financial reporting obligations, and customary events of default. If an event of default occurs, the agent and lenders will be entitled to take various actions, including requiring the immediate repayment of all outstanding amounts under the Credit Agreements, terminating commitments to make additional advances and selling the assets of the Borrowers and their subsidiary guarantors to satisfy the obligations under the Credit Agreements. The Company was in compliance with the covenants under the Credit Agreements as of March 31, 2019.

As of March 31, 2019, the Company had \$25.0 million in outstanding term loan borrowings under its PNC Facility, and no outstanding borrowings under the revolving line of credit. The interest rate on the PNC Facility was 8.63% at March 31, 2019. Deferred financing cost of \$2.1 million as of March 29, 2019 has been netted against the aggregate principal amount of the PNC term loan in the unaudited condensed consolidated balance sheet as of March 31, 2019.

Former Wells Fargo Bank Facility

On February 27, 2019, in connection with the entry into the PNC Facility, the Company repaid \$1.5 million in principal amount of outstanding borrowings plus accrued interest and fees under the Former WFB Facility, cash collateralized \$3.6 million outstanding letters of credit under the Former WFB Facility. On February 27, 2019, the Company also terminated the Former WFB Facility. There was no outstanding balance as of March 31, 2019.

Working Capital Loan

On October 1, 2018, as a condition for the Keymile Acquisition, Riverside, the former stockholder of Keymile extended a €4.0 million (\$4.5 million as of March 31, 2019) working capital loan to Keymile. The working capital loan bears interest at a rate of 3.5% per annum and is scheduled for repayment in two equal installments. The first payment of \$2.2 million was made in April 2019 and the balance is due in November 2019.

Bank and Trade Facilities - Foreign Operations

Certain of the Company's foreign subsidiaries have entered into various financing arrangements with foreign banks and other lending institutions consisting primarily of revolving lines of credit, trade facilities, term loans and export development loans. These facilities are renewed as they mature and are generally secured by a security interest in certain assets of the applicable foreign subsidiaries and supported by guarantees given by DNI or third parties. Payments under such facilities are made in accordance with the given lender's amortization schedules.

As of March 31, 2019 and December 31, 2018, the Company had an aggregate outstanding balance of \$18.9 million and \$24.8 million, respectively, under such financing arrangements. The maturity dates and interest rates per annum applicable to outstanding borrowings under these financing arrangements are listed in the tables below (amount in thousands).

		As of March 31, 2019			
		Maturity Date	Denomination	Interest rate (%)	Amount
Industrial Bank of Korea	Credit facility	04/08/2019 ~ 09/02/2019	USD	4.20 ~ 5.58	\$ 3,078
Industrial Bank of Korea	Trade finance	5/2/2019	USD	6.74	634
NongHyup Bank	Credit facility	04/10/2019 ~ 05/13/2019	USD	3.71 ~ 4.50	2,085
The Export-Import Bank of Korea	Export development loan	07/01/2019	KRW	3.44	5,405
Korea Development Bank	General loan	08/08/2019	KRW	3.48	4,394
Korea Development Bank	Credit facility	04/03/2019 ~ 07/08/2019	USD	3.64 ~ 3.91	1,552
LGUPlus	General loan	06/17/2019	KRW	0	1,757
					<u>\$ 18,905</u>

As of March 31, 2019, the Company had \$6.7 million in outstanding borrowings and \$5.6 million committed as security for letters of credit under the Company's \$19.0 million credit facilities with certain foreign banks.

		As of December 31, 2018			
		Maturity Date	Denomination	Interest rate (%)	Amount
Industrial Bank of Korea	Credit facility	01/02/2019 ~ 05/15/2019	USD	3.96 ~ 4.36	\$ 1,982
Industrial Bank of Korea	Trade finance	02/18/2019 ~ 02/25/2019	USD	5.31 ~ 6.08	1,920
Shinhan Bank	General loan	3/30/2019	KRW	6.06	2,862
NongHyup Bank	Credit facility	01/07/2019 ~ 04/29/2019	USD	3.71 ~ 4.50	2,053
The Export-Import Bank of Korea	Export development loan	07/01/2019	KRW	3.44	6,439
The Export-Import Bank of Korea	Import development loan	02/14/2019	USD	4.31	850
Korea Development Bank	General loan	08/08/2019	KRW	3.48	4,472
Korea Development Bank	Credit facility	02/07/2019 ~ 03/06/2019	USD	3.64 ~ 3.91	1,489
LGUPlus	General loan	06/17/2019	KRW	0	1,789
Shoko Chukin Bank	General loan	06/28/2019	JPY	1.33	906
					<u>\$ 24,762</u>

As of December 31, 2018, the Company had \$5.5 million in outstanding borrowings and \$2.6 million committed as security for letters of credit under the Company's \$19.0 million credit facilities with certain foreign banks.

See Note 11 Related-Party Transactions for a discussion of related-party debt.

(9) Defined Benefit Plans

The Company provides certain defined benefit pension plans in Germany for active and former employees of Keymile and their surviving dependents. These benefits were promised upon an employee either reaching retirement age or becoming disabled. Benefits paid depend on an employee's years of service and annual earnings. These plans were frozen as of September 30, 2003 and have not been offered to new employees after that date. Employees who were already covered by such plans ceased earning benefits under such plans from the freeze date forward. The benefit obligations are determined separately for each plan by estimating the present value of future benefits that employees have earned in prior periods. Given that all plans are frozen; the Company does not have any current service costs to recognize within its defined benefit obligation or pension expense.

The only component of pension expense relates to \$0.1 million of interest expense on the defined benefit pension plans, which is recognized in Other income (loss), net in the condensed consolidated statement of comprehensive income (loss). The interest expense is determined by multiplying the defined benefit obligation by the discount rate used to determine the defined benefit obligation. Actuarial gains and losses from changes in assumptions are included in Other comprehensive loss in the condensed consolidated statement of comprehensive income (loss).

The following key actuarial assumptions were made in determining the benefit obligation:

	March 31, 2019
Discount rate	1.70%
Rate of pension increase	1.70%
Retirement age	62-64 years

As of March 31, 2019, the Company's employee benefit obligations under the defined benefit plans is approximately \$12.4 million, net of pensions assets of \$3.5 million which is under a reinsurance contract policy. As of March 31, 2019, there were no cash contributions on the defined benefit plans.

(10) Non-Controlling Interests

Non-controlling interests for the three months ended March 31, 2019 and 2018 were as follows (in thousands):

	Three Months Ended March 31,	
	2019	2018
Beginning non-controlling interests	\$ 615	\$ 534
Net income (loss) attributable to non-controlling interests	181	34
Foreign currency translation adjustments (OCI)	(1)	30
Ending non-controlling interests	<u>\$ 795</u>	<u>\$ 598</u>

(11) Related-Party Transactions

Related-Party Debt

In connection with the Merger, on September 9, 2016, the Company entered into a loan agreement with DNI for a \$5.0 million unsecured subordinated term loan facility, which was fully drawn. The term loan matures in September 2021 and is pre-payable at any time by the Company without premium or penalty. The interest rate under this facility was 4.6% per annum. In February 2019, the Company repaid the term loan in full plus accrued interest in connection with the entry into the PNC Facility.

In February 2016, DNS borrowed \$1.8 million from DNI for capital investment, which amount was outstanding as of March 31, 2019. The interest rate as of March 31, 2019 under this facility was 4.6% per annum. On February 27, 2019, in connection with the entry into the PNC Facility, the Company amended the terms of this loan to extend the repayment date to May 27, 2022.

On December 27, 2018, the Company entered into a Loan Agreement with DNI, for a \$6.0 million term loan, which amount was outstanding as of March 31, 2019 with an interest rate of 4.6% per annum. On February 27, 2019, in

connection with the entry into the PNC Facility, the Company amended the terms of the term loan to extend the repayment date to May 27, 2022 and to terminate any security granted to DNI with respect to such term loan.

In March 2018, Dasan Network Solutions, Inc., a company incorporated under the laws of Korea (“DNS Korea”) borrowed KRW6.5 billion (\$5.8 million) from DNI, of which KRW5.0 billion (\$4.5 million) was repaid on August 8, 2018. As of March 31, 2019, KRW1.5 billion (\$1.3 million) remained outstanding. The loan bears interest at a rate of 4.6%, and is secured by certain accounts receivable of DNS Korea. On February 27, 2019, in connection with the entry into the PNC Facility, the Company amended the terms of this loan to extend the repayment date to May 27, 2022.

Interest expense on these related-party borrowings was \$0.1 million and \$0.2 million for the three months ended March 31, 2019 and 2018, respectively.

Other Related-Party Transactions

Sales and purchases, cost of revenue, research and product development, selling, marketing, general and administrative, interest expense and other expenses to and from related parties for the three months ended March 31, 2019 and 2018 were as follows (in thousands):

Three Months Ended March 31, 2019								
Counterparty	DNI ownership interest	Sales	Cost of revenue	Manufacturing (cost of revenue)	Research and product development	Selling, marketing, general and administrative	Interest expense	Other expenses
DNI (Parent Company)	N/A	\$ 722	\$ 535	\$ —	\$ —	\$ 998	\$ 141	\$ 89
Tomato Soft Ltd.	100%	—	—	30	—	—	—	—
Tomato Soft (Xi'an) Ltd.	100%	—	—	—	121	—	—	—
CHASAN Networks Co., Ltd.	100%	—	—	278	21	—	—	161
HANDYSOFT, Inc.	17.63%	91	23	—	—	2	—	—
J-Mobile Corporation	90.47%	42	81	—	—	—	—	—
		<u>\$ 855</u>	<u>\$ 639</u>	<u>\$ 308</u>	<u>\$ 142</u>	<u>\$ 1,000</u>	<u>\$ 141</u>	<u>\$ 250</u>

Three Months Ended March 31, 2018								
Counterparty	DNI ownership interest	Sales	Cost of revenue	Manufacturing (cost of revenue)	Research and product development	Selling, marketing, general and administrative	Interest expense	Other expenses
DNI (Parent Company)	N/A	\$ 1,246	\$ 1,123	\$ —	\$ —	\$ 1,022	\$ 196	\$ 66
Tomato Soft Ltd.	100%	—	—	19	—	—	—	—
Tomato Soft (Xi'an) Ltd.	100%	—	—	10	154	—	—	—
CHASAN Networks Co., Ltd.	100%	—	—	324	18	—	—	—
DASAN FRANCE	100%	202	177	—	—	—	—	—
HANDYSOFT, Inc.	17.63%	150	110	—	—	—	—	—
		<u>\$ 1,598</u>	<u>\$ 1,410</u>	<u>\$ 353</u>	<u>\$ 172</u>	<u>\$ 1,022</u>	<u>\$ 196</u>	<u>\$ 66</u>

The Company has entered into sales agreements with DNI and certain subsidiaries. Sales and cost of revenue to DNI and DASAN France represent finished goods produced by the Company that are sold to these related parties who sell the Company's products in Korea and France, respectively.

The Company has entered into an agreement with CHASAN Networks Co., Ltd. to provide manufacturing and research and development services for the Company. Under the agreement with CHASAN Networks, Ltd., the Company is charged a cost plus 7% fee for the manufacturing and development of certain deliverables.

The Company has entered into an agreement with Tomato Soft Ltd., a wholly owned subsidiary of DNI, to provide manufacturing and research and development services for the Company.

The Company has entered into an agreement with Tomato Soft (Xi'an) Ltd. to provide research and development services for the Company. Under the agreement with Tomato Soft (Xi'an) Ltd., the Company is charged an expected annual fee of \$0.8 million for the development of certain deliverables.

Prior to the Merger, as DNS was then a wholly owned subsidiary of DNI, DNI had sales agreements with certain customers on DNS' behalf. Since the Merger, due to these prior sales agreements, the Company has entered into an agreement with DNI in which DNI acts as a sales channel to these customers. Sales to DNI necessary for DNI to fulfill agreements with its customers are recorded net of royalty fees in related-party revenue.

The Company shares office space with DNI and certain of DNI's subsidiaries. Prior to the Merger, DNS, then a wholly owned subsidiary of DNI, shared human resources, treasury and other administrative support with DNI. As such, the Company entered into certain service sharing agreements with DNI and certain of its subsidiaries for the shared office space and shared administrative services. Expenses related to rent and administrative services are allocated to the Company based on square footage occupied and headcount, respectively.

Other expenses to related parties represent expenses to DNI for its payment guarantees relating to the Company's borrowings. The Company pays DNI a guarantee fee which is calculated as 0.9% of the guaranteed amount.

Balances of Receivables and Payables with Related Parties

Balances of receivables and payables arising from sales and purchases of goods and services with related parties as of March 31, 2019 and December 31, 2018 were as follows (in thousands):

<u>Counterparty</u>	<u>DNI ownership interest</u>	<u>As of March 31, 2019</u>						
		<u>Account receivables</u>	<u>Other receivables</u>	<u>Deposits for lease *</u>	<u>Long-term debt</u>	<u>Accounts payable</u>	<u>Other Payables</u>	<u>Accrued and other liabilities**</u>
DNI (parent company)	N/A	\$ 810	\$ —	\$ 722	\$ 9,118	\$ 500	\$ 2,068	\$ 141
Tomato Soft Ltd.	100%	—	—	—	—	—	10	—
Tomato Soft (Xi'an) Ltd.	100%	—	—	—	—	—	41	—
CHASAN Networks Co., Ltd.	100%	—	—	—	—	90	—	—
HANDYSOFT, Inc.	18%	88	—	—	—	2	—	—
DASAN FRANCE	100%	—	4	—	—	—	—	—
		<u>\$ 898</u>	<u>\$ 4</u>	<u>\$ 722</u>	<u>\$ 9,118</u>	<u>\$ 592</u>	<u>\$ 2,119</u>	<u>\$ 141</u>

<u>Counterparty</u>	<u>DNI Ownership Interest</u>	<u>As of December 31, 2018</u>						
		<u>Account receivables</u>	<u>Other receivables</u>	<u>Deposits for lease*</u>	<u>Loan Payable</u>	<u>Accounts payable</u>	<u>Other payables</u>	<u>Accrued and other liabilities**</u>
DNI (parent company)	N/A	\$ —	\$ —	\$ 735	\$ 14,142	\$ 1,000	\$ 1,231	\$ 169
Tomato Soft Ltd.	100%	—	—	—	—	—	9	—
Tomato Soft (Xi'an) Ltd.	100%	—	—	—	—	—	41	—
D-Mobile	N/A	—	—	—	—	—	—	—
Able	100%	—	—	—	—	—	—	—
Dasan France	100%	280	65	—	—	—	—	—
Handysoft, Inc.	14.77%	303	—	—	—	654	—	—
Chasan Networks Co., Ltd.	100%	—	—	—	—	89	—	—
		<u>\$ 583</u>	<u>\$ 65</u>	<u>\$ 735</u>	<u>\$ 14,142</u>	<u>\$ 1,743</u>	<u>\$ 1,281</u>	<u>\$ 169</u>

* Included in other assets related to deposits for lease in the unaudited condensed consolidated balance sheet as of March 31, 2019 and the consolidated balance sheet as of December 31, 2018.

** Included in accrued and other liabilities in the unaudited condensed consolidated balance sheet as of March 31, 2019 and the consolidated balance sheet as of December 31, 2018.

(12) Net Income (Loss) Per Share Attributable to DASAN Zhone Solutions, Inc.

Basic net income (loss) per share attributable to DASAN Zhone Solutions, Inc. is computed by dividing the net income (loss) attributable to DASAN Zhone Solutions, Inc. for the period by the weighted average number of shares of common stock outstanding during the period. The calculation of diluted net income (loss) per share attributable to DASAN Zhone Solutions, Inc. gives effect to common stock equivalents; however, potential common equivalent shares are excluded if their effect is antidilutive. Potential common equivalent shares are composed of incremental shares of common equivalent shares issuable upon the exercise of stock options and the vesting of restricted stock units.

Basic net loss per share is the same as diluted net loss per share for the three months ended March 31, 2019 because the effects of stock options and restricted stock units would have been anti-dilutive.

The following table is a reconciliation of the numerator and denominator in the basic and diluted net income (loss) per share calculation (in thousands, except per share data):

	<u>Three Months Ended March 31,</u>	
	<u>2019</u>	<u>2018</u>
Net income (loss) attributable to DASAN Zhone Solutions, Inc.	\$ (1,638)	\$ 107
Weighted average number of shares outstanding:		
Basic	16,593	16,416
Effect of dilutive securities:		
Stock options, restricted stock units and share awards	—	210
Diluted	<u>16,593</u>	<u>16,626</u>
Net income (loss) per share attributable to DASAN Zhone Solutions, Inc.:		
Basic	\$ (0.10)	\$ 0.01
Diluted	<u>\$ (0.10)</u>	<u>\$ 0.01</u>

The first quarter of 2019 excluded 333 thousand stock options at a weighted average exercise price of \$12.63 from diluted net income per share because their effect would have been antidilutive.

(13) Leases

The Company leases certain properties and buildings (including manufacturing facilities, warehouses, and office spaces) and equipment under various arrangements which provide the right to use the underlying asset and require lease payments for the lease term. The Company's lease portfolio consists of operating leases which expire at various dates through 2027. At March 31, 2019, the Company had no outstanding finance leases.

The Company determines if an arrangement contains a lease at inception on January 1, 2019. The Company evaluates each service contract upon inception to determine whether it is, or contains, a lease. Such determination is made by applying judgment in evaluating each service contract within the context of the 5-step decision making process under ASC 842. The key concepts of the 5-step decision making process that the Company evaluated can be summarized as: (1) is there an identified physical asset; (2) does the Company have the right to substantially all the economic benefits from the asset throughout the contract period; (3) does the Company control how and for what purpose the asset is used; (4) does the Company operate the asset; and (5) did the Company design the asset in a way that predetermines how it will be used.

Assets and liabilities related to operating leases are included in the condensed consolidated balance sheet as right-of-use assets from operating leases, operating lease liabilities - current and operating lease liabilities - non-current.

Operating lease right-of-use assets and liabilities are recognized at commencement date based on the present value of lease payments over the lease term. Many of the Company's lease agreements contain renewal options; however, the Company does not recognize right-of-use assets or lease liabilities for renewal periods unless it is determined that the Company is reasonably certain of renewing the lease at inception or when a triggering event occurs. Some

of the Company's lease agreements contain rent escalation clauses, rent holidays, capital improvement funding or other lease concessions.

The Company recognizes minimum rental expense on a straight-line basis based on the fixed components of a lease arrangement. The Company amortizes this expense over the term of the lease beginning with the date of initial possession, which is the date lessor makes an underlying asset available for use. Variable lease components represent amounts that are not fixed in nature and are not tied to an index or rate, and are recognized as incurred.

In determining its right-of-use assets and lease liabilities, the Company applies a discount rate to the minimum lease payments within each lease agreement. ASC 842 requires the Company to use the rate of interest that a lessee would have to pay to borrow on a collateralized basis over a similar term an amount equal to the lease payments in a similar economic environment. The Company determines the incremental borrowing rate for each lease based primarily on its lease term and the economic environment of the applicable country or region. When the Company cannot readily determine the discount rate implicit in the lease agreement, the Company utilizes incremental borrowing rate based on the most recent debt facilities interest rates.

For the measurement and classification of its lease agreements, the Company groups lease and non-lease components into a single lease component for all underlying asset classes. Variable lease payments include payments for non-lease components of maintenance costs. The components of lease expense are as follows:

	Three Months Ended March 31, 2019 (in thousands)
Operating lease cost	\$ 1,123
Variable lease cost	164
Total net lease cost	<u>\$ 1,287</u>

Supplemental cash flow information related to the Company's operating leases for the three months ended March 31, 2019 was as follows:

	Three Months Ended March 31, 2019 (in thousands)
Cash paid for amounts included in the measurement of operating lease liabilities	\$ 1,304
ROU assets obtained in exchange for operating lease obligations	\$ —

The following table presents the lease balances within the Company's condensed consolidated balance sheet, weighted average remaining lease term, and weighted average discount rates related to the Company's operating leases as of March 31, 2019 (in thousands):

Lease Assets and Liabilities

Assets:

Right-of-use assets from operating leases	<u>\$ 21,193</u>
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Liabilities:

Operating lease liabilities - current	\$ 4,261
Operating lease liabilities - non-current	18,103
Total operating lease liabilities	<u>\$ 22,364</u>

Weighted average remaining lease term	3.48 years
Weighted average discount rate	6%

The following table presents the maturity of the Company's operating lease liabilities as of March 31, 2019 (in thousands):

Remainder of 2019	\$ 3,892
2020	4,317
2021	3,993
2022	3,860
2023	3,732
Thereafter	6,582
Total operating lease payments	<u>\$ 26,376</u>

Less: imputed interest	(4,012)
Total operating lease liabilities	<u>\$ 22,364</u>

As of December 31, 2018, the estimated future lease payments under non-cancelable operating leases as defined under the previous lease accounting guidance of ASC Topic 840, for the following five fiscal years and thereafter are as follows (in thousands):

	<u>Operating Leases</u>
Year ending December 31:	
2019	\$ 4,100
2020	3,005
2021	2,590
2022	2,664
2023	2,494
Thereafter	5,929
Total minimum lease payments	<u>\$ 20,782</u>

(14) Commitments and Contingencies

Warranties

The Company accrues warranty costs based on historical trends for the expected material and labor costs to provide warranty services. Warranty periods are generally one to five years from the date of shipment. The following table reconciles changes in the Company's accrued warranties and related costs for the three months ended March 31, 2019 and 2018 (in thousands):

	<u>Three Months Ended March 31,</u>	
	<u>2019</u>	<u>2018</u>
Beginning balance	\$ 1,549	\$ 931
Charged to cost of revenue	140	359
Claims and settlements	(194)	(195)
Foreign exchange impact	(11)	(1)
Ending balance	<u>\$ 1,484</u>	<u>\$ 1,094</u>

Performance Bonds

In the normal course of operations, from time to time, the Company arranges for the issuance of various types of surety bonds, such as bid and performance bonds, which are agreements under which the surety company guarantees that the Company will perform in accordance with contractual or legal obligations. As of March 31, 2019, the Company had \$9.6 million of surety bonds guaranteed by third parties.

Purchase Commitments

The Company has agreements with various contract manufacturers which include non-cancellable inventory purchase commitments. The Company's inventory purchase commitments typically allow for cancellation of orders 30 days in advance of the required inventory availability date as set by the Company at time of order. The amount of non-cancellable purchase commitments outstanding, net of reserve, was \$3.1 million as of March 31, 2019.

Royalties

The Company has certain royalty commitments associated with the shipment and licensing of certain products. Royalty expense is generally based on a dollar amount per unit shipped or a percentage of the underlying revenue and is recorded in cost of revenue.

Payment Guarantees provided by Third Parties and DNI

The following table sets forth payment guarantees of the Company's indebtedness and other obligations as of March 31, 2019 (in thousands) that have been provided by third parties and DNI. DNI owns approximately 57.2% of the outstanding shares of the Company's common stock:

Guarantor	Amount Guaranteed (in thousands)	Description of Obligations Guaranteed
DNI	\$ 8,400	Credit facility from Industrial Bank of Korea
DNI	2,109	Purchasing Card from Industrial Bank of Korea
DNI	1,688	Purchasing Card from Shinhan Bank
DNI	8,400	Credit facility from Korea Development Bank
DNI	5,273	Borrowings from Korea Development Bank
DNI	6,000	Credit facility from NongHyup Bank
DNI	5,036	Borrowings from Export-Import Bank of Korea
Industrial Bank of Korea	6,525	Letter of Credit
Industrial Bank of Korea	2,131	Bank Guarantee
Seoul Guarantee Insurance Co.	4,857	Performance Bond, Warranty Bond etc. (*)
NongHyup Bank	4,258	Letter of Credit
Woori Bank	2,503	Bank Guarantee
Korea Development Bank	1,552	Letter of Credit
Shinhan Bank	88	Purchasing Card
AXA Insurance Company	180	Guarantee for flexible retirement program
Polska Agencja Zeglugi Powietrznej	117	Performance Bond, Warranty Bond etc. (*)
	<u>\$ 59,117</u>	

* The Company is generally responsible for warranty liabilities for a period of two years with respect to major product sales and has, therefore, contracted for surety insurance for a portion of the warranty liabilities.

Legal Proceedings

From time to time, the Company is subject to various legal proceedings, claims and litigation arising in the ordinary course of business. While the outcome of these matters is currently not determinable, the Company records an accrual for legal contingencies that it has determined to be probable to the extent that the amount of the loss can be reasonably estimated. The Company does not expect that the ultimate costs to resolve these matters will have a material adverse effect on its consolidated financial position or results of operations. However, litigation is subject to inherent uncertainties, and unfavorable rulings could occur. If an unfavorable ruling were to occur, there exists the possibility of a material adverse impact on the results of operations of the period in which the ruling occurs, or future periods.

(15) Income Taxes

Income tax (benefit) expense for the three months ended March 31, 2019 and 2018 was approximately \$0.1 million and \$0.0 million, respectively, on pre-tax loss of \$1.4 million and pre-tax income of \$0.1 million, respectively. As of March 31, 2019, the income tax rate varied from the United States statutory income tax rate primarily due to valuation allowances in the United States and the mix of earnings generated by the Company's wholly owned foreign subsidiaries.

The total amount of unrecognized tax benefits, including interest and penalties, at March 31, 2019 was \$0.8 million. The amount of tax benefits that would impact the effective income tax rate, if recognized, is \$0.1 million. There were no significant changes to unrecognized tax benefits during the quarters ended March 31, 2019 and 2018. The Company does not anticipate any significant changes with respect to unrecognized tax benefits within the next 12 months.

(16) Enterprise-Wide Information

The Company is a global provider of ultra-broadband network access solutions and communications platforms deployed by advanced Tier 1, 2 and 3 service providers and enterprise customers. There are no segment managers who are held accountable for operations, operating results and plans for levels or components below the Company unit level. Accordingly, the Company is considered to be in a single reporting segment and operating unit structure. The Company's property, plant and equipment, net of accumulated depreciation, were located in the following geographical areas as of March 31, 2019 and December 31, 2018 (in thousands):

	March 31, 2019	December 31, 2018
United States	\$ 2,910	\$ 3,036
Korea	1,388	1,543
Japan and Vietnam	876	910
Taiwan and India	28	29
Germany	922	—
	<u>\$ 6,124</u>	<u>\$ 5,518</u>

Item 2. Management’s Discussion and Analysis of Financial Condition and Results of Operations

As used in this Quarterly Report on Form 10-Q, unless the context suggests otherwise, the terms “DZS,” “we,” “our” and “us” refer to DASAN Zhone Solutions, Inc. and its subsidiaries.

Forward-Looking Statements

This Quarterly Report on Form 10-Q, including “Management’s Discussion and Analysis of Financial Condition and Results of Operations,” contains forward-looking statements regarding future events and our future results that are subject to the safe harbors created under the Securities Act of 1933 (the “Securities Act”) and the Securities Exchange Act of 1934 (the “Exchange Act”). These statements are based on current expectations, estimates, forecasts, and projections about the industries in which we operate, and reflect the beliefs and assumptions of our management as of the date hereof. We use words such as “anticipate,” “believe,” “continue,” “could,” “estimate,” “expect,” “forecast,” “goal,” “intend,” “may,” “plan,” “project,” “seek,” “should,” “target,” “will,” “would,” variations of such words, and similar expressions to identify forward-looking statements. In addition, statements that refer to projections of earnings, revenue, costs or other financial items in future periods; anticipated growth and trends in our business or key markets; cost synergies, growth opportunities and other potential financial and operating benefits of our acquisitions, including our acquisition of Keymile GmbH (the “Keymile Acquisition”); future growth and revenues from our products; our ability to refinance or repay our existing indebtedness prior to the applicable maturity dates; future economic conditions and performance; anticipated performance of products or services; plans, objectives and strategies for future operations; anticipated cash contribution requirements for our non-U.S. defined benefit pension plans; and other characterizations of future events or circumstances, and all other statements that are not statements of historical fact are forward-looking statements within the meaning of the Securities Act and the Exchange Act. Readers are cautioned that these forward-looking statements are only predictions and are subject to risks, uncertainties and assumptions that are difficult to predict, including those identified under the heading “Risk Factors” in Part II, Item 1A of this Quarterly Report on Form 10-Q and in our other filings with the Securities and Exchange Commission (the SEC). Our actual results may differ materially and adversely from those expressed in any forward-looking statements. Factors that might cause such a difference include, but are not limited to, our ability to realize the anticipated cost savings, synergies and other benefits of acquisitions, including the Keymile Acquisition and any integration risks relating to acquisitions, including the Keymile Acquisition, the ability to generate sufficient revenue to achieve or sustain profitability, our ability to raise additional capital to fund existing and future operations or to refinance or repay our existing indebtedness, defects or other performance problems in our products, any economic slowdown in the telecommunications industry that restricts or delays the purchase of products by our customers, commercial acceptance of our products, intense competition in the communications equipment market from large equipment companies as well as private companies with products that address the same networks needs as our products, higher than anticipated expenses that we may incur, any failure to comply with the periodic filing and other requirements of The Nasdaq Stock Market for continued listing, material weaknesses or other deficiencies in our internal control over financial reporting, the initiation of any civil litigation, regulatory proceedings, government enforcement actions or other adverse effects relating to the Audit Committee investigation or errors in the consolidated financial statements of Zhone Technologies, Inc. and other factors identified elsewhere in this Quarterly Report on Form 10-Q and in our most recent reports on Forms 10-K, 10-Q and 8-K. We undertake no obligation to revise or update any forward-looking statements for any reason.

OVERVIEW

We are a global provider of ultra-broadband network access solutions and communications platforms deployed by advanced Tier 1, 2 and 3 service providers and enterprise customers. We provide a wide array of reliable, cost-effective networking technologies to a diverse customer base that includes more than 900 customers in more than 80 countries worldwide. We research, develop, test, sell, manufacture and support platforms in five major areas: broadband access, mobile backhaul, Ethernet switching with Software Defined Networking (“SDN”) capabilities, new enterprise solutions based on Passive Optical LAN (“POL”), and new generation of SDN/Network Function Virtualization (“NFV”) solutions for unified wired and wireless networks. In September 2018, our wholly owned subsidiary DASAN Network solutions, Inc., a corporation organized under the laws of the Republic of Korea (“DNS Korea”), was awarded a contract by South Korean Tier 1 service provider LG U+ to deliver DZS switches to be deployed in its 5G wireless network in South Korea. As of March 31, 2019, we employed over 670 personnel worldwide, of which approximately half are engineers or engaged in research and development.

On January 3, 2019, ZTI Merger Subsidiary III Inc., a Delaware corporation and our wholly owned subsidiary (“ZTI”), acquired all of the outstanding shares of Keymile GmbH, a limited liability company organized under the laws of Germany (“Keymile”). The aggregate cash purchase price paid for all of the shares of Keymile and certain of its

subsidiaries was €10,250,000 (approximately \$11.8 million). We also assumed pension obligations of approximately \$12.7 million, net of pension assets of \$3.5 million. Following the closing of the acquisition, Keymile became our wholly-owned subsidiary.

CRITICAL ACCOUNTING POLICIES AND ESTIMATES

For a complete description of what we believe to be the critical accounting policies and estimates used in the preparation of our unaudited condensed consolidated financial Statements, refer to Note 1(j), Recent Accounting Pronouncements, in the notes to our audited consolidated financial statements in our Annual Report on Form 10-K for the year ended December 31, 2018, as supplemented by Note 1(j), Recent Accounting Pronouncements, in the notes to our unaudited condensed consolidated financial statements in Part I, Item 1 of this Quarterly Report on Form 10-Q.

RESULTS OF OPERATIONS

We list in the table below the historical condensed consolidated statement of comprehensive income (loss) as a percentage of total net revenue for the periods indicated.

	Three Months Ended March 31,	
	2019	2018
Net revenue:		
Third parties	99%	97%
Related parties	1%	3%
Total net revenue	<u>100%</u>	<u>100%</u>
Cost of revenue:		
Products and services - third parties	65%	61%
Products and services - related parties	1%	2%
Amortization of intangible assets	0%	0%
Total cost of revenue	<u>66%</u>	<u>63%</u>
Gross profit	34%	37%
Operating expenses:		
Research and product development	14%	15%
Selling, marketing, general and administrative	20%	21%
Amortization of intangible assets	1%	0%
Total operating expenses	<u>35%</u>	<u>36%</u>
Operating income (loss)	-1%	1%
Interest income	0%	0%
Interest expense	-1%	-1%
Other income (loss), net	0%	0%
Income (loss) before income taxes	-2%	0%
Income tax (benefit) provision	0%	0%
Net income (loss)	-2%	0%
Net income attributable to non-controlling interest	0%	0%
Net income (loss) attributable to DASAN Zhong Solutions, Inc.	<u>-2%</u>	<u>0%</u>
Foreign currency translation adjustments	-2%	1%
Comprehensive income (loss)	-4%	1%
Comprehensive income attributable to non-controlling interest	0%	0%
Comprehensive income (loss) attributable to DASAN Zhong Solutions, Inc.	<u>-4%</u>	<u>1%</u>

Net Revenue

Information about our net revenue for products and services for the three months ended March 31, 2019 and 2018 is summarized below (in millions):

	Three Months Ended March 31,			
	2019	2018	Increase	% change
Products	\$ 69.6	\$ 56.7	\$ 12.9	23%

Services	<u>4.5</u>	<u>2.8</u>	<u>1.7</u>	<u>61%</u>
Total	<u>\$ 74.1</u>	<u>\$ 59.5</u>	<u>\$ 14.6</u>	<u>25%</u>

Net revenue increased by 25% or \$14.6 million for the three months ended March 31, 2019 compared to the same period last year. For the three months ended March 31, 2019, product revenue increased by 23% or \$12.9 million to \$69.6 million from \$56.7 million in the same period last year. The increase was primarily due an increase in product sales, resulting from the combined impact of the Keymile Acquisition, as well as our broadened geographical base and product offerings.

Service revenue represents revenue from maintenance and other services associated with product shipments. For the three months ended March 31, 2019, service revenue increased by 61% or \$1.7 million to \$4.5 million from \$2.8 million in the same period last year. The increase in service revenue was primarily due to the Keymile Acquisition.

Information about our net revenue for North America and international markets for the three months ended March 31, 2019 and 2018 is summarized below (in millions):

	Three Months Ended March 31,		Increase/ (decrease)	% change
	2019	2018		
Revenue by geography:				
United States	\$ 9.6	\$ 16.5	\$ (6.9)	(42)%
Canada	0.9	1.0	(0.1)	(10)%
Total North America	<u>10.5</u>	<u>17.5</u>	<u>(7.0)</u>	<u>(40)%</u>
Latin America	6.6	8.0	(1.4)	(18)%
Europe, Middle East, Africa	18.4	7.5	10.9	145%
Korea	15.9	12.1	3.8	31%
Other Asia Pacific	22.7	14.4	8.3	58%
Total International	<u>63.6</u>	<u>42.0</u>	<u>21.6</u>	<u>51%</u>
Total	<u>\$ 74.1</u>	<u>\$ 59.5</u>	<u>\$ 14.6</u>	<u>25%</u>

For the three months ended March 31, 2019, net revenue increased 25% or \$14.6 million to \$74.1 million from \$59.5 million for the same period last year. The increase in net revenue for three months ended March 31, 2019 was primarily due to increased revenues in the Europe, Middle East and Africa (EMEA) region due to the Keymile Acquisition, as well as increased revenues in Korea and the Other Asia Pacific regions. This increase was partially offset by the decline in revenue in the North America due to change in the buying pattern of certain customers.

Across international markets, net revenue for the three months ended March 31, 2019 increased 51% or \$21.6 million to \$63.6 million from \$42.0 million for the same period last year, and represented 86% of total net revenue compared with 71% during the same period of 2018. The increases in international net revenue were primarily related to the Keymile Acquisition, which increased revenues in EMEA, and increased product sales in the Other Asia Pacific, primarily in India and Vietnam.

For the three months ended March 31, 2019 and for the three months ended March 31, 2018, no customers represented 10% or more of net revenue. However, we anticipate that our results of operations in any given period may depend to a large extent on sales to a small number of large accounts. As a result, our revenue for any quarter may be subject to significant volatility based upon changes in orders from one or a small number of key customers.

Cost of Revenue and Gross Profit

Total cost of revenue increased 30% or \$11.4 million to \$49.2 million for the three months ended March 31, 2019, compared to \$37.8 million for the three months ended March 31, 2018. Total cost of revenue was 66% of net revenue for the first quarter of 2019, compared to 63% in the first quarter of 2018. The increases in total cost of revenue, as a percentage of sales, were primarily due to the Keymile Acquisition, and increased product sales to certain Asia Pacific customers.

We expect that in the future our cost of revenue as a percentage of net revenue will vary depending on the mix and average selling prices of products sold. In addition, continued competitive and economic pressures could cause us to reduce our prices, adjust the carrying values of our inventory, or record inventory expenses relating to discontinued products and excess or obsolete inventory.

Research and Product Development Expenses

Research and product development expenses increased 13% or \$1.2 million to \$10.2 million for the three months ended March 31, 2019 compared to \$9.0 million for the three months ended March 31, 2018. As a percentage of sales, research and product development expenses were 14% in the first quarter of 2019, compared to 15% in the first quarter of 2018. The increase in research and product development expenses was primarily due to the Keymile Acquisition. We intend to continue to invest in research and product development to attain our strategic product development objectives while seeking to manage the associated costs through expense controls.

Selling, Marketing, General and Administrative Expenses

Selling, marketing, general and administrative expenses increased 21% or \$2.6 million to \$15.0 million for the three months ended March 31, 2019, compared to \$12.4 million for the three months ended March 31, 2018. As a percentage of sales, selling, marketing, general and administrative expenses were 20% and 21% as of March 31, 2019 and 2018, respectively. The increase in selling, marketing, general and administrative expenses was primarily due to the Keymile Acquisition.

Income Tax Provision

Income tax (benefit) expense for the three months ended March 31, 2019 and 2018 was approximately \$0.1 million and \$0.0 million, respectively, on pre-tax loss of \$1.4 million and pre-tax income of \$0.1 million, respectively. As of March 31, 2019, the income tax rate varied from the United States statutory income tax rate primarily due to valuation allowances in the United States and the mix of earnings generated by our wholly owned foreign subsidiaries.

OTHER PERFORMANCE MEASURES

In managing our business and assessing our financial performance, we supplement the information provided by our U.S. GAAP results with adjusted earnings before stock-based compensation, interest, taxes, and depreciation, or Adjusted EBITDA, a non-GAAP financial measure. We define Adjusted EBITDA as net income (loss) plus (i) interest expense, net, (ii) provision (benefit) for taxes, (iii) depreciation and amortization, (iv) stock-based compensation, and (v) material non-recurring transactions or events, such as merger and acquisition transaction costs or a gain (loss) on sale of assets or impairment of fixed assets. We believe that the presentation of Adjusted EBITDA enhances the usefulness of our financial information by presenting a measure that management uses internally to monitor and evaluate our operating performance and to evaluate the effectiveness of our business strategies. We believe Adjusted EBITDA also assists investors and analysts in comparing our performance across reporting periods on a consistent basis because it excludes the impact of items that we do not believe reflect our core operating performance.

Adjusted EBITDA has limitations as an analytical tool. Some of these limitations are:

- Adjusted EBITDA does not reflect our cash expenditures, or future requirements, for capital expenditures or contractual requirements;
- Adjusted EBITDA does not reflect changes in, or cash requirements for, our working capital needs;
- Adjusted EBITDA does not reflect the interest expense, or the cash requirements necessary to service interest or principal payments, on our debts;
- Although depreciation and amortization are non-cash expenses, the assets being depreciated and amortized will often have to be replaced in the future, and Adjusted EBITDA does not reflect any cash requirements for such replacements;
- Non-cash compensation is and will remain a key element of our overall long-term incentive compensation package, although we exclude it as an expense when evaluating our ongoing operating performance for a particular period; and
- Other companies in our industry may calculate Adjusted EBITDA and similar measures differently than we do, limiting its usefulness as a comparative measure.

Because of these limitations, Adjusted EBITDA should not be considered in isolation or as a substitute for net income (loss) or any other performance measures calculated in accordance with U.S. GAAP or as a measure of liquidity. Management understands these limitations and compensates for these limitations by relying primarily on our U.S. GAAP results and using Adjusted EBITDA only as a supplemental measure.

Set forth below is a reconciliation of net income (loss) to Adjusted EBITDA, which we consider to be the most directly comparable U.S. GAAP financial measure to Adjusted EBITDA (in thousands):

	Three Months Ended March 31,	
	2019	2018
Net income (loss)	\$ (1,457)	\$ 141
Add (less):		
Interest expense, net	783	237
Income tax (benefit) expense	77	(5)
Depreciation and amortization	1,417	699
Stock-based compensation	825	363
Acquisition costs	337	—
Inventory step-up valuation amortization	201	—
Bargain purchase gain	(334)	—
Adjusted EBITDA	<u>\$ 1,849</u>	<u>\$ 1,435</u>

LIQUIDITY AND CAPITAL RESOURCES

Our operations are financed through a combination of our existing cash, cash equivalents, available credit facilities, and sales of equity and debt instruments, based on our operating requirements and market conditions.

Although we had net income of \$2.8 million and \$1.2 million for the years ended December 31, 2018 and 2017, we had a net loss of \$1.5 million for the quarter ended March 31, 2019 and have incurred significant losses in prior years. As of March 31, 2019, we had an accumulated deficit of \$17.4 million and working capital of \$86.5 million. As of March 31, 2019, we had \$20.9 million in cash and cash equivalents, which included \$12.2 million in cash balances held by our international subsidiaries, and \$57.5 million in aggregate principal amount of short-term debt obligations, other long-term debt and long-term related-party borrowings. In addition, as of March 31, 2019, we had \$12.3 million committed as security for letters of credit under our revolving credit facilities, leaving \$21.7 million in aggregate borrowing availability under these facilities.

Our current lack of liquidity could harm us by:

- Increasing our vulnerability to adverse economic conditions in our industry or the economy in general;
- Requiring substantial amounts of cash to be used for debt servicing, rather than other purposes, including operations;
- Limiting our ability to plan for, or react to, changes in our business and industry; and
- Influencing investor and customer perceptions about our financial stability and limiting our ability to obtain financing or acquire customers.

However, we plan to focus on cost management, operating efficiency and restrictions on discretionary spending. In addition, if necessary, we may sell assets, issue debt or equity securities or purchase credit insurance. We may also reduce the scope of our planned product development, reduce sales and marketing efforts and reduce our operations in low margin regions, including reductions in headcount. In the first quarter of 2019, we refinanced our former Wells Fargo Bank senior secured facilities with a new term loan and revolving line of credit facility, as described more fully in Note 8 to the accompanying condensed consolidated financial statements.

Our ability to meet our obligations as they become due in the ordinary course of business for the next twelve (12) months will depend on our ability to (i) achieve forecasted results, (ii) access capital under our existing or new credit facilities and/or raise additional capital through debt or equity financing from public and/or private capital markets and (iii) effectively manage inventory procurement. If we cannot access or raise additional capital when needed, our operations and prospects could be negatively affected. Management's belief that we will be able to achieve forecasted results assumes that, among other things, we will continue to be successful in implementing our business strategy and that there will be no

material adverse development in our business, liquidity or capital requirements. If one or more of these factors do not occur as expected, it could cause us to fail to meet our obligations as they come due.

Based on our current plans and current business conditions, we believe that our existing cash, cash equivalents and available credit facilities will be sufficient to satisfy our anticipated cash requirements for at least the next twelve (12) months.

Operating Activities

Net cash used in operating activities decreased by \$8.5 million to \$5.0 million for the three months ended March 31, 2019 from \$13.5 million for the three months ended March 31, 2018. The improvement in cash from changes in operating assets and liabilities was primarily due to collection accounts receivable at quarter-end.

Investing Activities

Net cash used in investing activities increased by \$4.7 million to \$4.8 million for the three months ended March 31, 2019 from \$0.1 million for the three months ended March 31, 2018. This increase was primarily due to the paid purchase price as a result of the Keymile Acquisition of \$11.8 million, net of cash received from the Keymile Acquisition of \$7.1 million.

Financing Activities

Net cash provided by financing activities was \$5.1 million for the three months ended March 31, 2019 compared to \$16.8 million for the three months ended March 31, 2018. This decrease was primarily due to extinguishment of certain debts of \$22.1 million offset by proceeds from short-term and long-term borrowings of \$29.3 million, primarily from the PNC Facility (defined below).

Cash Management

Our primary source of liquidity comes from our cash and cash equivalents, which totaled \$20.9 million at March 31, 2019, as well as our PNC Bank Facility, under which we had aggregate revolving line availability of \$15.0 million as of March 31, 2019. Our cash and cash equivalents as of March 31, 2019 included \$12.2 million in cash balances held by our international subsidiaries.

PNC Bank Facility

On February 27, 2019, DZS and ZTI (collectively, the “Borrowers”), and certain direct and indirect subsidiaries of the Borrowers, as guarantors, entered into that certain Revolving Credit, Term Loan, Guaranty and Security Agreement (the “Domestic Credit Agreement”) and that certain Export-Import Revolving Credit, Guaranty and Security Agreement (the “Ex-Im Credit Agreement,” and together with the Domestic Credit Agreement, the “Credit Agreements”), in each case with PNC Bank, National Association (“PNC”) and Citibank, N.A. as lenders, and PNC as agent for the lenders (the “PNC Facility”), which replaced our former senior secured credit facilities with Wells Fargo Bank (the “Former WFB Facility”).

The Credit Agreements provide for a \$25.0 million term loan and a \$15.0 million revolving line of credit (including subfacilities for Ex-Im transactions, letters of credit and swing loans). The amount we are able to borrow on the revolving line of credit at any time is based on eligible accounts receivable and other conditions, less certain reserves. Borrowings under the PNC Facility bear interest at our option, at either (i) a base rate equal to the highest of the federal funds rate plus 0.50%, PNC’s prime rate, or the daily LIBOR rate plus 1.00%, or (ii) the LIBOR rate for the applicable interest period, subject to a floor of 1.00% (with respect to the term loans only), plus in each case, an applicable margin. The applicable margin for term loans is 5.00% for base rate loans and 6.00% for LIBOR rate loans, and the applicable margin for borrowings under the revolving line of credit is 1.50% for base rate loans and 2.50% for LIBOR rate loans.

We used a portion of the funds borrowed from the term loan under the Credit Agreements to (i) repay \$5.0 million in principal amount of existing related-party indebtedness with DNI plus accrued interest, (ii) repay \$1.5 million in outstanding borrowings plus accrued interest and fees and cash collateralize \$3.6 million in outstanding letters of credit under the Former WFB Facility, and (iii) repay \$5.6 million short-term debt in Korea and Japan. We intend to use the remaining funds for ongoing working capital needs. Obligations under the Credit Agreements are secured by substantially all of the personal property assets of the Borrowers and the subsidiaries that guarantee the Credit Agreements, including their intellectual property.

The maturity date under the Credit Agreements is February 27, 2022. The term loan under the Credit Agreements is repayable in eight quarterly installments of \$625,000 beginning June 30, 2019, followed by quarterly installments of \$937,500 beginning on June 30, 2021, with all remaining unpaid principal and accrued interest due on the maturity date.

The Credit Agreements contain certain covenants, limitations, and conditions with respect to the Borrowers and their subsidiaries, including a maximum leverage ratio, a minimum fixed charge coverage ratio, and a minimum liquidity covenant, as well as financial reporting obligations, and customary events of default. If an event of default occurs, the agent and lenders will be entitled to take various actions, including requiring the immediate repayment of all outstanding amounts under the Credit Agreements, terminating commitments to make additional advances and selling the assets of the Borrowers and their subsidiary guarantors to satisfy the obligations under the Credit Agreements. We were in compliance with the covenants under the Credit Agreements as of March 31, 2019.

As of March 31, 2019, we had \$25 million in outstanding term loan borrowings under its PNC Facility, and no outstanding borrowings under the revolving line of credit. The interest rate on the PNC Facility was 8.63% at March 31, 2019.

Former Wells Fargo Bank Facility

On February 27, 2019, in connection with the entry into the PNC Facility, we repaid \$1.5 million in principal amount of outstanding borrowings plus accrued interest and fees under the Former WFB Facility, cash collateralized \$3.6 million outstanding letters of credit under the Former WFB Facility, and terminated the Former WFB Facility.

Working Capital Loan

On October 1 2018, as a condition for the Keymile Acquisition, the former stockholder of Keymile extended a €4.0 million (\$4.5 million as of March 31, 2019) working capital loan to Keymile. The working capital loan bears interest at a rate of 3.5% per annum and is scheduled for repayment in two equal installments. The first payment of \$2.2 million was made in April 2019 and the balance is due in November 2019.

Bank and Trade Facilities - Foreign Operations

Certain of our foreign subsidiaries have entered into various financing arrangements with foreign banks and other lending institutions consisting primarily of revolving lines of credit, trade facilities, term loans and export development loans. These facilities are renewed as they mature and are generally secured by a security interest in certain assets of the applicable foreign subsidiaries and supported by guarantees given by DNI or third parties. Payments under such facilities are made in accordance with the given lender's amortization schedules. As of March 31, 2019 and December 31, 2018, we had an aggregate outstanding balance of \$18.9 million and \$24.8 million, respectively, under such financing arrangements, and the interest rate per annum applicable to outstanding borrowings under these financing arrangements ranged from 0% to 6.74% as of March 31, 2019.

Related-Party Debt

In connection with the Merger, on September 9, 2016, we entered into a loan agreement with DNI for a \$5.0 million unsecured subordinated term loan facility, which was fully drawn. The term loan matures in September 2021 and is pre-payable at any time by us without premium or penalty. The interest rate under this facility was 4.6% per annum. In February 2019, we repaid the term loan in full plus accrued interest in connection with the entry into the PNC Facility.

In February 2016, DNS borrowed \$1.8 million from DNI for capital investment, which amount was outstanding as of March 31, 2019. The interest rate as of March 31, 2019 under this facility was 4.6% per annum. On February 27, 2019, in connection with the entry into the PNC Facility, we amended the terms of this loan to extend the repayment date until May 27, 2022.

On December 27, 2018, we entered into a Loan Agreement with DNI for a \$6.0 million term loan, which amount was outstanding as of March 31, 2019 with an interest rate of 4.6% per annum. On February 27, 2019, in connection with the entry into the PNC Facility, we amended the terms of the term loan to extend the repayment date until May 27, 2022 and to terminate any security granted to DNI with respect to such term loan.

On March 27, 2018, DNS Korea borrowed KRW6.5 billion (\$5.8 million) from DNI, of which KRW5.0 billion (\$4.5 million) was repaid on August 8, 2018. As of March 31, 2019, KRW1.5 billion (\$1.3 million) remained outstanding. The loan bears interest at a rate of 4.6%, and is secured by certain accounts receivable of DNS Korea. On February 27, 2019, in connection with the entry into the PNC Facility, we amended the terms of this loan to extend the repayment date until May 27, 2022.

Interest expense on these related-party borrowings was \$0.1 million and \$0.2 million for the three months ended March 31, 2019 and 2018, respectively.

Future Requirements and Funding Sources

Our fixed commitments for cash expenditures consist primarily of payments under operating leases, inventory purchase commitments, and payments of principal and interest for debt obligations.

From time to time, we may provide or commit to extend credit or credit support to our customers. This financing may include extending the terms for product payments to customers. Any extension of financing to our customers will limit the capital that we have available for other uses.

Our accounts receivable, while not considered a primary source of liquidity, represent a concentration of credit risk because a significant portion of the accounts receivable balance at any point in time typically consists of a relatively small number of customer account balances. As of March 31, 2019, no customer accounted for 10% or more of net accounts receivable, and receivables from customers in countries other than the United States represented 92% of net accounts receivable. We do not currently have any material commitments for capital expenditures, or any other material commitments aside from operating leases for our facilities, inventory purchase commitments and debt.

Contractual Commitments and Off-Balance Sheet Arrangements

At March 31, 2019, our future contractual commitments by fiscal year were as follows (in thousands):

	Total	Payments due by period					
		2019	2020	2021	2022	2023	Thereafter
Operating leases payments	\$ 26,376	\$ 3,892	\$ 4,317	\$ 3,993	\$ 3,860	\$ 3,732	\$ 6,582
Other lease payments	726	465	226	35	—	—	—
Purchase commitments	3,137	3,137	—	—	—	—	—
Foreign debts	23,393	23,393	—	—	—	—	—
PNC debt	25,000	1,875	2,500	3,437	17,188	—	—
Long-term debt-related party	9,118	—	—	—	9,118	—	—
Royalty obligations	144	144	—	—	—	—	—
Total future contractual commitments	<u>\$ 87,894</u>	<u>\$ 32,906</u>	<u>\$ 7,043</u>	<u>\$ 7,465</u>	<u>\$ 30,166</u>	<u>\$ 3,732</u>	<u>\$ 6,582</u>

Operating Leases

The operating lease amounts shown above represent primarily off-balance sheet arrangements. For operating lease commitments, a liability is generally not recorded on our balance sheet unless the facility represents an excess facility for which an estimate of the facility exit costs has been recorded on our balance sheet, net of estimated sublease income. For operating leases that include contractual commitments for operating expenses and maintenance, estimates of such amounts are included based on current rates. Payments made under operating leases will be treated as rent expense for the facilities currently being utilized.

Purchase Commitments

The purchase commitments shown above represent non-cancellable inventory purchase commitments as of March 31, 2019.

Short-term Debt

Our short-term debt obligations have been recorded as liabilities on our balance sheet, and as of March 31, 2019 are comprised of \$18.9 million in outstanding borrowings under the credit facilities of our foreign subsidiaries, \$2.5 million in outstanding borrowings under the PNC Facility and \$4.5 million in outstanding borrowings under a working capital loan from the former stockholder of Keymile. The amount shown above represents scheduled principal repayments under the facilities, but not the associated interest payments which may vary based on changes in market interest rates. At March 31, 2019, the interest rate per annum applicable to outstanding borrowings under the trade facilities of our foreign subsidiaries ranged from 0% to 6.74% and was 8.63% under the PNC Facility and 3.5% for the working capital loan. See above under "Cash Management" for further information about these facilities.

Related-Party Debt

As of March 31, 2019, we had an aggregate of \$9.1 million in outstanding borrowings from DNI, which consisted of a \$6.0 million unsecured subordinated term loan facility which matures in May 2022, a \$1.8 million loan for capital investment which matures in May 2022, and KRW 1.5 billion (\$1.3 million) outstanding under a secured loan to DNS Korea which matures in May 2022. All three loans bear interest at a rate of 4.6% per annum.

See above under “Cash Management” for further information about our related-party debt.

RECENT ACCOUNTING PRONOUNCEMENTS

Please refer to Note 1(j) to the unaudited condensed consolidated financial statements included in Part I, Item 1 of this Quarterly Report on Form 10-Q.

Item 3. Quantitative and Qualitative Disclosures about Market Risk

Concentration of Credit Risk

Financial instruments which potentially subject us to concentrations of credit risk consist primarily of cash and cash equivalents, and accounts receivable. Cash and cash equivalents consist principally of financial deposit and money market accounts. Cash and cash equivalents are principally held with various domestic and international financial institutions with high credit standing. We perform ongoing credit evaluations of our customers and generally do not require collateral. Allowances are maintained for potential doubtful accounts.

We anticipate that our results of operations in any given period may depend to a large extent on sales to a small number of large accounts. As a result, our revenue for any quarter may be subject to significant volatility based upon changes in orders from one or a small number of key customers.

For the three months ended March 31, 2019 and 2018, no single customer accounted for 10% or more of net revenue.

As of March 31, 2019, no single customer represented 10% or more of net accounts receivable. As of December 31, 2018, two (2) customers represented 11% and 10% of net accounts receivable, respectively.

As of March 31, 2019 and December 31, 2018, receivables from customers in countries other than the United States represented 92% and 88%, respectively, of net accounts receivable.

Interest Rate Risk

Our exposure to market risk for changes in interest rates relates primarily to our variable rate outstanding debt. As of March 31, 2019, our outstanding variable-interest debt balance was \$43.9 million, which consisted of principal amount of borrowings under the short-term credit facilities of our foreign subsidiaries and borrowings under the PNC Facility (all of which bear interest at a variable rate). As of March 31, 2019, amounts borrowed under our short-term credit facilities bore interest ranging from 0% to 6.74%, and amounts borrowed under the PNC Facility bore interest at 8.63%. Assuming the outstanding balance on our variable rate debt remains constant over a year, a 1% increase in the interest rate would decrease pre-tax income and cash flow by approximately \$0.4 million. In addition, as of March 31, 2019, we had an aggregate of \$13.6 million in outstanding borrowings from DNI and Riverside (all of which bear interest at a fixed rate of 4.6% and 3.5%, respectively).

Foreign Currency Risk

We transact business in various foreign countries, and a significant portion of our assets is located in Korea. We have sales operations throughout Asia, Europe, the Middle East and Latin America. We are exposed to foreign currency exchange rate risk associated with foreign currency denominated assets and liabilities, primarily intercompany receivables and payables. Accordingly, our operating results are exposed to changes in exchange rates between the U.S. dollar and those currencies.

We have performed a sensitivity analysis as of March 31, 2019 using a modeling technique that measures the impact on the balance sheet arising from a hypothetical 10% adverse movement in the levels of foreign currency exchange rates relative to the U.S. dollar, with all other variables held constant. The sensitivity analysis indicated that a hypothetical 10% adverse movement in foreign currency exchange rates would result in a foreign exchange loss of \$5.3 million at March 31, 2019. This sensitivity analysis assumes a parallel adverse shift in foreign currency exchange rates, which do not always move in the same direction. Actual results may differ materially.

Item 4. Controls and Procedures

Disclosure Controls and Procedures

We maintain disclosure controls and procedures designed to provide reasonable assurance of achieving the objective that information required to be disclosed in our reports filed or submitted pursuant to the Securities Exchange Act of 1934 (the “Exchange Act”) is recorded, processed, summarized and reported within the time periods specified in the SEC’s rules and forms and that such information is accumulated and communicated to our management, including our Chief Executive Officer and Chief Financial Officer, as appropriate to allow for timely decisions regarding required disclosures. In designing and evaluating the disclosure controls and procedures, management recognizes that any controls and procedures, no matter how well designed and operated, can provide only reasonable assurance of achieving the desired control objectives, and management applies its judgment in evaluating the cost-benefit relationship of possible controls and procedures.

As required by Rule 13a-15(b) under the Exchange Act, we conducted an evaluation of the effectiveness of the design and operation of our disclosure controls and procedures as of March 31, 2019, the end of the period covered by this Quarterly Report on Form 10-Q. The evaluation was done under the supervision and with the participation of management, including our Chief Executive Officer and our Chief Financial Officer. Based upon this evaluation, our Chief Executive Officer and Chief Financial Officer concluded that, because of the material weaknesses in our internal control over financial reporting that existed as of December 31, 2016 and that have not yet been remediated, as described below, our disclosure controls and procedures were not effective as of March 31, 2019.

A material weakness is a deficiency, or a combination of deficiencies, in internal control over financial reporting such that there is a reasonable possibility that a material misstatement of the registrant's annual or interim financial statements will not be prevented or detected on a timely basis. Based on the results of the independent investigation and due to the incorrect application of generally accepted accounting principles that resulted in material misstatements and a restatement of our unaudited condensed consolidated financial statements for the three and nine months ended September 30, 2016, management identified material weaknesses in our internal control over financial reporting as of December 31, 2016 which continued to exist at December 31, 2018. Specifically, we did not maintain an effective control environment as there was an insufficient complement of personnel with appropriate accounting knowledge, experience and competence, resulting in incorrect application of generally accepted accounting principles. This material weakness contributed to the following material weaknesses. We did not maintain effective controls over our financial close process. Also, we did not design and maintain effective controls over the review of supporting information to determine the completeness and accuracy of the accounting for complex transactions, specifically related to the business combination that occurred on September 9, 2016, which resulted in an incorrect application of generally accepted accounting principles that resulted in material misstatements and a restatement of our unaudited condensed consolidated financial statements for the three and nine months period ended September 30, 2016. Additionally, these material weaknesses could result in a misstatement in the financial statements that would result in a material misstatement in the annual or interim consolidated financial statements that would not be prevented or detected.

In light of the material weakness described above, and based on the criteria set forth in Internal Control —Integrated Framework (2013) issued by the Committee Sponsoring Organizations of the Treadway Commission (COSO), our management concluded that our internal control over financial reporting was not effective as of December 31, 2018.

As of the date of this Quarterly Report on Form 10-Q, we are re-assessing the design of our controls and modifying processes related to the accounting for significant and unusual transactions as well as enhancing monitoring and oversight controls in the application of accounting guidance related to such transactions. In connection therewith, we have hired and we anticipate that we will hire additional accounting personnel with relevant skills, training and experience, and conduct further training of our accounting and finance personnel.

Changes in Internal Control over Financial Reporting

Except as described above, there were no changes in our internal control over financial reporting that occurred during our last fiscal quarter that have materially affected, or are reasonably likely to materially affect, our internal control over financial reporting. Integration activities related to the Keymile Acquisition may lead us to modify certain internal controls in future periods.

Inherent Limitations on Effectiveness of Controls

Our management, including our Chief Executive Officer and Chief Financial Officer, does not expect that our disclosure controls and procedures or our internal control over financial reporting will prevent or detect all error and all fraud. A control system, no matter how well designed and operated, can provide only reasonable, not absolute, assurance that the control system's objectives will be met. The design of a control system must reflect the fact that there are resource constraints, and the benefits of controls must be considered relative to their costs. Further, because of the inherent limitations in all control systems, no evaluation of controls can provide absolute assurance that misstatements due to error or fraud will not occur or that all control issues and instances of fraud, if any, within the Company have been detected. These inherent limitations include the realities that judgments in decision-making can be faulty and that breakdowns can occur because of simple error or mistake. Controls can also be circumvented by the individual acts of some persons, by collusion of two or more people, or by management override of the controls. The design of any system of controls is based in part on certain assumptions about the likelihood of future events, and there can be no assurance that any design will succeed in achieving its stated goals under all potential future conditions. Projections of any evaluation of controls

effectiveness to future periods are subject to risks. Over time, controls may become inadequate because of changes in conditions or deterioration in the degree of compliance with policies or procedures.

PART II. OTHER INFORMATION

Item 1. Legal Proceedings

We are subject to various legal proceedings, claims and litigation arising in the ordinary course of business. While the outcome of these matters is currently not determinable, we do not expect that the ultimate costs to resolve these matters will have a material adverse effect on our consolidated financial position or results of operations. However, litigation is subject to inherent uncertainties, and unfavorable rulings could occur. If an unfavorable ruling were to occur, there exists the possibility of a material adverse impact on the results of operations of the period in which the ruling occurs, or future periods.

Item 1A. Risk Factors

In addition to the other information set forth in this Quarterly Report on Form 10-Q, you should carefully consider the factors discussed in Part I, "Item 1A, Risk Factors" in our Annual Report on Form 10-K for the year ended December 31, 2018, which could materially affect our business, financial condition or future results. There have been no material changes to the risk factors described in the "Risk Factors" section in our Annual Report on Form 10-K for the year ended December 31, 2018. The risks described in our Annual Report on Form 10-K are not the only risks facing our company. Additional risks and uncertainties not currently known to us or that we currently deem to be immaterial also may materially adversely affect our business, financial condition and/or operating results.

Our amended and restated bylaws provide that the Court of Chancery of the State of Delaware will be the sole and exclusive forum for substantially all disputes between us and our stockholders (except for causes of action arising under the federal securities laws), which could limit our stockholders' ability to obtain a favorable judicial forum for disputes with us or our directors, officers, or employees.

Our amended and restated bylaws (our "Bylaws") provide that the Court of Chancery of the State of Delaware is the sole and exclusive forum for:

- any derivative action or proceeding brought on behalf of the Company;
- any action asserting a claim of breach of a fiduciary duty owed by any director, officer, employee or agent of the Company to the Company or the Company's stockholders;
- any action asserting a claim against the Company arising pursuant to any provision of the General Corporation Law of the State of Delaware, the Certificate of Incorporation or the Bylaws; and
- any action asserting a claim against the Corporation governed by the internal affairs doctrine, in each such case subject to said Court of Chancery having personal jurisdiction over the indispensable parties named as defendants therein;

provided, that with respect to any derivative action or proceeding brought on our behalf to enforce any liability or duty created by the Exchange Act or the rules and regulations thereunder, the exclusive forum will be the federal district courts of the United States. The exclusive forum provision in our Bylaws does not apply to resolving any complaint asserting a cause of action arising under the Securities Act.

These exclusive forum provisions may limit a stockholder's ability to bring a claim in a judicial forum that it finds favorable for disputes with us or our directors, officers, or other employees, which may discourage lawsuits against us and our directors, officers and other employees. If a court were to find the exclusive forum provision in our Bylaws to be inapplicable or unenforceable in an action, we may incur additional costs associated with resolving the dispute in other jurisdictions, which could seriously harm our business. For example, the Court of Chancery of the State of Delaware recently determined that the exclusive forum provision of federal district courts of the United States for resolving any complaint asserting a cause of action arising under the Securities Act is not enforceable. However, this decision may be reviewed and ultimately overturned by the Delaware Supreme Court.

Item 6. Exhibits

EXHIBIT INDEX

Exhibit Number	Description
10.1	<u>Revolving Credit, Term Loan, Guaranty and Security Agreements, dated as of February 27, 2019, by and among DASAN Zhone Solutions, Inc. various of its subsidiaries and PNC Bank, National Association and Citibank, N.A</u>
10.2	<u>Export-Import Revolving Credit, Guaranty and Security Agreement dated as of February 27, 2019, by and among DASAN Zhone Solutions, Inc. various of its subsidiaries PNC Bank, National Association and Citi Bank, N.A.</u>
10.3	<u>Amendment 1 to Loan Agreement, dated February 25, 2019, by and between DASAN Networks, Inc. and Dasan Network Solutions, Inc. under existing loan agreement for KRW6.5 billion</u>
10.4	<u>Amendment 1 to Loan Agreement, dated February 25, 2019, by and between DASAN Zhone Solutions, Inc. and Dasan Networks, Inc., under existing loan agreement for \$6.0 million</u>
31.1	<u>Certification of Chief Executive Officer Pursuant to Rule 13a-14(a)/15d-14(a)</u>
31.2	<u>Certification of Chief Financial Officer Pursuant to Rule 13a-14(a)/15d-14(a)</u>
32.1	<u>Section 1350 Certification of Chief Executive Officer and Chief Financial Officer</u>
101.INS	XBRL Instance Document
101.SCH	XBRL Taxonomy Extension Schema
101.CAL	XBRL Taxonomy Extension Calculation Linkbase
101.DEF	XBRL Taxonomy Extension Definition Linkbase
101.LAB	XBRL Taxonomy Extension Labels Linkbase
101.PRE	XBRL Taxonomy Extension Presentation Linkbase

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.

DASAN ZHONG SOLUTIONS, INC.

Date: May 10, 2019

By:	_____/s/ IL YUNG KIM
Name:	Il Yung Kim
Title:	President and Chief Executive Officer
By:	_____/s/ MICHAEL GOLOMB
Name:	Michael Golomb
Title:	Chief Financial Officer, Corporate Treasurer and Corporate Secretary