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

FORM 10-Q

(Mark One)

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

For the quarterly period ended September 30, 2023

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

For the transition period from to

Commission File Number 001-38267

RIBBON COMMUNICATIONS INC.

(Exact name of Registrant as specified in its charter)

Delaware	**82-1669692**
(State or other jurisdiction of incorporation or organization)	(I.R.S. Employer Identification No.)

6500 Chase Oaks Boulevard, Suite 100, Plano, Texas 75023
(Address of principal executive offices) (Zip code)

(978) 614-8100
(Registrant's telephone number, including area code)

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

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, par value $0.0001	RBBN	The Nasdaq Global Select Market

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 x No o

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 x No o

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

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

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

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

As of October 23, 2023, there were 171,730,757 shares of the registrant's common stock, $0.0001 par value per share, outstanding.

RIBBON COMMUNICATIONS INC.
FORM 10-Q
QUARTERLY PERIOD ENDED SEPTEMBER 30, 2023
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Cautionary Note Regarding Forward-Looking Statements

This Quarterly Report on Form 10-Q contains "forward-looking statements" within the meaning of the U.S. Private Securities Litigation Reform Act of 1995, which are subject to a number of risks and uncertainties. All statements other than statements of historical facts contained in this Quarterly Report on Form 10-Q, including statements regarding impacts from the terrorist attacks in Israel and the resulting war, our future expenses and restructuring activities, results of operations and financial position, capital structure, credit facility compliance, expected impacts from the war in Ukraine and the financial sanctions and trade restrictions imposed in connection therewith, beliefs about our business strategy, availability of components for the manufacturing of our products, ongoing litigation, plans and objectives of management for future operations and manufacturing are forward-looking statements. Without limiting the foregoing, the words "anticipates", "believes", "could", "estimates", "expects", "intends", "may", "plans", "seeks" and other similar language, whether in the negative or affirmative, are intended to identify forward-looking statements, although not all forward-looking statements contain these identifying words. Forward-looking statements are based on our current expectations and assumptions regarding our business, the economy and other future conditions. Because forward-looking statements relate to the future, they are subject to inherent uncertainties, risks and changes in circumstances that are unknown and/or difficult to predict and that may cause our actual results, performance or achievements to be materially different from those expressed or implied by the forward-looking statements. Such risks and uncertainties include, but are not limited to, supply chain disruptions resulting from component availability and/or geopolitical instabilities and disputes (including those related to the wars in Israel and Ukraine); the closure, on a temporary basis, of our offices in Israel as a result of the war and the impact of military call-ups of our employees in Israel; material litigation; unpredictable fluctuations in quarterly revenue and operating results; the impact of fluctuations in interest rates; the impact of fluctuations of our EBITDA on compliance under our credit facility; material cybersecurity and data intrusion incidents, including any security breaches resulting in the theft, transfer, or unauthorized disclosure of customer, employee, or company information; our ability to comply with applicable domestic and foreign information security and privacy laws, regulations and technology platform rules or other obligations related to data privacy and security; failure to compete successfully against telecommunications equipment and networking companies; failure to grow our customer base or generate recurring business from our existing customers; credit risks; the timing of customer purchasing decisions and our recognition of revenues; macroeconomic conditions, including inflation; the impact of restructuring and cost-containment activities; our ability to adapt to rapid technological and market changes; our ability to generate positive returns on our research and development; our ability to protect our intellectual property rights and obtain necessary licenses; our ability to maintain partner, reseller, distribution and vendor support and supply relationships; the potential for defects in our products; risks related to the terms of our credit agreement; higher risks in international operations and markets; increases in tariffs, trade restrictions or taxes on our products; currency fluctuations; unanticipated adverse changes in legal, regulatory or tax laws; future accounting pronouncements or changes in our accounting policies; and/or failure or circumvention of our controls and procedures. We therefore caution you against relying on any of these forward-looking statements.

Additional important factors that could cause actual results to differ materially from those in these forward-looking statements are also discussed in Part I, Item 2, "Management's Discussion and Analysis of Financial Condition and Results of Operations" and Part I, Item 1A and Part II, Item 7A, "Risk Factors" and "Quantitative and Qualitative Disclosures About Market Risk," respectively, of our Annual Report on Form 10-K for the year ended December 31, 2022 and our Quarterly Report on Form 10-Q for the quarter ended June 30, 2023. Any forward-looking statement made by us in this Quarterly Report on Form 10-Q speaks only as of the date on which this Quarterly Report on Form 10-Q was first filed. We undertake no obligation to publicly update any forward-looking statement, whether as a result of new information, future developments or otherwise.

PART I FINANCIAL INFORMATION

Item 1. Financial Statements

RIBBON COMMUNICATIONS INC.
Condensed Consolidated Balance Sheets
(in thousands, except share and per share data)
(unaudited)

	September 30, 2023	December 31, 2022
Assets		
Current assets:		
Cash and cash equivalents	$ 24,501	$ 67,262
Accounts receivable, net	242,183	267,244
Inventory	70,184	75,423
Other current assets	53,620	68,057
Total current assets	390,488	477,986
Property and equipment, net	42,319	44,832
Intangible assets, net	251,053	294,728
Goodwill	300,892	300,892
Deferred income taxes	63,422	53,649
Operating lease right-of-use assets	39,167	44,888
Other assets	34,274	38,589
	$ 1,121,615	$ 1,255,564
Liabilities and Stockholders' Equity		
Current liabilities:		
Current portion of term debt	$ 30,087	$ 20,058
Revolving credit facility	10,000	—
Accounts payable	73,873	95,810
Accrued expenses and other	89,076	85,270
Operating lease liabilities	14,901	15,416
Deferred revenue	107,536	113,939
Total current liabilities	325,473	330,493
Long-term debt, net of current	206,908	306,270
Warrant liability	5,052	—
Preferred stock liability, $0.01 par value per share; 10,000,000 shares authorized, 55,000 shares issued and outstanding at September 30, 2023 ($56,650 liquidation preference); none issued and outstanding at December 31, 2022	49,855	—
Operating lease liabilities, net of current	38,282	46,183
Deferred revenue, net of current	17,865	19,254
Deferred income taxes	3,729	3,750
Other long-term liabilities	30,523	31,187
Total liabilities	677,687	737,137
Commitments and contingencies (Note 19)		
Stockholders' equity:		
Common stock, $0.0001 par value per share; 240,000,000 shares authorized; 171,417,372 shares issued and outstanding at September 30, 2023; 168,324,995 shares issued and outstanding at December 31, 2022	17	17
Additional paid-in capital	1,954,586	1,941,569
Accumulated deficit	(1,527,029)	(1,453,744)
Accumulated other comprehensive income	16,354	30,585
Total stockholders' equity	443,928	518,427
	$ 1,121,615	$ 1,255,564

See notes to the unaudited condensed consolidated financial statements.

RIBBON COMMUNICATIONS INC.
Condensed Consolidated Statements of Operations
(in thousands, except per share data)
(unaudited)

	Three months ended		Nine months ended	
	September 30, 2023	September 30, 2022	September 30, 2023	September 30, 2022
Revenue:				
Product	$ 108,501	$ 111,152	$ 319,166	$ 305,809
Service	94,660	95,975	280,772	280,312
Total revenue	203,161	207,127	599,938	586,121
Cost of revenue:				
Product	59,436	59,866	189,426	169,226
Service	33,065	35,175	102,152	106,049
Amortization of acquired technology	7,157	7,768	21,985	23,923
Total cost of revenue	99,658	102,809	313,563	299,198
Gross profit	103,503	104,318	286,375	286,923
Operating expenses:				
Research and development	46,229	49,366	145,309	153,159
Sales and marketing	32,795	36,365	102,099	109,827
General and administrative	12,885	12,118	41,276	37,881
Amortization of acquired intangible assets	7,216	7,508	21,740	22,296
Acquisition-, disposal- and integration-related	842	988	2,982	4,372
Restructuring and related	2,680	1,269	13,924	8,977
Total operating expenses	102,647	107,614	327,330	336,512
Income (loss) from operations	856	(3,296)	(40,955)	(49,589)
Interest expense, net	(7,143)	(5,266)	(20,331)	(13,869)
Other expense, net	(2,620)	(3,732)	(536)	(42,760)
Loss before income taxes	(8,907)	(12,294)	(61,822)	(106,218)
Income tax provision	(4,594)	(6,122)	(11,463)	(12,353)
Net loss	$ (13,501)	$ (18,416)	$ (73,285)	$ (118,571)
Loss per share:				
Basic	$ (0.08)	$ (0.12)	$ (0.43)	$ (0.78)
Diluted	$ (0.08)	$ (0.12)	$ (0.43)	$ (0.78)
Weighted average shares used to compute loss per share:				
Basic	171,190	158,921	169,955	152,795
Diluted	171,190	158,921	169,955	152,795

See notes to the unaudited condensed consolidated financial statements.

RIBBON COMMUNICATIONS INC.
Condensed Consolidated Statements of Comprehensive Loss
(in thousands)
(unaudited)

	Three months ended		Nine months ended	
	September 30, 2023	September 30, 2022	September 30, 2023	September 30, 2022
Net loss	$ (13,501)	$ (18,416)	$ (73,285)	$ (118,571)
Other comprehensive income (loss), net of tax:				
Unrealized gain (loss) on interest rate swap, net of reclassifications and amortization into earnings	(1,322)	1,726	(8,544)	21,248
Reclassification of gain to other expense, net upon sale of interest rate swap	—	—	(5,099)	—
Foreign currency translation adjustments	(3)	(144)	(588)	(1,157)
Employee retirement benefits	—	142	—	(742)
Other comprehensive income (loss), net of tax	(1,325)	1,724	(14,231)	19,349
Comprehensive loss, net of tax	$ (14,826)	$ (16,692)	$ (87,516)	$ (99,222)

See notes to the unaudited condensed consolidated financial statements.

RIBBON COMMUNICATIONS INC.
Condensed Consolidated Statements of Stockholders' Equity
(in thousands, except shares)
(unaudited)

Three months ended September 30, 2023

	Common stock		Additional paid-in capital	Accumulated deficit	Accumulated other comprehensive (loss) income	Total stockholders' equity
	Shares	Amount				
Balance at July 1, 2023	170,958,400	$ 17	$ 1,950,079	$ (1,513,528)	$ 17,679	$ 454,247
Exercise of stock options	6,899		13			13
Vesting of restricted stock awards and units	612,818					—
Vesting of performance-based stock units						—
Shares of restricted stock returned to the Company under net share settlements to satisfy tax withholding obligations	(160,745)		(456)			(456)
Stock-based compensation expense			4,950			4,950
Other comprehensive loss					(1,325)	(1,325)
Net loss				(13,501)		(13,501)
Balance at September 30, 2023	171,417,372	$ 17	$ 1,954,586	$ (1,527,029)	$ 16,354	$ 443,928

Nine months ended September 30, 2023

	Common stock		Additional paid-in capital	Accumulated deficit	Accumulated other comprehensive (loss) income	Total stockholders' equity
	Shares	Amount				
Balance at January 1, 2023	168,324,995	$ 17	$ 1,941,569	$ (1,453,744)	$ 30,585	$ 518,427
Exercise of stock options	7,816		15			15
Vesting of restricted stock awards and units	3,927,390					—
Vesting of performance-based stock units	381,071					—
Shares of restricted stock returned to the Company under net share settlements to satisfy tax withholding obligations	(1,223,900)		(3,912)			(3,912)
Stock-based compensation expense			16,914			16,914
Other comprehensive loss					(14,231)	(14,231)
Net loss				(73,285)		(73,285)
Balance at September 30, 2023	171,417,372	$ 17	$ 1,954,586	$ (1,527,029)	$ 16,354	$ 443,928

See notes to the unaudited condensed consolidated financial statements.

RIBBON COMMUNICATIONS INC.
Condensed Consolidated Statements of Stockholders' Equity
(in thousands, except shares)
(unaudited)

Three months ended September 30, 2022

	Common stock		Additional paid-in capital	Accumulated deficit	Accumulated other comprehensive income	Total stockholders' equity
	Shares	Amount				
Balance at July 1, 2022	150,459,784	$ 15	$ 1,881,942	$ (1,455,816)	$ 25,203	$ 451,344
Exercise of stock options	353		1			1
Vesting of restricted stock units	800,999					—
Vesting of performance-based stock units	3,433					—
Shares of restricted stock returned to the Company under net share settlements to satisfy tax withholding obligations	(242,434)		(738)			(738)
Common stock issued in equity offering	17,071,311	2	52,065			52,067
Issuance costs related to equity offering			(1,654)			(1,654)
Stock-based compensation expense			4,841			4,841
Other comprehensive income					1,724	1,724
Net loss				(18,416)		(18,416)
Balance at September 30, 2022	168,093,446	$ 17	$ 1,936,457	$ (1,474,232)	$ 26,927	$ 489,169

Nine months ended September 30, 2022

	Common stock		Additional paid-in capital	Accumulated deficit	Accumulated other comprehensive income	Total stockholders' equity
	Shares	Amount				
Balance at January 1, 2022	148,895,308	$ 15	$ 1,875,234	$ (1,355,661)	$ 7,578	$ 527,166
Exercise of stock options	708		1			1
Vesting of restricted stock units	2,808,137					—
Vesting of performance-based stock units	179,184					—
Shares of restricted stock returned to the Company under net share settlements to satisfy tax withholding obligations	(861,202)		(2,684)			(2,684)
Common stock issued in equity offering	17,071,311	2	52,065			52,067
Issuance costs related to equity offering			(1,654)			(1,654)
Stock-based compensation expense			13,495			13,495
Other comprehensive income					19,349	19,349
Net loss				(118,571)		(118,571)
Balance at September 30, 2022	168,093,446	$ 17	$ 1,936,457	$ (1,474,232)	$ 26,927	$ 489,169

See notes to the unaudited condensed consolidated financial statements.

RIBBON COMMUNICATIONS INC.
Condensed Consolidated Statements of Cash Flows
(in thousands)
(unaudited)

	Nine months ended	
	September 30, 2023	September 30, 2022
Cash flows from operating activities:		
Net loss	$ (73,285)	$ (118,571)
Adjustments to reconcile net loss to cash flows used in operating activities:		
Depreciation and amortization of property and equipment	10,603	11,688
Amortization of intangible assets	43,725	46,219
Amortization of debt issuance costs	2,517	1,697
Amortization of accumulated other comprehensive gain related to interest rate swap	(3,818)	—
Stock-based compensation	16,914	13,495
Deferred income taxes	(3,617)	(19,071)
Decrease in fair value of investments	—	41,291
Gain on sale of swap	(7,301)	—
Change in fair value of warrant liability	(444)	—
Change in fair value of preferred stock liability	(572)	—
Dividends accrued on preferred stock liability	2,573	—
Foreign currency exchange losses	1,174	830
Changes in operating assets and liabilities:		
Accounts receivable	31,345	44,604
Inventory	(4,327)	(24,002)
Other operating assets	27,785	6,066
Accounts payable	(22,276)	(22,311)
Accrued expenses and other long-term liabilities	(16,255)	(6,983)
Deferred revenue	(7,793)	(17,414)
Net cash used in operating activities	(3,052)	(42,462)
Cash flows from investing activities:		
Purchases of property and equipment	(6,620)	(9,744)
Purchases of software licenses	—	(3,300)
Net cash used in investing activities	(6,620)	(13,044)
Cash flows from financing activities:		
Borrowings under revolving line of credit	67,000	58,625
Principal payments on revolving line of credit	(57,000)	(58,625)
Principal payments of term debt	(90,044)	(40,044)
Principal payments of finance leases	—	(433)
Payment of debt issuance costs	(1,572)	(1,046)
Proceeds from equity offering	—	52,067
Payment of equity offering issuance costs	—	(1,654)
Proceeds from issuance of preferred stock and warrant liabilities	53,350	—
Proceeds from the exercise of stock options	15	1
Payment of tax withholding related to net share settlements of restricted stock awards	(3,912)	(2,684)
Net cash (used in) provided by financing activities	(32,163)	6,207
Effect of exchange rate changes on cash and cash equivalents	(926)	(1,251)
Net decrease in cash and cash equivalents	(42,761)	(50,550)
Cash and cash equivalents, beginning of year	67,262	106,485
Cash and cash equivalents, end of period	$ 24,501	$ 55,935

RIBBON COMMUNICATIONS INC.
Condensed Consolidated Statements of Cash Flows (continued)
(in thousands)
(unaudited)

	Nine months ended	
	September 30, 2023	September 30, 2022
Supplemental disclosure of cash flow information:		
Interest paid	$ 18,606	$ 13,179
Income taxes paid	$ 9,721	$ 14,653
Income tax refunds received	$ 1,160	$ 643
Supplemental disclosure of non-cash investing activities:		
Capital expenditures incurred, but not yet paid	$ 2,505	$ 989
Software license acquired through investment disposal	$ —	$ 1,886
Inventory transfers to property and equipment	$ 1,524	$ 1,705
Supplemental disclosure of non-cash financing activities:		
Total fair value of restricted stock awards, restricted stock units and performance-based stock units on date vested	$ 13,454	$ 9,092

See notes to the unaudited condensed consolidated financial statements.

(1) BASIS OF PRESENTATION

Business

Ribbon Communications Inc. ("Ribbon" or the "Company") is a leading global provider of communications technology to service providers and enterprises. The Company provides a broad range of software and high-performance hardware products, network solutions, and services that enable the secure delivery of data and voice communications, and high-bandwidth networking and connectivity for residential consumers and for small, medium, and large enterprises and industry verticals such as finance, education, government, utilities, and transportation. Ribbon's mission is to create a recognized global technology leader providing cloud-centric solutions that enable the secure exchange of information, with unparalleled scale, performance, and elasticity. The Company is headquartered in Plano, Texas, and has a global presence with research and development, or sales and support locations in over thirty countries around the world.

Basis of Presentation

In the opinion of management, the accompanying unaudited condensed consolidated financial statements include all adjustments, consisting only of normal recurring items, necessary for their fair presentation with accounting principles generally accepted in the United States of America ("GAAP") and with the rules and regulations of the U.S. Securities and Exchange Commission ("SEC").

Interim results are not necessarily indicative of results for a full year or any future interim period. The information included in this Quarterly Report on Form 10-Q should be read in conjunction with the Company's Annual Report on Form 10-K for the year ended December 31, 2022, as amended (the "Annual Report"), which was filed with the SEC on March 31, 2023.

Private Placement Offering

On March 28, 2023, the Company issued 55,000 shares of newly designated Series A Preferred Stock (the "Preferred Stock") to investors in a private placement offering at a price of $970 per share, along with 4.9 million warrants (the "Warrants") to purchase shares of the Company's common stock, par value $0.0001 per share (the "Private Placement"), at the exercise price of $3.77 per share. The proceeds from the Private Placement were approximately $53.4 million, including approximately $10 million from existing related party stockholders (See Note 11).

Operating Segments

The Company's chief operating decision maker (the "CODM") is its president and chief executive officer. The CODM assesses the Company's performance based on the performance of two separate organizations within Ribbon: the Cloud and Edge segment ("Cloud and Edge") and the IP Optical Networks segment ("IP Optical Networks").

Significant Accounting Policies

The Company's significant accounting policies are disclosed in Note 2 to the Consolidated Financial Statements included in the Annual Report. There were no material changes to the significant accounting policies during the nine months ended September 30, 2023, except for the addition of the accounting policy below for the Preferred Stock and Warrants issued in the Private Placement on March 28, 2023.

Preferred Stock and Warrants

The Company accounts for the Preferred Stock and Warrants as liability-classified instruments based on an assessment of their specific terms in accordance with ASC Topic 480, *Distinguishing Liabilities from Equity*. The fair value option was elected for the Preferred Stock, as the Company considers fair value to best reflect the expected future economic value. These liabilities are remeasured to fair value at each reporting date using the same valuation methodology applied upon issuance.

The value of the Preferred Stock is calculated using the Black-Derman-Toy (BDT) stochastic yield lattice model to capture the optimal timing of repayment, increasing dividend rate and other features, and the value of the Warrants is calculated using the Black-Scholes Pricing Model.

Changes in the fair value of the Preferred Stock and Warrants are reported as Other expense, net in the Company's condensed consolidated statements of operations.

Principles of Consolidation

The condensed consolidated financial statements include the accounts of Ribbon and its wholly-owned subsidiaries. Intercompany transactions and balances have been eliminated in consolidation.

Use of Estimates and Judgments

The preparation of financial statements in conformity with GAAP requires Ribbon 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 financial statements and the reported amounts of revenue and expenses during the reporting periods. Significant estimates and judgments relied upon in preparing these condensed consolidated financial statements include accounting for business combinations, revenue recognition for multiple element arrangements, inventory valuations, assumptions used to determine the fair value of stock-based compensation and the Preferred Stock and Warrants, intangible asset and goodwill valuations, including impairments, legal contingencies and recoverability of Ribbon's net deferred tax assets and the related valuation allowances. Ribbon regularly assesses these estimates and records changes in estimates in the period in which they become known. Ribbon bases its estimates on historical experience and various other assumptions that it believes to be reasonable under the circumstances. Actual results could differ from those estimates.

Transfers of Financial Assets

The Company's IP Optical Networks segment maintains customer receivables factoring agreements with a number of financial institutions. Under the terms of these agreements, the Company may transfer receivables to the financial institutions, on a non-recourse basis, provided that the financial institutions approve the receivables in advance. The Company maintains credit insurance policies from major insurance providers or obtains letters of credit from the customers for a majority of its factored trade receivables. The Company accounts for the factoring of its financial assets as a sale of the assets and records the factoring fees, when incurred, as a component of interest expense in the condensed consolidated statements of operations, and the proceeds from the sales of receivables are included in cash from operating activities in the condensed consolidated statements of cash flows.

Factoring of accounts receivable and associated fees for the three and nine months ended September 30, 2023 and 2022 were as follows (in thousands):

	Three months ended		Nine months ended	
	September 30, 2023	September 30, 2022	September 30, 2023	September 30, 2022
Accounts receivable sold	24,701	16,926	73,028	57,640
Less factoring fees	(752)	(281)	(2,022)	(757)
Net cash proceeds	23,949	16,645	71,006	56,883

Recent Accounting Pronouncements

In March 2022, the Financial Accounting Standards Board (the "FASB") issued ASU 2022-02, *Financial Instruments – Credit Losses (Topic 326): Troubled Debt Restructurings and Vintage Disclosures* ("ASU 2022-02"), which eliminates the accounting guidance on troubled debt restructurings for creditors in ASC 310, *Receivables (Topic 310)*, and requires entities to provide disclosures about current period gross write-offs by year of origination. Also, ASU 2022-02 updates the requirements related to accounting for credit losses under ASC 326, *Financial Instruments – Credit Losses (Topic 326)*, and adds enhanced disclosures for creditors with respect to loan refinancings and restructurings for borrowers experiencing financial difficulty. ASU 2022-02 was effective for the Company January 1, 2023. The adoption of ASU 2022-02 did not have a material impact on the Company's consolidated financial statements.

In October 2021, the FASB issued ASU 2021-08, *Business Combinations (Topic 805): Accounting for Contract Assets and Contract Liabilities from Contracts with Customers* ("ASU 2021-08"), which amends ASC 805, *Business Combinations (Topic 805)*, to add contract assets and contract liabilities to the list of exceptions to the recognition and measurement principles that apply to business combinations and to require that an acquiring entity recognize and measure contract assets and contract liabilities acquired in a business combination in accordance with ASC 606, *Revenue from Contracts with Customers (Topic 606)* ("ASC 606"). Under current GAAP, an acquirer generally recognizes such items at fair value on the acquisition date. While primarily related to contract assets and contract liabilities that were accounted for by the acquiree in accordance with ASC 606, ASU 2021-08 also applies to contract assets and contract liabilities from other contracts to which the provisions of ASC 606 apply, such as contract liabilities from the sale of nonfinancial assets within the scope of ASU 2017-05, *Other Income - Gains and Losses from the Derecognition of Nonfinancial Assets (Subtopic 610-20)*. ASU 2021-08 was effective for the Company January 1, 2023. The Company believes that the adoption of ASU 2021-08 could have a material impact on its consolidated financial statements for periods including and subsequent to significant business acquisitions.

(2) EARNINGS (LOSS) PER SHARE

Basic earnings (loss) per share is computed by dividing net income (loss) by the weighted average number of shares outstanding during the period. For periods in which the Company reports net income, diluted net earnings per share is determined by using the weighted average number of common and dilutive common equivalent shares outstanding during the period, unless the effect is antidilutive.

The shares used to compute loss per share were as follows (in thousands):

	Three months ended		Nine months ended	
	September 30, 2023	September 30, 2022	September 30, 2023	September 30, 2022
Weighted average shares outstanding - basic	171,190	158,921	169,955	152,795
Potential dilutive common shares	—	—	—	—
Weighted average shares outstanding - diluted	171,190	158,921	169,955	152,795

Options to purchase the Company's common stock and unvested restricted and performance-based stock units aggregating 14.4 million shares were excluded from the computation of diluted loss per share for the three and nine months ended September 30, 2023 and 2022, because their effect would have been antidilutive.

As of September 30, 2023, the potential number of dilutive shares from the Warrants totaled 4,858,090 shares. However, there was no impact on weighted average shares outstanding from these Warrants for the three and nine months ended September 30, 2023 as the average share price of the Company's common stock in each period was below the exercise price of $3.77 per share and their effect would have been antidilutive.

Dividends payable on the Preferred Stock are not an adjustment to net income (loss) used for the calculation of diluted earnings (loss) per share as these dividends are included in the fair value adjustment of the Preferred Stock which is reflected in Other expense, net.

(3) INVENTORY

Inventory at September 30, 2023 and December 31, 2022 consisted of the following (in thousands):

	September 30, 2023	December 31, 2022
On-hand final assemblies and finished goods inventories	$ 87,503	$ 85,888
Deferred cost of goods sold	2,637	1,449
	90,140	87,337
Less noncurrent portion (included in Other assets)	(19,956)	(11,914)
Current portion	$ 70,184	$ 75,423

(4) INTANGIBLE ASSETS AND GOODWILL

The Company's intangible assets at September 30, 2023 and December 31, 2022 consisted of the following (in thousands):

September 30, 2023	Weighted average amortization period (years)	Cost	Accumulated amortization	Net carrying value
Developed technology	7.84	$ 340,380	$ 233,201	$ 107,179
Customer relationships	11.86	268,140	127,908	140,232
Trade names	3.88	5,000	4,875	125
Software licenses	3.00	5,236	1,719	3,517
	9.51	$ 618,756	$ 367,703	$ 251,053

December 31, 2022	Weighted average amortization period (years)	Cost	Accumulated amortization	Net carrying value
Developed technology	7.84	$ 340,380	$ 212,448	$ 127,932
Customer relationships	11.86	268,140	106,385	161,755
Trade names	3.88	5,000	4,658	342
Software licenses	3.00	5,186	487	4,699
	9.51	$ 618,706	$ 323,978	$ 294,728

Estimated future amortization expense for the Company's intangible assets at September 30, 2023 was as follows (in thousands):

Years ending December 31,	
Remainder of 2023	$ 13,162
2024	50,733
2025	44,022
2026	38,978
2027	33,936
2028	23,400
Thereafter	46,822
	$ 251,053

There were no changes to the carrying value of the Company's goodwill in the nine months ended September 30, 2023 and 2022. The components of goodwill at September 30, 2023 and 2022 were as follows (in thousands):

	Cloud and Edge	IP Optical Networks	Total
Balance at September 30, 2023			
Goodwill	$ 392,302	$ 191,996	$ 584,298
Accumulated impairment losses	(167,406)	(116,000)	(283,406)
	$ 224,896	$ 75,996	$ 300,892
Balance at September 30, 2022			
Goodwill	$ 392,302	$ 191,996	$ 584,298
Accumulated impairment losses	(167,406)	(116,000)	(283,406)
	$ 224,896	$ 75,996	$ 300,892

(5) INVESTMENTS AND FAIR VALUE HIERARCHY

The Company received debentures (the "Debentures") and warrants (the "AVCT Warrants") as sale consideration in connection with the sale of its Kandy Communications business on December 1, 2020 to American Virtual Cloud Technologies, Inc. ("AVCT"). The Debentures bore interest at a rate of 10% per annum, which was added to the principal amount of the Debentures. On September 8, 2021 (the "Debenture Conversion Date"), the Debentures were converted into 13,700,421 shares of AVCT common stock (the "Debenture Shares"). The AVCT Warrants entitled the Company to purchase 4,377,800 shares of AVCT common stock at an exercise price of $0.01 per share and were to expire on December 1, 2025. The Company's investment in AVCT (the "AVCT Investment") was comprised of the Debentures and AVCT Warrants for periods prior to the Debenture Conversion Date and the Debenture Shares and AVCT Warrants for periods subsequent to the Debenture Conversion Date. The Company recorded the AVCT Investment at fair value, with changes in fair value recorded as a component of Other (expense) income, net, in the condensed consolidated statements of operations.

On August 29, 2022, the Company and AVCT entered into a settlement agreement which provided for, amongst other things, the cancellation of the Company's investment in the Debenture Shares and the AVCT Warrants with an aggregate fair value of $2.6 million. Pursuant to the settlement agreements, the Company and AVCT also entered into a Wind Down Agreement, pursuant to which a Reseller Agreement between the parties, as previously amended, was terminated, and the Company was granted a non-exclusive perpetual license to use and modify certain intellectual property owned by AVCT comprising WebRTC gateway technology that is integrated with Ribbon’s SBCs and Application Servers. As consideration, the Company paid AVCT $2.5 million in cash, the Debenture Shares were redeemed and canceled, and the AVCT Warrants were terminated and canceled. The perpetual license granted by AVCT is classified as Intangible assets, net in the Company's condensed consolidated balance sheet as of September 30, 2023 and December 31, 2022 in the amount of $2.8 million and $3.9 million, respectively.

The Company had no investment in AVCT as of September 30, 2023 or December 31, 2022 due to the settlement agreement entered into on August 29, 2022. The Company recorded losses of $1.9 million and $41.3 million in the three and nine months ended September 30, 2022, respectively, representing the change in the fair value of the AVCT Investment.

The carrying amounts of the Company's financial instruments approximate their fair values and include cash equivalents, accounts receivable, accounts payable and borrowings under a revolving credit facility. Ribbon's term debt balance as of September 30, 2023 and December 31, 2022 of $240.4 million and $330.4 million, respectively, had a fair value of approximately $239.5 million and $323.0 million, respectively. Our Preferred Stock and Warrants liabilities had a combined fair value of $54.9 million as of September 30, 2023, including cumulative dividends on the Preferred Stock of $2.6 million.

Fair value is the price that would be received to sell an asset or paid to transfer a liability in an orderly transaction between market participants. As such, fair value is a market-based measurement that should be determined based on assumptions that market participants would use in pricing an asset or a liability. The three-tier fair value hierarchy is based on the level of independent, objective evidence surrounding the inputs used to measure fair value. A financial instrument's categorization within the fair value hierarchy is based upon the lowest level of input that is significant to the fair value measurement. The fair value hierarchy is as follows:

Level 1. Level 1 applies to assets or liabilities for which there are quoted prices in active markets for identical assets or liabilities.

Level 2. Level 2 applies to assets or liabilities for which there are inputs that are directly or indirectly observable in the marketplace, such as quoted prices for similar assets or liabilities in active markets or quoted prices for identical assets or liabilities in markets with insufficient volume or infrequent transactions (less active markets).

Level 3. Level 3 applies to assets or liabilities for which there are unobservable inputs to the valuation methodology that are significant to the measurement of the fair value of the assets or liabilities.

(6) ACCRUED EXPENSES AND OTHER

Accrued expenses at September 30, 2023 and December 31, 2022 consisted of the following (in thousands):

	September 30, 2023	December 31, 2022
Employee compensation and related costs	$ 29,363	$ 25,994
Professional fees	18,548	17,195
Taxes payable	8,066	8,152
Other	33,099	33,929
	$ 89,076	$ 85,270

(7) WARRANTY ACCRUALS

The changes in the Company's accrual balance in the nine months ended September 30, 2023 were as follows (in thousands):

Balance at January 1, 2023	$ 11,857
Current period provisions	4,207
Settlements	(4,070)
Balance at September 30, 2023	$ 11,994

(8) RESTRUCTURING AND FACILITIES CONSOLIDATION INITIATIVES

The Company recorded restructuring and related expense aggregating $2.7 million and $1.3 million in the three months ended September 30, 2023 and 2022, respectively, and $13.9 million and $9.0 million in the nine months ended September 30, 2023 and 2022, respectively. Restructuring and related expense includes restructuring expense (primarily severance and related costs), estimated future variable lease costs for vacated properties with no intent or ability of sublease, and accelerated rent amortization expense.

For restructuring events that involve lease assets and liabilities, the Company applies lease reassessment and modification guidance and evaluates the right-of-use assets for potential impairment. If the Company plans to exit all or distinct portions of a facility and does not have the ability or intent to sublease, the Company will accelerate the amortization of each of those lease components through the vacate date. The accelerated amortization is recorded as a component of Restructuring and related expense in the Company's condensed consolidated statements of operations. Related variable lease expenses will continue to be expensed as incurred through the vacate date, at which time the Company will reassess the liability balance to ensure it appropriately reflects the remaining liability associated with the premises and record a liability for the estimated future variable lease costs.

Accelerated amortization of lease assets is recognized from the date that the Company commences the plan to fully or partially vacate a facility, for which there is no intent or ability to enter into a sublease, through the final vacate date. Accelerated amortization of lease assets that are included as a component of restructuring and related expense are excluded from the restructuring accrual activity tables below, as the liability for lease payments for these facilities is included as a component of current and noncurrent Operating lease liabilities in the Company's condensed consolidated balance sheets at September 30, 2023 and December 31, 2022 (see Note 16). The Company may incur additional future expense if it is unable to sublease other locations included in the Company's facilities consolidation initiatives.

Restructuring and related expense for the three and nine months ended September 30, 2023 and 2022 was comprised of the following (in thousands):

	Three months ended		Nine months ended	
	September 30, 2023	September 30, 2022	September 30, 2023	September 30, 2022
Severance and related costs	$ 804	$ (358)	$ 9,355	$ 4,623
Variable and other facilities-related costs	1,653	$ 970	3,784	2,734
Accelerated amortization of lease assets due to cease-use	223	$ 657	785	1,620
	$ 2,680	$ 1,269	$ 13,924	$ 8,977

2023 Restructuring Plan

On February 22, 2023, the Company's Board of Directors approved a strategic restructuring program (the "2023 Restructuring Plan") to streamline the Company's operations in order to support the Company's investment in critical growth areas. The 2023 Restructuring Plan is expected to include, among other things, charges related to a workforce reduction. Any potential positions eliminated in countries outside the United States are subject to local law and consultation requirements.

The Company recorded restructuring and related expense of $0.9 million and $9.4 million in the three and nine months ended September 30, 2023, respectively, in connection with the 2023 Restructuring Plan entirely for severance related costs. A summary of the 2023 Restructuring Plan accrual activity for the nine months ended September 30, 2023 is as follows (in thousands):

	Balance at January 1, 2023	Initiatives charged to expense	Cash payments	Net transfer to operating lease accounts	Balance at September 30, 2023
Severance	$ —	$ 9,355	$ (7,994)	$ —	$ 1,361

2022 Restructuring Plan

On February 14, 2022, the Company's Board of Directors approved a strategic restructuring program (the "2022 Restructuring Plan") to streamline the Company's operations in order to support the Company's investment in critical growth areas. The 2022 Restructuring Plan includes, among other things, charges related to a consolidation of facilities and a workforce reduction. Any positions eliminated in countries outside the United States are subject to local law and consultation requirements.

The Company recorded restructuring and related expense of $1.9 million and $4.6 million in the three and nine months ended September 30, 2023, respectively, in connection with the 2022 Restructuring Plan. The amount for the three months ended September 30, 2023 was comprised of $1.7 million for facilities-related costs, and $0.2 million for accelerated amortization of lease assets no longer being used with no ability or intent to sublease. The amount for the nine months ended September 30, 2023 was comprised of $3.8 million for facilities-related costs and $0.8 million for accelerated amortization of lease assets no longer being used with no ability or intent to sublease. A summary of the 2022 Restructuring Plan accrual activity for the nine months ended September 30, 2023 is as follows (in thousands):

	Balance at January 1, 2023	Initiatives charged to expense	Cash payments	Net transfer to operating lease accounts	Balance at September 30, 2023
Severance	$ 1,164	$ —	$ (1,010)	$ —	$ 154
Variable and other facilities-related costs	890	3,784	(4,148)	—	526
Accelerated amortization of lease assets due to cease-use	—	785	—	(785)	—
	$ 2,054	$ 4,569	$ (5,158)	$ (785)	$ 680

Balance Sheet Classification

The current portions of accrued restructuring were $2.0 million and $1.3 million at September 30, 2023 and December 31, 2022, respectively, and are included as components of Accrued expenses in the condensed consolidated balance sheets. The long-term portions of accrued restructuring are included as components of Other long-term liabilities in the condensed consolidated balance sheets. The long-term portions of accrued restructuring were $1.2 million and $2.0 million at September 30, 2023 and December 31, 2022, respectively.

(9) DEBT

2020 Credit Facility

On March 3, 2020, the Company entered into a Senior Secured Credit Facilities Credit Agreement (as amended, the "2020 Credit Facility"), by and among the Company, as a guarantor, Ribbon Communications Operating Company, Inc., as the borrower ("Borrower"), Citizens Bank, N.A. ("Citizens"), Santander Bank, N.A., and others as lenders ("Lenders"). The proceeds from the Credit Agreement were used, in part, to pay off in full all obligations of the Company under the 2019 Credit Facility.

The 2020 Credit Facility originally provided for $500 million of commitments from the Lenders to the Borrower, comprised of $400 million in term loans (the "2020 Term Loan Facility") and a $100 million facility available for revolving loans (the "2020 Revolving Credit Facility"). Under the 2020 Revolving Credit Facility, a $30 million sublimit was originally available for letters of credit and a $20 million sublimit is available for swingline loans.

The indebtedness and other obligations under the 2020 Credit Facility are unconditionally guaranteed on a senior secured basis by the Company, Edgewater Networks, Inc., a wholly-owned subsidiary of the Company, and GENBAND Inc., a wholly-owned subsidiary of the Company (together, the "Guarantors"). The 2020 Credit Facility is secured by first-priority liens on substantially all of the assets of the Borrower and the Guarantors, including substantially all of the assets of the Company.

The 2020 Credit Facility requires compliance with certain financial covenants, including a minimum Consolidated Fixed Charge Coverage Ratio and a maximum Consolidated Net Leverage Ratio (each as defined in the 2020 Credit Facility, and each tested on a quarterly basis).

On August 18, 2020, the Company entered into the First Amendment to the 2020 Credit Facility in which $75 million of the 2020 Term Loan Facility was assigned from Citizens to a new lender and designated as the Term B Loan. The remaining $325 million of the 2020 Term Loan Facility was deemed the Term A Loan.

The Term A Loan and the 2020 Revolving Credit Facility mature in March 2025 and originally bore interest at the Borrower's option at either the LIBOR rate plus a margin ranging from 1.50% to 3.50% per year, or the base rate plus 0.50%, or the prime rate plus a margin ranging from 0.50% to 2.50% per year (the "Applicable Margin"). The Applicable Margin varied depending on the Company's Consolidated Net Leverage Ratio (as defined in the 2020 Credit Facility).

The Term B Loan was scheduled to mature in March 2026 and bore interest, at the Borrower's option, at either the LIBOR rate plus a margin of 7.50% per year, or the base rate (the highest of the Federal Funds Effective Rate (as defined in the First Amendment) plus 0.50%, or the prime rate.

On December 1, 2020, the Company entered into the Second Amendment to the 2020 Credit Facility to obtain consent for an equity exchange with AVCT in connection with the sale of our Kandy Communications business, as well as to amend certain other provisions of the 2020 Credit Facility.

On March 3, 2021, the Company entered into the Third Amendment to the 2020 Credit Facility which provided for an incremental term loan facility in the principal amount of $74.6 million, the proceeds of which were used to consummate an open market purchase of all outstanding amounts under the Term B Loan, resulting in the assignment and immediate cancellation of the Term B Loan, such that the outstanding amount under the Term A Loan and incremental term loan facility were combined and held by the Lenders (the "2020 Term Loan") with the same terms as the Term A Loan. The Company wrote off $2.5 million of capitalized debt issuance costs in connection with the Third Amendment.

On March 10, 2022, the Company entered into the Fourth Amendment to the 2020 Credit Facility to increase the Maximum Consolidated Net Leverage Ratio (as defined in the 2020 Credit Facility) and in conjunction the Company made a $15.0 million prepayment that was applied to the final payment due on the maturity date.

On June 30, 2022, the Company entered into the Fifth Amendment to the 2020 Credit Facility (the "Fifth Amendment") to increase the Maximum Consolidated Net Leverage Ratio (as defined in the 2020 Credit Facility) for 2022, with the fourth quarter of 2022 increased to 4.75:1.00, the 1st and 2nd quarters of 2023 declining to 3.25:1.00, and in all subsequent quarters the ratio was to be fixed at 3.00:1.00. Also, the Fifth Amendment reduced the minimum Consolidated Fixed Charge Coverage Ratio (as defined in the 2020 Credit Facility) in 2022, with the fourth quarter of 2022 reduced to 1.10:1.00 and in all subsequent quarters the ratio was to be fixed at 1.25:1.00. In addition, the Fifth Amendment increased the maximum rate at which loans were to bear interest if the Company's Consolidated Net Leverage Ratio for any quarter was greater than 4.50:1.00. Specifically, loans incurred would bear interest, at the Borrower's option, at either LIBOR plus a margin ranging from 1.50% to 4.50% per year, or the base rate plus 0.50%, or the prime rate plus a margin ranging from 0.50% to 3.50% per year. The Fifth Amendment also allows the Company to incur junior secured or unsecured debt in an amount no less than $50 million, subject to certain conditions, including the requirement that 50% of the aggregate amount of such incurred debt (net of certain costs, fees and other amounts) must be applied to prepay the 2020 Credit Facility, and compliance with certain leverage ratio-based covenant exceptions. In connection with the Fifth Amendment, the Company made a $10.0 million voluntary prepayment that was applied to the final payment due on the maturity date. Subsequent to the Fifth Amendment, the Company is required to make quarterly principal payments on the 2020 Term Loan aggregating approximately $5.0 million per quarter through March 31, 2024 and $10.0 million in each of the three quarters thereafter, with the remaining and final payment due on the maturity date in March 2025.

On March 24, 2023, the Company entered into the Sixth Amendment to the 2020 Credit Facility (the "Sixth Amendment") effective March 30, 2023. The Sixth Amendment, among other things, increased the Maximum Consolidated Net Leverage Ratio (as defined in the 2020 Credit Facility), with the first, second and third quarters of 2023 increasing to 4.50:1.00. In the fourth quarter of 2023 and the first quarter of 2024, the Maximum Consolidated Net Leverage Ratio declines to 4.25:1.00 and 4.00:1.00, respectively. In all subsequent quarters, the Maximum Consolidated Senior Net Leverage Ratio will be fixed at 3.00:1.00 and the Maximum Consolidated Net Leverage Ratio will be fixed at 4.00:1.00. Also, the Sixth Amendment reduced the minimum Consolidated Fixed Charge Coverage Ratio (as defined in the 2020 Credit Facility) to 1.10:1.00 through the first quarter of 2024 and in all subsequent quarters the ratio will be fixed at 1.25:1.00. The Sixth Amendment reduced the maximum borrowings allowed under the 2020 Revolving Credit Facility from $100 million to $75 million and the sublimit available for letters of credit was reduced from $30 million to $20 million. In addition, the Sixth Amendment replaced LIBOR with the Secured Overnight Financing Rate ("SOFR") as the alternative rate that may be used by the Company for calculating interest owed under the 2020 Credit Facility with the margin now fixed at 4.5%. In conjunction with the Sixth Amendment, the Company made a $75 million prepayment that was applied to the final payment due upon maturity in March 2025 of approximately $200.3 million. The $75 million prepayment was almost entirely funded with the net proceeds from the Private Placement and the sales of our interest rate swap. Debt issuance costs associated with the Sixth Amendment totaled $1.7 million and are being amortized on a straight line basis over the remaining life of the 2020 Credit Facility to Interest expense, net.

The Company's interest rates under the 2020 Term Loan for the nine months ended September 30, 2023 and 2022 benefited from a hedge instrument that was in place, specifically a fixed rate swap, which was sold in March 2023 (see Note 10). As a result of the fixed rate swap sold in March 2023, the ongoing interest rate is based upon U.S. dollar SOFR plus a fixed margin of 4.5%. The Company was in compliance with all covenants of the 2020 Credit Facility at both September 30, 2023 and December 31, 2022, including the current Consolidated Net Leverage Ratio calculation that considers the Company's debt to include Preferred Stock.

The Company had the following outstanding borrowings, unamortized debt issuance costs, letters of credit, interest rates, and remaining borrowing capacity under the 2020 Credit Facility as of September 30, 2023 and December 31, 2022:

	September 30, 2023	December 31, 2022
Revolving Credit Facility	$ 10,000	$ —
Current portion of Term Debt	$ 30,087	$ 20,058
Long-term Debt, net of Current:		
Long-term Debt, net of Current (Face Amount)	$ 210,323	$ 310,395
Unamortized Debt Issuance Costs - Contra-Liability	(3,415)	(4,125)
Long-term Debt, net of Current	$ 206,908	$ 306,270
Total Face Amount of Borrowings	$ 250,410	$ 330,453
Unamortized Debt Issuance Costs:		
Other Assets	$ 677	$ 798
Long-Term Debt - Contra Liability	3,415	4,125
Total Unamortized Debt Issuance Costs	$ 4,092	$ 4,923
Letters of Credit Outstanding	$ 2,985	$ 3,272
Remaining Borrowing Capacity	$ 62,015	$ 96,728
Average Interest Rates:		
Revolving Credit Facility	9.9 %	-
Term Loan	9.9 %	5.4 %
Letters of Credit	4.5 %	4.5 %

The Company's debt maturities as of September 30, 2023 were as follows:

Years ending December 31,	
Remainder of 2023	$ 15,015
2024	35,102
2025	200,293
	$ 250,410

Letters of Credit and Other Guarantees

The Company uses letters of credit and performance and bid bonds in the course of its business. At September 30, 2023, the Company had $6.7 million of letters of credit, bank guarantees, and performance and bid bonds outstanding (collectively, "Guarantees"), comprised of the $3.0 million of letters of credit under the 2020 Credit Facility described above (the "Letters of Credit") and $3.7 million of bank guarantees and performance and bid bonds (collectively, the "Other Guarantees") under various uncommitted facilities. At December 31, 2022, the Company had Guarantees aggregating $8.3 million, comprised of the $3.3 million of Letters of Credit noted above and $5.0 million of Other Guarantees.

(10) DERIVATIVE INSTRUMENTS AND HEDGING ACTIVITIES

The Company is exposed to financial market risk related to foreign currency fluctuations and changes in interest rates. These exposures are actively monitored by management. To manage the volatility related to the exposure to changes in interest rates, the Company may enter into derivative financial instruments. Management's objective has been to reduce, where it is deemed appropriate to do so, fluctuations in earnings and cash flows associated with changes in interest rates. Ribbon's policies and practices are to use derivative financial instruments only to the extent necessary to manage exposures. Ribbon does not hold or issue derivative financial instruments for trading or speculative purposes.

The Company records derivatives on the balance sheet at fair value. The accounting for changes in the fair value of derivatives depends on the intended use of the derivative, whether the Company has elected to designate a derivative in a hedging relationship and apply hedge accounting and whether the hedging relationship has satisfied the criteria necessary to apply hedge accounting. Derivatives designated and qualifying as a hedge of the exposure to changes in the fair value of an asset, liability, or firm commitment attributable to a specific risk, such as interest rate risk, are considered fair value hedges. Derivatives designated and qualifying as a hedge of the exposure to variability in expected future cash flows, or other types of forecasted transactions, are considered cash flow hedges. Derivatives may also be designated as hedges of the foreign currency exposure of a net investment in a foreign operation. Hedge accounting generally provides for the matching of the timing of gain or loss recognition on the hedging instrument with the recognition of the changes in the fair value of the hedged asset or liability that are attributable to the hedged risk in a fair value hedge, or the earnings effect of the hedged forecasted transactions in a cash flow hedge. The Company may enter into derivative contracts that are intended to economically hedge certain of its risk even though hedge accounting does not apply or the Company elects not to apply hedge accounting.

Cash Flow Hedge of Interest Rate Risk

The 2020 Term Loan Facility had outstanding balances of $240.4 million and $330.4 million at September 30, 2023 and December 31, 2022, respectively. The 2020 Revolving Credit Facility had an outstanding balance of $10.0 million at September 30, 2023 and was undrawn at December 31, 2022. Borrowings under the 2020 Credit Facility have variable interest rates based on LIBOR or SOFR (see Note 9). As a result of exposure to interest rate movements, during March 2020, the Company entered into an interest rate swap arrangement, which effectively converted its $400 million term loan with its variable interest rate based upon one-month LIBOR to an aggregate fixed rate of 0.904%, plus a leverage-based margin as defined in the 2020 Credit Facility.

On July 22, 2022, the Company sold $30 million of the notional amount of its interest rate swap back to its counterparty for $1.5 million, reducing the notional amount of this swap to $370 million. On August 16, 2022 the Company sold another $30 million of the notional amount of its interest rate swap back to its counterparty for $1.6 million, reducing the notional amount to $340 million, which approximated the current level of our term loan debt then outstanding. The gain in accumulated other comprehensive (loss) income related to the $60 million notional amount sold of $3.1 million is being released into earnings on a straight line basis over the remaining term of the 2020 Credit Facility as a decrease to interest expense, the amortization of which totaled $0.2 million and $0.7 million for the three and nine months ended September 30, 2023, respectively.

On March 24, 2023, the Company received $9.4 million, consisting of $0.4 million of interest and $9.0 million for the sale of $170 million of its $340 million notional amount interest rate swap back to its counterparty, reducing the notional amount to $170 million. On March 27, 2023, the Company received $9.8 million, consisting of $0.4 million of interest and $9.4 million for the sale of the remaining $170 million of its interest rate swap back to its counterparty. The portion of the gain in accumulated other comprehensive (loss) income related to the term loan debt prepaid on the date of the final sale of our swap totaled $7.3 million and was released into earnings immediately as Other expense, net. The portion of the gain in accumulated other comprehensive (loss) income related to our remaining term loan debt balance was $12.0 million and is being released into earnings on a straight line basis over the remaining term of the 2020 Credit Facility as a decrease to interest expense, the amortization of which totaled $1.5 million and $3.1 million for the three and nine months ended September 30, 2023, respectively.

The Company’s objectives in using interest rate derivatives have been to add stability to interest expense and to manage its exposure to interest rate movements. To accomplish this objective, the Company has used an interest rate swap as part of its interest rate risk management strategy. Interest rate swaps designated as cash flow hedges involve the receipt of variable amounts from a counterparty in exchange for the Company making fixed-rate payments over the life of the related agreements without exchange of the underlying notional amount.

The effective portion of changes in the fair value of designated derivatives that qualify as cash flow hedges is recorded in accumulated other comprehensive income in the condensed consolidated balance sheet and is subsequently reclassified into earnings in the period that the hedged forecasted transactions affect earnings. During the nine months ended September 30, 2023 and 2022, such a derivative was used to hedge the variable cash flows associated with the outstanding borrowings under the 2020 Credit Facility and the Company has accounted for this derivative as an effective hedge until the final portion of the swap was sold on March 27, 2023. Any ineffective portion of the change in the fair value of the derivative was recognized directly in earnings.

Amounts reported in accumulated other comprehensive income related to the Company's derivative are reclassified to interest expense as interest is accrued on the Company’s variable-rate debt. The impact of the Company’s derivative financial instrument on its condensed consolidated statements of comprehensive (loss) income for the three and nine months ended September 30, 2023 and 2022 was as follows, net of tax (in thousands):

	Three months ended		Nine months ended	
	September 30, 2023	September 30, 2022	September 30, 2023	September 30, 2022
Gain (loss) recognized in other comprehensive income (loss) on derivative, net of tax	$ —	$ 3,056	$ (2,715)	$ 21,685
Amount reclassified from accumulated other comprehensive income (loss) to other expense, net upon sale of swap, net of tax	—	—	(5,099)	—
Amount reclassified from accumulated other comprehensive income (loss) to interest expense	(1,322)	(1,330)	(5,829)	(437)
	$ (1,322)	$ 1,726	$ (13,643)	$ 21,248

The Company had no derivative assets or liabilities at September 30, 2023. The fair values and locations in the condensed consolidated balance sheets at December 31, 2022 of the Company's derivative assets (liabilities) designated as a hedging instrument were as follows (in thousands):

	Balance sheet location	December 31, 2022
Interest rate derivative - asset derivative	Other current assets	$ 13,212
Interest rate derivative - asset derivative	Other assets	12,216
		$ 25,428

The Company classified the interest rate derivative aggregating $25.4 million at December 31, 2022, as Level 2 fair value measurements within the fair value hierarchy (see Note 5).

(11) PREFERRED STOCK AND WARRANTS

On March 28, 2023, the Company issued 55,000 shares of Preferred Stock to investors in the Private Placement at a price of $970 per share, along with 4,858,090 Warrants with an exercise price of $3.77 per share.

The Company accounts for the Preferred Stock and Warrants as liability-classified instruments based on an assessment of their specific terms in accordance with ASC Topic 480, *Distinguishing Liabilities from Equity*. The fair value option was elected for the Preferred Stock, as the Company considers fair value to best reflect the expected future economic value. These liabilities are remeasured to fair value at each reporting date using the same valuation methodology applied upon issuance using current input assumptions.

The value of the Preferred Stock is calculated using the Black-Derman-Toy (BDT) stochastic yield lattice model to capture the optimal timing of repayment, increasing dividend rate and other features and the value of the Warrants is calculated using the Black-Scholes Pricing Model.

Changes in the fair value of the Preferred Stock and Warrants are reported as Other expense, net in the Company's condensed consolidated statements of operations.

The fair value of the Preferred Stock and Warrants are determined using Level 3 input and the key inputs into the models utilized were as follows as of September 30, 2023:

	Preferred Stock (BDT)
Face value per share	$1,000
Interest payments per year	4
Dividend rate - year 1 (paid in-kind)	9.25%
Dividend rate - year 2 (paid in-kind or in cash at the Company's choice)	9.75%
Dividend rate - thereafter (paid in cash)	12.00%
Yield volatility	25.0%
Time to maturity (in years)	2.0

	Warrants (Black-Scholes)
Stock price	$2.68
Strike price	$3.77
Risk-free rate	4.69%
Volatility	61.9%
Dividend yield	0.0%
Time to expiration (years)	3.5

The changes in the Company's Preferred Stock and Warrant liabilities from issuance in March 2023 through September 30, 2023 were as follows (in thousands):

	Preferred stock liability
Balance at March 31, 2023	$ 47,854
Cumulative dividends	2,573
Fair value change	(572)
Balance at September 30, 2023	$ 49,855

	Warrant liability
Balance at March 31, 2023	$ 5,496
Fair value change	(444)
Balance at September 30, 2023	$ 5,052

The Preferred Stock is subordinate to Company indebtedness and senior to the Company’s common stock or other equity. Holders of the Preferred Stock are entitled to cumulative dividends that accrue quarterly through the September 30, 2025 maturity date. Dividends are payable in-kind during the first year at a rate of 9.25%. At the Company’s option, the dividends are payable in-kind or in cash during the second year at a rate of 9.75%. Dividends thereafter are payable in cash at a rate of 12.00%. The proceeds from the Preferred Stock issuance were approximately $53.4 million, including $10.0 million from existing related party stockholders. Offering costs paid by the Company of approximately $3.5 million were recorded in Other expense, net in our condensed consolidated statement of operations in the three months ended March 31, 2023. The net proceeds from the Private Placement were used for the repayment of debt. The Preferred Stock is redeemable on or after the first and second anniversaries of the closing date at a rate of 103% and 102%, respectively.

The Warrants are immediately exercisable and upon an event such as a merger, consolidation, asset sale or similar change of control, the Warrants may be exercised and the holders may vote the underlying shares of common stock. In connection with the Private Placement, the Company provided the investors with certain registration rights relating to the Preferred Stock, the Warrants and the shares of the Company’s common stock underlying the Warrants, that required the Company to file a registration statement on Form S-3 with the SEC within 30 days following the closing date of the Private Placement. The registration requirement was completed on May 19, 2023.

(12) REVENUE RECOGNITION

The Company derives revenue from two primary sources: products and services. Product revenue includes the Company's hardware and software that function together to deliver the products' essential functionality. Software and hardware are also sold on a standalone basis. Services include customer support (software updates, upgrades and technical support), consulting, design services, installation services and training. Generally, contracts with customers contain multiple performance obligations, consisting of products and services. For these contracts, the Company accounts for individual performance obligations separately if they are considered distinct.

When an arrangement contains more than one performance obligation, the Company will allocate the transaction price to each performance obligation on a relative standalone selling price basis. The Company utilizes the observable price of goods and services when they are sold separately to similar customers in order to estimate standalone selling price.

The Company's software licenses typically provide a perpetual right to use the Company's software. The Company also sells term-based software licenses that expire and Software-as-a-Service ("SaaS")-based software which are referred to as subscription arrangements. The Company does not customize its software nor are installation services required, as the customer has a right to utilize internal resources or a third-party service company. The software and hardware are delivered before related services are provided and are functional without professional services or customer support. The Company has concluded that its software licenses are functional intellectual property that are distinct, as the user can benefit from the software on its own. Product revenue is typically recognized upon transfer of control or when the software is made available for download, as this is the point the user of the software can direct the use of, and obtain substantially all of the remaining benefits from, the functional intellectual property. The Company begins to recognize software revenue related to the renewal of subscription software licenses at the start of the subscription period.

The Company offers warranties on its products. Certain of the Company's warranties are considered to be assurance-type in nature, ensuring the product is functioning as intended. Assurance-type warranties do not represent separate performance obligations. The Company also sells separately-priced maintenance service contracts which qualify as service-type warranties and represent separate performance obligations. The Company does not allow and has no history of accepting product returns.

Services revenue includes revenue from customer support and other professional services. Customer support includes software updates on a when-and-if-available basis, telephone support, integrated web-based support and bug fixes or patches. The Company sells its customer support contracts at a percentage of list or net product price. Customer support revenue is recognized ratably over the term of the customer support agreement, which is typically one year.

The Company's professional services include consulting, technical support, resident engineer services, design services and installation services. Because control transfers over time, revenue is recognized based on progress toward completion of the performance obligation. The method to measure progress toward completion requires judgment and is based on the nature of the products or services to be provided. The Company generally uses the input method to measure progress for its contracts because it believes such method best depicts the transfer of assets to the customer, which occurs as the Company incurs costs for the contracts. However, in some instances, the Company uses the output method because it best depicts the transfer of asset to the customer. Under the cost-to-cost measure of progress, the progress toward completion is measured based on the ratio of costs incurred to date to the total estimated costs at completion of the performance obligation. When the measure of progress is based upon expended labor, progress toward completion is measured as the ratio of labor time expended to date versus the total estimated labor time required to complete the performance obligation. Revenue is recorded proportionally as costs are incurred or as labor is expended. Costs to fulfill these obligations include internal labor as well as subcontractor costs.

Customer training includes courses offered by the Company. The related revenue is typically recognized as the training services are performed.

The Company's typical performance obligations include the following:

Performance Obligation	When Performance Obligation is Typically Satisfied	When Payment is Typically Due
Software and Product Revenue		
Software licenses (perpetual or term)	Upon transfer of control; typically, when made available for download (point in time)	Generally, within 30 days of invoicing except for term licenses, which may be paid for over time
Software licenses (subscription)	Upon activation of hosted site (over time)	Generally, within 30 days of invoicing
Hardware	When control of the hardware passes to the customer; typically, upon delivery (point in time)	Generally, within 30 days of invoicing
Software upgrades	Upon transfer of control; typically, when made available for download (point in time)	Generally, within 30 days of invoicing
Customer Support Revenue		
Customer support	Ratably over the course of the support contract (over time)	Generally, within 30 days of invoicing
Professional Services		
Other professional services (excluding training services)	As work is performed (over time)	Generally, within 30 days of invoicing (upon completion of services)
Training	When the class is taught (point in time)	Generally, within 30 days of services being performed

Significant Judgments

The Company's contracts with customers often include promises to transfer multiple products and services to the customer. Determining whether products and services are considered distinct performance obligations that should be accounted for separately versus together may require significant judgment.

Judgment is required to determine the standalone selling price ("SSP") for each distinct performance obligation. The Company typically has more than one SSP for individual products and services due to the stratification of those products and services by customers and circumstances. In these instances, the Company may use information such as the size of the customer and geographic region in determining the SSP.

Deferred Revenue

Deferred revenue is a contract liability representing amounts collected from or invoiced to customers in excess of revenue recognized. This results primarily from the billing of annual customer support agreements where the revenue is recognized over the term of the agreement. The value of deferred revenue will increase or decrease based on the timing of recognition of revenue.

Disaggregation of Revenue

The Company disaggregates its revenue from contracts with customers based on the nature of the products and services and the geographic regions in which each customer is domiciled. The Company's revenue for the three and nine months ended September 30, 2023 and 2022 was disaggregated as follows:

Three months ended September 30, 2023	Product revenue	Service revenue (maintenance)	Service revenue (professional services)	Total revenue
United States	$ 40,162	$ 33,454	$ 12,440	$ 86,056
Europe, Middle East and Africa	31,969	18,268	8,120	58,357
Asia Pacific	32,070	10,016	3,043	45,129
Other	4,300	7,534	1,785	13,619
	$ 108,501	$ 69,272	$ 25,388	$ 203,161

Three months ended September 30, 2022	Product revenue	Service revenue (maintenance)	Service revenue (professional services)	Total revenue
United States	$ 42,373	$ 32,980	$ 11,684	$ 87,037
Europe, Middle East and Africa	42,454	20,022	7,147	69,623
Asia Pacific	19,077	11,382	3,186	33,645
Other	7,248	7,605	1,969	16,822
	$ 111,152	$ 71,989	$ 23,986	$ 207,127

Nine months ended September 30, 2023	Product revenue	Service revenue (maintenance)	Service revenue (professional services)	Total revenue
United States	$ 131,774	$ 100,417	$ 35,135	$ 267,326
Europe, Middle East and Africa	88,235	56,393	22,374	167,002
Asia Pacific	89,495	29,552	8,456	127,503
Other	9,662	23,126	5,319	38,107
	$ 319,166	$ 209,488	$ 71,284	$ 599,938

Nine months ended September 30, 2022	Product revenue	Service revenue (maintenance)	Service revenue (professional services)	Total revenue
United States	$ 128,056	$ 99,090	$ 33,689	$ 260,835
Europe, Middle East and Africa	95,392	56,464	20,503	172,359
Asia Pacific	64,471	31,178	10,791	106,440
Other	17,890	23,320	5,277	46,487
	$ 305,809	$ 210,052	$ 70,260	$ 586,121

The Company's product revenue from indirect sales through its channel partner program and from its direct sales program for the three and nine months ended September 30, 2023 and 2022 was as follows (in thousands):

	Three months ended		Nine months ended	
	September 30, 2023	September 30, 2022	September 30, 2023	September 30, 2022
Indirect sales through channel partner program	$ 35,950	$ 34,382	$ 109,454	$ 86,335
Direct sales	72,551	76,770	209,712	219,474
	$ 108,501	$ 111,152	$ 319,166	$ 305,809

The Company's product revenue from sales to enterprise customers and from sales to service provider customers for the three and nine months ended September 30, 2023 and 2022 was as follows (in thousands):

	Three months ended		Nine months ended	
	September 30, 2023	September 30, 2022	September 30, 2023	September 30, 2022
Sales to enterprise customers	$ 32,044	$ 33,136	$ 97,163	$ 78,056
Sales to service provider customers	76,457	78,016	222,003	227,753
	$ 108,501	$ 111,152	$ 319,166	$ 305,809

The Company's product revenue and service revenue components by segment for the three and nine months ended September 30, 2023 and 2022, respectively were as follows (in thousands):

	Three months ended		Nine months ended	
	September 30, 2023	September 30, 2022	September 30, 2023	September 30, 2022
Product revenue:				
Cloud and Edge	$ 42,305	$ 51,321	$ 137,496	$ 153,081
IP Optical Networks	66,196	59,831	181,670	152,728
Total product revenue	$ 108,501	$ 111,152	$ 319,166	$ 305,809
Service revenue:				
Maintenance:				
Cloud and Edge	$ 55,004	$ 55,686	$ 164,848	$ 165,895
IP Optical Networks	14,268	16,303	44,640	44,157
Total maintenance revenue	69,272	71,989	209,488	210,052
Professional services:				
Cloud and Edge	18,456	17,678	53,157	52,595
IP Optical Networks	6,932	6,308	18,127	17,665
Total professional services revenue	25,388	23,986	71,284	70,260
Total service revenue	$ 94,660	$ 95,975	$ 280,772	$ 280,312

Revenue Contract Balances

The timing of revenue recognition, billings and cash collections results in billed accounts receivable; unbilled receivables, which are contract assets; and customer advances and deposits, which are contract liabilities, in the Company's condensed consolidated balance sheets. Amounts are billed as work progresses in accordance with agreed-upon contractual terms, either at periodic intervals or upon achievement of contractual milestones. Completion of services and billing may occur subsequent to revenue recognition, resulting in contract assets. The Company may receive advances or deposits from its customers before revenue is recognized, resulting in contract liabilities that are classified as deferred revenue. These assets and liabilities are reported in the Company's condensed consolidated balance sheets on a contract-by-contract basis as of the end of each reporting period. Changes in the contract asset and liability balances during the nine months ended September 30, 2023 were not materially impacted by any factors other than billing and revenue recognition. Nearly all of the Company's deferred revenue balance is related to services revenue, primarily customer support contracts. Unbilled receivables stem primarily from engagements where services have been performed; however, billing cannot occur until services are completed.

In some arrangements, the Company allows customers to pay for term-based software licenses and products over the term of the software license. The Company also sells SaaS-based software under subscription arrangements, with payment terms over the term of the SaaS agreement. Amounts recognized as revenue in excess of amounts billed are recorded as unbilled receivables. Unbilled receivables that are anticipated to be invoiced in the next twelve months are included in Accounts receivable on the Company's condensed consolidated balance sheets. The changes in the Company's accounts receivable, unbilled receivables and deferred revenue balances for the nine months ended September 30, 2023 were as follows (in thousands):

	Accounts receivable	Unbilled accounts receivable	Deferred revenue (current)	Deferred revenue (long-term)
Balance at January 1, 2023	$ 170,969	$ 96,275	$ 113,939	$ 19,254
Increase (decrease), net	(15,120)	(9,941)	(6,403)	(1,389)
Balance at September 30, 2023	$ 155,849	$ 86,334	$ 107,536	$ 17,865

The Company recognized approximately $92 million of revenue in the nine months ended September 30, 2023 that was recorded as deferred revenue at December 31, 2022 and approximately $85 million of revenue in the nine months ended September 30, 2022 that was recorded as deferred revenue at December 31, 2021. Of the Company's deferred revenue reported as long-term in its condensed consolidated balance sheet at September 30, 2023, the Company expects that approximately $4 million will be recognized as revenue in 2024, approximately $9 million will be recognized as revenue in 2025 and approximately $5 million will be recognized as revenue in 2026 and beyond.

All freight-related customer invoicing is recorded as revenue, while the shipping and handling costs that occur after control of the promised goods or services transfer to the customer are reported as fulfillment costs, a component of Cost of revenue - product in the Company's condensed consolidated statements of operations.

Deferred Commissions Cost

Sales commissions earned by the Company's employees are considered incremental and recoverable costs of obtaining a contract with a customer. Expense related to commission payments has been deferred on our condensed consolidated balance sheet and is being amortized over the expected life of the customer contract, which averages five years. The current and long-term portions of deferred commission expense are included as components of Other current assets and Other assets, respectively. The Company had capitalized deferred sales commissions of $3.4 million and $3.6 million as of September 30, 2023 and December 31, 2022, respectively.

(13) OPERATING SEGMENT INFORMATION

The Company has two reportable segments, which are intended to align with the manner in which the business is managed: Cloud and Edge, and IP Optical Networks.

The Cloud and Edge segment provides secure and reliable software and hardware products, solutions and services for enabling Voice over Internet Protocol ("VoIP") communications, Voice over Long-Term Evolution ("VoLTE") and Voice Over 5G ("VoNR") communications, and Unified Communications and Collaboration ("UC&C") within service provider and enterprise networks and from the cloud. The Cloud and Edge products are increasingly software-centric and cloud-native for deployment on private, public or hybrid cloud infrastructures, in data centers, on enterprise premises and within service provider networks. Ribbon's Cloud and Edge product portfolio consists primarily of its Session Border Controller ("SBC") products and its Network Transformation ("NTR") products.

The IP Optical Networks segment provides high-performance, secure solutions for IP networking and optical transport, supporting wireless networks including 5G, metro and edge aggregation, core networking, data center interconnect, legacy transformation and transport solutions for wholesale carriers. This portfolio is offered to service provider, enterprise and industry verticals with critical transport network infrastructures including utilities, government, defense, transportation, and education and research.

The Company has not provided segment asset information as such information is not provided to the CODM and accordingly, asset information is not used in assessing segment performance. Segment revenue and expenses included in the tables below represent direct revenue and expense attributable to each segment. Please see Note 4 for information regarding the allocation of goodwill between segments.

The CODM utilizes revenue and adjusted gross profit to measure and assess each segment's performance. The Company calculates adjusted gross profit by excluding from cost of revenue: amortization of acquired technology and stock-based compensation, and may also exclude other items in future periods that the Company believes are not part of the Company's core business. Adjusted gross profit is not a financial measure determined in accordance with U.S. GAAP and may not be comparable to similarly titled measures used by other companies, and should not be considered a substitute for gross profit or other results reported in accordance with U.S. GAAP. See below for a reconciliation of adjusted gross profit to gross profit, which is the most directly comparable U.S. GAAP measure.

The tables below provide information regarding revenue, adjusted gross profit, and depreciation expense by reportable segment for the three and nine months ended September 30, 2023 and 2022 (in thousands):

	Three months ended		Nine months ended	
	September 30, 2023	September 30, 2022	September 30, 2023	September 30, 2022
Segment revenue:				
Cloud and Edge	$ 115,765	$ 124,685	$ 355,501	$ 371,571
IP Optical Networks	87,396	82,442	244,437	214,550
Revenue	$ 203,161	$ 207,127	$ 599,938	$ 586,121

	Three months ended		Nine months ended	
	September 30, 2023	September 30, 2022	September 30, 2023	September 30, 2022
Segment adjusted gross profit:				
Cloud and Edge	$ 78,455	$ 81,524	$ 231,729	$ 243,196
IP Optical Networks	32,862	31,287	78,613	69,556
Total segment adjusted gross profit	111,317	112,811	310,342	312,752
Stock-based compensation expense	(657)	(725)	(1,982)	(1,906)
Amortization of acquired technology	(7,157)	(7,768)	(21,985)	(23,923)
Gross profit	$ 103,503	$ 104,318	$ 286,375	$ 286,923

	Three months ended		Nine months ended	
	September 30, 2023	September 30, 2022	September 30, 2023	September 30, 2022
Segment depreciation expense:				
Cloud and Edge	$ 2,426	$ 2,753	$ 7,402	$ 8,153
IP Optical Networks	1,118	1,162	3,201	3,535
Depreciation expense	$ 3,544	$ 3,915	$ 10,603	$ 11,688

(14) MAJOR CUSTOMERS

The following customers contributed 10% or more of the Company's revenue in the three and nine months ended September 30, 2023 and 2022:

	Three months ended		Nine months ended	
	September 30, 2023	September 30, 2022	September 30, 2023	September 30, 2022
Verizon Communications Inc.	11%	13%	11%	16%
AT&T	*	10%	*	*
* Less than 10% of total revenue.				

At September 30, 2023 and December 31, 2022, no customer accounted for 10% or more of the Company's accounts receivable balance. The Company performs ongoing credit evaluations of its customers and generally does not require collateral on accounts receivable. The Company maintains an allowance for doubtful accounts and such losses have historically been within management's expectations.

(15) STOCK-BASED COMPENSATION PLANS

The Company grants stock-based compensation to employees, officers and non-employee directors, as well as consultants and advisors of the Company and its subsidiaries under its Amended and Restated 2019 Incentive Award Plan, as amended which provides for the award of stock options, stock appreciation rights, restricted stock awards ("RSAs"), performance-based stock awards, restricted stock units ("RSUs"), performance-based stock units ("PSUs") and other stock- or cash-based awards.

Executive Equity Arrangements

Inducement Awards

In connection with his appointment as President and Chief Executive Officer of Ribbon on March 16, 2020, the Company awarded Bruce McClelland sign-on equity grants, comprised of RSUs and a PSU grant with both market and service conditions.

Performance-Based Stock Grants

In addition to granting RSAs and RSUs to its executives and certain of its employees, the Company also grants PSUs to certain of its executives and certain other employees. Vesting periods for RSAs, RSUs, and PSUs granted range from one to three years. PSUs granted consist of 60% that have both performance and service conditions (the "Performance PSUs") and 40% that have both market and service conditions (the "Market PSUs"). Each Performance PSU is comprised of three consecutive fiscal year performance periods beginning in the year of grant, with one-third of the Performance PSUs attributable to each fiscal year performance period. The Market PSUs have one three-year performance period, beginning January 1 in the year of grant and ending on December 31, three years thereafter. The number of shares of common stock underlying the PSUs that can be earned will not exceed 200% of the Performance or Market PSUs. Shares subject to PSUs that fail to be earned will be forfeited.

Restricted Stock Units

The activity related to the Company's RSUs for the nine months ended September 30, 2023 was as follows:

	Shares	Weighted Average Grant Date Fair Value
Unvested balance at January 1, 2023	7,649,747	$ 3.96
Granted	4,852,840	$ 2.90
Vested	(3,927,390)	$ 4.20
Forfeited	(623,602)	$ 4.05
Unvested balance at September 30, 2023	7,951,595	$ 3.19

The total grant date fair value of shares of restricted stock underlying RSUs that vested during the nine months ended September 30, 2023 was $16.5 million.

Performance-Based Stock Units

The activity related to the Company's PSUs for the nine months ended September 30, 2023 was as follows:

	Shares	Weighted Average Grant Date Fair Value
Unvested balance at January 1, 2023	6,653,503	$ 2.52
Granted	1,800,202	$ 3.26
Vested	(381,071)	$ 6.91
Forfeited	(1,706,133)	$ 4.05
Unvested balance at September 30, 2023	6,366,501	$ 2.09

The total grant date fair value of shares of restricted stock underlying PSUs that vested during the nine months ended September 30, 2023 was $2.6 million.

Stock-Based Compensation

The condensed consolidated statements of operations include stock-based compensation for the three and nine months ended September 30, 2023 and 2022 as follows (in thousands):

	Three months ended		Nine months ended	
	September 30, 2023	September 30, 2022	September 30, 2023	September 30, 2022
Product cost of revenue	$ 121	$ 133	$ 385	$ 339
Service cost of revenue	536	592	1,597	1,567
Research and development	1,259	1,289	3,821	3,735
Sales and marketing	1,402	1,567	5,673	4,418
General and administrative	1,632	1,260	5,438	3,436
	$ 4,950	$ 4,841	$ 16,914	$ 13,495

At September 30, 2023, there was $22.7 million, net of expected forfeitures, of unrecognized stock-based compensation expense related to unvested RSUs and PSUs. This expense is expected to be recognized over a weighted average period of approximately two years.

(16) LEASES

The Company has operating leases for corporate offices and research and development facilities and has historically had finance leases for certain equipment. Operating leases are reported separately in the Company's condensed consolidated balance sheets. Assets acquired under finance leases, if any, are included in Property and equipment, net, in the condensed consolidated balance sheets.

The Company determines if an arrangement is a lease at inception. A contract is determined to contain a lease component if the arrangement provides the Company with a right to control the use of an identified asset. Lease agreements may include lease and non-lease components. In such instances for all classes of underlying assets, the Company does not separate lease and non-lease components but rather, accounts for the entire arrangement under leasing guidance. Leases with an initial term of 12 months or less are not recorded on the balance sheet and lease expense for these leases is recognized on a straight-line basis over the lease term.

Right-of-use assets and lease liabilities are initially measured based on the present value of the future minimum fixed lease payments (i.e., fixed payments in the lease contract) over the lease term at the commencement date. As the Company's existing leases do not have a readily determinable implicit rate, the Company uses its incremental borrowing rate based on the information available at the commencement date in determining the present value of future minimum fixed lease payments. The Company calculates its incremental borrowing rate to reflect the interest rate that it would have to pay to borrow on a collateralized basis an amount equal to the lease payments in a similar economic environment over a similar term and considers its historical borrowing activities and market data from entities with comparable credit ratings in this determination. The measurement of the right-of-use asset also includes any lease payments made prior to the commencement date (excluding any lease incentives) and initial direct costs incurred. The Company assessed its right-of-use assets for impairment as of September 30, 2023 and December 31, 2022 and determined no impairment has occurred.

Lease terms may include options to extend or terminate the lease and the Company incorporates such options in the lease term when it has the unilateral right to make such an election and it is reasonably certain that the Company will exercise that option. In making this determination, the Company considers its prior renewal and termination history and planned usage of the assets under lease, incorporating expected market conditions.

For operating leases, lease expense for minimum fixed lease payments is recognized on a straight-line basis over the lease term. The expense for finance leases includes both interest and amortization expense components, with the interest component calculated based on the effective interest method and the amortization component calculated based on straight-line amortization of the right-of-use asset over the lease term. Lease contracts may contain variable lease costs, such as common area maintenance, utilities and tax reimbursements that vary over the term of the contract. Variable lease costs are not included in minimum fixed lease payments and as a result, are excluded from the measurement of the right-of-use assets and lease liabilities. The Company expenses all variable lease costs as incurred.

Certain leased facilities are being partially or fully vacated as part of the 2022 Restructuring Plan and for some of those facilities, the Company has no plans to enter into sublease agreements. Accordingly, the Company accelerated the amortization of those lease assets through the planned cease-use date of each facility, resulting in additional amortization expense of $0.2 million and $0.8 million, respectively, in the three and nine months ended September 30, 2023 and $0.6 million and $1.6 million in the three and nine months ended September 30, 2022, respectively. No variable lease costs were accrued in the three and nine months ended September 30, 2023 for future estimated variable expenses related to assets partially or fully vacated with no intent or ability to sublease. Variable lease costs for the three and nine months ended September 30, 2022 included accruals of $0.7 million and $1.0 million, respectively, for all future estimated variable expenses related to certain assets partially or fully vacated with no intent or ability to sublease.

All accelerated amortization and accrual of future variable costs are recorded as Restructuring and related expense in the Company's condensed consolidated statements of operations. At September 30, 2023 and December 31, 2022, the Company had accruals of $1.6 million and $2.0 million, respectively, for all future anticipated variable lease costs related to these facilities. The Company may incur additional future expense if it is unable to sublease other locations included in the Facilities Consolidations Initiatives.

The Company leases its corporate offices and other facilities under operating leases, which expire at various times through

2032. The Company's right-of-use lease assets and lease liabilities at September 30, 2023 and December 31, 2022 were as follows (in thousands):

	Classification	September 30, 2023	December 31, 2022
Assets:			
Operating lease assets	Operating lease right-of-use assets	$ 39,167	$ 44,888
Liabilities:			
Current Operating	Operating lease liabilities	$ 14,901	$ 15,416
Non-Current Operating	Operating lease liabilities, net of current	38,282	46,183
Total Operating lease liabilities		$ 53,183	$ 61,599

The components of lease expense for the three and nine months ended September 30, 2023 and 2022 were as follows (in thousands):

	Three months ended		Nine months ended	
	September 30, 2023	September 30, 2022	September 30, 2023	September 30, 2022
Operating lease cost*	$ 4,708	$ 5,233	$ 14,205	$ 15,401
Finance lease cost:				
Amortization of leased assets	—	64	—	244
Interest on lease liabilities	—	2	—	12
Short-term lease cost	3,454	3,610	10,544	10,451
Variable lease costs (costs excluded from minimum fixed lease payments)**	819	1,424	2,525	3,283
Sublease income	(282)	(502)	(1,105)	(1,439)
Net lease cost	$ 8,699	$ 9,831	$ 26,169	$ 27,952

* Operating lease costs for the three and nine months ended September 30, 2023 included $0.2 million and $0.8 million, respectively, of accelerated amortization for certain assets partially or fully vacated with no intent or ability to sublease. Operating lease costs for the three and nine months ended September 30, 2022 included $0.6 million and $1.6 million, respectively, of accelerated amortization for certain assets partially or fully vacated with no intent or ability to sublease.

** No variable lease costs were accrued in the three and nine months ended September 30, 2023 for future estimated variable expenses related to certain assets partially or fully vacated with no intent or ability to sublease. Variable lease costs for the three and nine months ended September 30, 2022 included accruals of $0.7 million and $1.0 million, respectively, for all future estimated variable expenses related to certain assets partially or fully vacated with no intent or ability to sublease.

Cash flow information related to the Company's leases for the nine months ended September 30, 2023 and 2022 was as follows (in thousands):

	Nine months ended	
	September 30, 2023	September 30, 2022
Cash paid for amounts included in the measurement of lease liabilities:		
Operating cash flows for operating leases	$ 14,315	$ 15,662
Operating cash flows for finance leases	$ —	$ 12
Financing cash flows for finance leases	$ —	$ 433

Other information related to the Company's leases as of September 30, 2023 and December 31, 2022 was as follows:

	September 30, 2023	December 31 2022
Weighted average remaining lease term (years):		
Operating leases	5.64	
Weighted average discount rate:		
Operating leases	6.19 %	5.

Future minimum fixed lease payments under noncancelable leases at September 30, 2023 were as follows (in thousands):

	Operating leases
Remainder of 2023	$ 4,682
2024	16,983
2025	9,243
2026	7,517
2027	6,549
2028	18,418
Total lease payments	63,392
Less: interest	(10,209)
Present value of lease liabilities	$ 53,183

(17) INCOME TAXES

The Company recorded income tax provisions of $11.5 million and $12.4 million in the nine months ended September 30, 2023 and 2022, respectively. These amounts reflect the Company's estimates of the effective rates expected to be applicable for the respective full years, adjusted for any discrete events, which are recorded in the period in which they occur. These estimates are reevaluated each quarter based on the Company's estimated tax expense for the full fiscal year. The estimated effective tax rate includes the impact of valuation allowances in various jurisdictions. The Company intends to continue to maintain a valuation allowance on its deferred tax assets until there is sufficient evidence to support the reversal of all or some portion of the respective allowances.

(18) RELATED PARTIES

The Company recognized revenue from its largest stockholder of $1.3 million and $0.6 million in the three months ended September 30, 2023 and 2022, respectively, and $7.1 million and $1.7 million in the nine months ended September 30, 2023 and 2022, respectively. Additionally, as discussed in Note 11, certain related party stockholders participated in the Private Placement.

(19) COMMITMENTS AND CONTINGENCIES

Liabilities for Royalty Payments to the IIA

Prior to the Company's acquisition of ECI Telecom Group Ltd. ("ECI"), ECI had received research and development grants from the Office of the Innovation Authority of the Israeli Ministry of Economics (the "IIA"). The Company assumed ECI's contract with the IIA, which requires the Company to pay royalties to the IIA on proceeds from the sale of products which the Israeli government has supported by way of research and development grants. The royalties for grants prior to 2017 were calculated at the rates of 1.3% to 5.0% of the aggregated proceeds from the sale of such products developed at certain of the

Company's R&D centers, up to an amount not exceeding 100% of such grants plus interest at LIBOR. Effective for grants approved in 2017 and subsequently, interest was calculated at the higher of LIBOR plus 1.5% to 2.75%. At September 30, 2023, the Company's maximum possible future royalties commitment, including $1.8 million of unpaid royalties accrued, was $21.6 million, including interest of $0.9 million, based on estimates of future product sales, grants received from the IIA not yet repaid, and management's estimation of products still to be sold.

Litigation

The Company is often a party to disputes and legal proceedings that it considers routine and incidental to its business, including those described below. The Company believes that it has meritorious defenses to the allegations made in the pending cases and intends to vigorously defend these lawsuits; however, the Company is unable currently to forecast the ultimate outcome of these or similar matters. Since it is difficult to predict the outcome of legal proceedings, it is possible that the ultimate outcomes could materially and adversely affect the Company’s business, financial position, results of operations or cash flows. Accordingly, with respect to these proceedings, the Company is currently unable to reasonably estimate the possible loss or range of possible loss.

Miller Complaint. On November 8, 2018, Ron Miller, a purported stockholder of the Company, filed a Class Action Complaint (the "Miller Complaint") in the United States District Court for the District of Massachusetts (the "Massachusetts District Court") against the Company and three of its former officers (collectively, the "Defendants"), claiming to represent a class of purchasers of Sonus common stock during the period from January 8, 2015 through March 24, 2015 and alleging violations of the federal securities laws. Similar to a previous complaint entitled Sousa et al. vs. Sonus Networks, Inc. et al., which was dismissed with prejudice by an order dated June 6, 2017, the Miller Complaint claims that the Defendants made misleading forward-looking statements concerning Sonus' expected fiscal first quarter of 2015 financial performance, which statements were also the subject of an August 7, 2018 Securities and Exchange Commission Cease and Desist Order, whose findings the Company neither admitted nor denied. The Miller plaintiffs are seeking monetary damages.

After the Miller Complaint was filed, several parties filed and briefed motions seeking to be selected by the Massachusetts District Court to serve as a Lead Plaintiff in the action. On June 21, 2019, the Massachusetts District Court appointed a group as Lead Plaintiffs and the Lead Plaintiffs filed an amended complaint on July 19, 2019. On August 30, 2019, the Defendants filed a motion to dismiss the Miller Complaint and, on October 4, 2019, the Lead Plaintiffs filed an opposition to the motion to dismiss. There was an oral argument on the motion to dismiss on February 12, 2020, and on October 20, 2022 the court denied the motion to dismiss. In June 2023, the Defendants agreed to a settlement in principle with the named plaintiffs, and the settlement was preliminarily approved by the court on October 18, 2023. The proposed settlement remains subject to final approval by the affected stockholders and the court. The court has set April 24, 2024 as the hearing date for final approval of the proposed settlement. If approved, the proposed settlement would provide a release of all claims asserted in the litigation to all Defendants, who continue to deny liability, and the proposed $4.5 million settlement amount is expected to be fully paid by the Company's Directors and Officers liability insurance.

Charter Complaint. On September 19, 2022, Charter Communications Operating, LLC (“Charter”) filed two complaints against two of our subsidiaries (Sonus Networks, Inc. and Ribbon Communications Operating Company, Inc.) alleging breach of contract with respect to indemnification obligations purportedly owed to Charter in connection with Charter’s legal dispute with Sprint Communications Company L.P., which was settled by Charter in March 2022. One complaint was filed in the Supreme Court of the State of New York, in New York County; the second complaint was filed by Charter as well as co-plaintiffs Charter Communications Holding Company, LLC and Bright House Networks, LLC, in the Superior Court of the State of Delaware in and for New Castle County. In both complaints, Charter is seeking monetary damages. The Company filed its answer to the first complaint file in New York on December 7, 2022 and to the second complaint filed in Delaware on January 9, 2023. Discovery is on-going and the court in the Delaware complaint has set a preliminary trial date of January 2025.

WideOpenWest Complaint. On August 9, 2023, WideOpenWest, Inc. and WideOpenWest Finance, LLC (collectively, “WOW”) filed a complaint against Ribbon alleging breach of contract with respect to indemnification obligations purportedly owed to WOW in connection with WOW’s legal dispute with Sprint Communications Company L.P., which was settled by WOW in the second quarter of 2023. The complaint was filed in the 429th Judicial District of the District Court of the State of Texas, in Collin County, Texas and has since been transferred to the 493rd Judicial District Court in Collin County. In the complaint, WOW is seeking monetary damages. The Company filed its answer to the complaint on October 5, 2023. Discovery is on-going and no trial date has been set at this time.

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

The following discussion of the financial condition and results of operations of Ribbon Communications Inc. should be read in conjunction with the condensed consolidated financial statements and the related notes thereto included elsewhere in this Quarterly Report on Form 10-Q and the audited financial statements and notes thereto and Management's Discussion and Analysis of Financial Condition and Results of Operations included in our Annual Report on Form 10-K for the year ended December 31, 2022, which was filed with the U.S. Securities and Exchange Commission on March 31, 2023.

Overview

We are a leading global provider of communications technology to service providers and enterprises. We provide a broad range of software and high-performance hardware products, solutions and services that enable the secure delivery of data and voice communications for residential consumers and for small, medium and large enterprises and industry verticals such as finance, education, government, utilities and transportation. Our mission is to create a recognized global technology leader providing solutions that enable the secure exchange of information, with unparalleled scale, performance and elasticity. Headquartered in Plano, Texas, we have a global presence with research and development and/or sales and support locations in over thirty countries around the world.

Key Trends and Economic Factors Affecting Ribbon

Supplier Disruptions. Ongoing uncertainty in the global economy due to inflation, the wars in Israel and Ukraine, and other factors, continue to disrupt various manufacturing, commodity and financial markets, increase volatility, and impede global supply chains. Our ability to deliver our solutions as agreed upon with our customers depends in part on the ability of our global contract manufacturers, vendors, licensors and other business partners to deliver products or perform services we have procured from them.

Continued uncertain global economic conditions, may cause our customers to restrict spending or delay purchases for an indeterminate period of time and consequently cause our revenues to decline. Further, such factors may negatively impact our operating costs resulting in a reduction in net income. The degree to which the ongoing military conflict in Ukraine and the high inflationary and rising interest rate environment impacts our future business, financial position and results of operations will depend on developments beyond our control, including the duration of the global economic downturn that has resulted from these factors.

The Ongoing Wars in Israel and Ukraine. The uncertainty resulting from the wars in Israel and Ukraine and the threat for expansion of one or both of these wars could result in some of our customers delaying purchases from us. As a result of safety concerns, we closed our offices in Israel for several days. Although our employees in these offices have the ability to work remotely and business continuity plans are in place to address any medium- or long-term disruptions that could result from the closure of these offices, the office closures and general effects of employees operating in a region at war could have a negative impact on our operations. Further, a number of our employees in Israel are members of the military reserves and subject to immediate call-up in response to the war in Israel. Following the terrorist attacks in Israel in October 2023, a number of our employees have been activated for military duty and we expect that additional employees will also be activated if the war in Israel continues. While we have business continuity plans in place to address the military call-ups, it could affect the timing of projects in the short-term as the work is shifted to other team members both inside and outside of Israel.

Further, the U.S. and other European countries have imposed sanctions and trade restrictions against Russia in connection with the war in Ukraine. These sanctions and restrictions currently prohibit our ability to sell certain products and services. The sanctions continue to evolve and further changes in the current sanctions or trade restrictions could further limit our ability to sell products and services to customers in Russia and, our ability to collect on outstanding accounts receivable from such customers. If we are further limited in our ability to sell products and services to Russia and other countries for an extended period, it could have a material impact on our financial results.

Inflation and Interest Rates. We continue to see near-term impacts on our business due to inflation, including ongoing global price pressures driving up energy prices, component costs, freight premiums, and other operating costs above normal rates. Although headline inflation in the United States and Europe appears to be nearing a peak, core inflation (excluding food and energy prices) remains elevated and is a source of continued cost pressure on businesses and households. Interest rates have increased significantly as central banks in developed countries attempt to subdue inflation while government deficits and debt remain at high levels in many global markets. Accordingly, the eventual implications of higher government deficits and debt, tighter monetary policy, and potentially higher long-term interest rates may drive a higher cost of capital for our business.

Presentation

Unless otherwise noted, all financial amounts, excluding tabular information, in this Management's Discussion and Analysis of Financial Condition and Results of Operations ("MD&A") are rounded to the nearest million dollar amount, and all percentages, excluding tabular information, are rounded to the nearest percentage point.

Private Placement

On March 28, 2023, we issued 55,000 shares of newly designated Series A Preferred Stock (the "Preferred Stock") to investors in a private placement offering at a price of $970 per share, along with 4.9 million warrants (the "Warrants") to purchase shares of our common stock, par value $0.0001 per share (the "Private Placement"), at an exercise price of $3.77 per share. The proceeds from the Private Placement were approximately $53.4 million, including approximately $10 million from existing related party stockholders. For additional detail on the Private Placement, see Note 11 - Preferred Stock and Warrants to our condensed consolidated financial statements.

Operating Segments

Our Chief Operating Decision Maker assesses our performance based on the performance of two separate organizations within Ribbon: the Cloud and Edge operating segment ("Cloud and Edge") and the IP Optical Networks operating segment ("IP Optical Networks"). For additional details regarding our operating segments, see Note 13 - Operating Segment Information to our condensed consolidated financial statements.

Financial Overview

Financial Results

We reported income from operations of $0.9 million and losses from operations of $3.3 million for the three months ended September 30, 2023 and 2022, respectively. We reported losses from operations of $41.0 million and $49.6 million for the nine months ended September 30, 2023 and 2022, respectively.

Our revenue was $203.2 million and $207.1 million in the three months ended September 30, 2023 and 2022, respectively. Our gross profit and gross margin were $103.5 million and 50.9%, respectively, in the three months ended September 30, 2023, and $104.3 million and 50.4%, respectively, in the three months ended September 30, 2022. The lower revenue in the three months of 2023 compared to 2022 is due to $8.9 million of lower Cloud and Edge sales, partially offset by $5.0 million of higher IP Optical sales. Our revenue was $599.9 million and $586.1 million in the nine months ended September 30, 2023 and 2022, respectively. Our gross profit and gross margin were $286.4 million and 47.7%, respectively, in the nine months ended September 30, 2023, and $286.9 million and 49.0%, respectively, in the nine months ended September 30, 2022. The higher revenue in the nine months of 2023 compared to 2022 is due to $29.9 million of higher IP Optical sales, partially offset by $16.1 million of lower Cloud and Edge sales.

Revenue from our Cloud and Edge segment was $115.8 million and $124.7 million in the three months ended September 30, 2023 and 2022, respectively. Gross profit and gross margin for this segment were $74.7 million and 64.6%, respectively, in the three months ended September 30, 2023, and $76.4 million and 61.3%, respectively, in the three months ended September 30, 2022. Revenue from our Cloud and Edge segment was $355.5 million and $371.6 million in the nine months ended September 30, 2023 and 2022, respectively. Gross profit and gross margin for this segment were $220.1 million and 61.9%, respectively, in the nine months ended September 30, 2023, and $227.4 million and 61.2%, respectively, in the nine months ended September 30, 2022.

Revenue from our IP Optical Networks segment was $87.4 million and $82.4 million in the three months ended September 30, 2023 and 2022, respectively. Gross profit and gross margin for this segment were $28.8 million and 32.9%, respectively, in the three months ended September 30, 2023, and $27.9 million and 33.8%, respectively, in the three months ended September 30, 2022. Revenue from our IP Optical Networks segment was $244.4 million and $214.6 million in the nine months ended September 30, 2023 and 2022, respectively. Gross profit and gross margin for this segment were $66.2 million and 27.1%, respectively, in the nine months ended September 30, 2023, and $59.5 million and 27.7%, respectively, in the nine months ended September 30, 2022

Our operating expenses were $102.6 million and $107.6 million in the three months ended September 30, 2023 and 2022, respectively, and $327.3 million and $336.5 million in the nine months ended September 30, 2023 and 2022, respectively. The decreased operating expenses are primarily related to lower R&D and sales and marketing expenses, partially offset by higher restructuring and related expense and higher general and administrative expense. Operating expenses for the three months ended September 30, 2023 included $7.2 million of amortization of acquired intangible assets, $0.8 million of acquisition-, disposal- and integration-related expense, and $2.7 million of restructuring and related expense. Operating expenses for the three months ended September 30, 2022 included $7.5 million of amortization of acquired intangible assets, $1.0 million of acquisition-, disposal- and integration-related expense, and $1.3 million of restructuring and related expense. Operating expenses for the nine months ended September 30, 2023 included $21.7 million of amortization of acquired intangible assets, $3.0 million of acquisition-, disposal- and integration-related expense, and $13.9 million of restructuring and related expense. Operating expenses for the nine months ended September 30, 2022 included $22.3 million of amortization of acquired intangible assets, $4.4 million of acquisition-, disposal- and integration-related expense, and $9.0 million of restructuring and related expense.

We recorded stock-based compensation expense of $5.0 million and $4.8 million in the three months ended September 30, 2023 and 2022, respectively, and $16.9 million and $13.5 million in the nine months ended September 30, 2023 and 2022, respectively. These amounts are included as components of both Cost of revenue and Operating expenses in our condensed consolidated statements of operations.

See "Results of Operations" in this MD&A for a discussion of the changes in our revenue and expenses for the three and nine months ended September 30, 2023 compared to the three and nine months ended September 30, 2022.

Restructuring and Cost Reduction Initiatives

2023 Restructuring Plan. In February 2023, our Board of Directors approved a strategic restructuring program (the "2023 Restructuring Plan") to streamline the Company's operations in order to support the Company's investment in critical growth areas. The 2023 Restructuring Plan includes, among other things, charges related to a workforce reduction. Any potential positions eliminated in countries outside the United States are subject to local law and consultation requirements.

We recorded restructuring and related expense of $0.9 million and $9.4 million in the three and nine months ended September 30, 2023, respectively, in connection with the 2023 Restructuring Plan for severance related costs. We anticipate that we will record future expense for severance of approximately $1 million in connection with the 2023 Restructuring Plan.

2022 Restructuring Plan. In February 2022, our Board of Directors approved a strategic restructuring program (the "2022 Restructuring Plan") to streamline the Company's operations in order to support the Company's investment in critical growth areas. The 2022 Restructuring Plan includes, among other things, charges related to a consolidation of facilities and a workforce reduction. Any positions eliminated in countries outside the United States are subject to local law and consultation requirements.

We recorded restructuring and related expense of $1.9 million and $4.6 million in the three and nine months ended September 30, 2023, respectively, in connection with the 2022 Restructuring Plan. The amount for the three months ended September 30, 2023 was comprised of $1.7 million for variable and other facilities-related costs and $0.2 million for accelerated amortization of lease assets no longer being used with no ability or intent to sublease. The amount for the nine months ended September 30, 2023 was comprised of $3.8 million for variable and other facilities-related costs and $0.8 million for accelerated amortization of lease assets no longer being used with no ability or intent to sublease. We anticipate that we will record future expense for facility consolidations aggregating approximately $14 million in connection with the 2022 Restructuring Plan. We have increased the total anticipated expense for facilities consolidation under the 2022 Restructuring Plan from our original estimation as we consolidate additional space within two of our facilities.

Accelerated Rent Amortization. Accelerated rent amortization is recognized from the date that we commence the plan to fully or partially vacate a facility, for which there is no intent or ability to enter into a sublease, through the final vacate date. We recorded $0.2 million and $0.8 million for accelerated rent amortization in the three and nine months ended September 30, 2023. We continue to evaluate our properties included in our restructuring plans for accelerated amortization and/or right-of-use asset impairment. We may incur additional future expense if we are unable to sublease other locations included in these initiatives.

Critical Accounting Policies and Estimates

This MD&A is based upon our condensed consolidated financial statements, which have been prepared in accordance with accounting principles generally accepted in the United States of America ("GAAP"). The preparation of these financial statements requires us to make estimates and judgments that affect the reported amounts of assets, liabilities, revenues and expenses, and related disclosure of contingent assets and liabilities. We base our estimates and judgments on historical experience, knowledge of current conditions and beliefs of what could occur in the future given available information. We consider the following accounting policies to be both those most important to the portrayal of our financial condition and those that require the most subjective judgment: revenue recognition, the valuation of inventory, debentures and warrants received as sale consideration, warranty accruals, loss contingencies and reserves, stock-based compensation, our Preferred Stock and Warrants, business combinations, goodwill and intangible assets, accounting for leases, and accounting for income taxes. If actual results differ significantly from management's estimates and projections, there could be a material effect on our condensed consolidated financial statements.

There was one significant change to our critical accounting policies during the nine months ended September 30, 2023 with the addition of a policy for accounting for our Preferred Stock and Warrants that were issued in the Private Placement on March 28, 2023 as follows:

Preferred Stock and Warrants

We account for the Preferred Stock and Warrants as liability-classified instruments based on an assessment of their specific terms in accordance with ASC Topic 480, *Distinguishing Liabilities from Equity*. The fair value option was elected for the Preferred Stock, as we consider fair value to best reflect the expected future economic value. These liabilities are remeasured to fair value at each reporting date using the same valuation methodology applied upon issuance.

For further discussion of our critical accounting policies and estimates, please refer to our Annual Report on Form 10-K for the year ended December 31, 2022.

Results of Operations

Three and nine months ended September 30, 2023 and 2022

Revenue. Revenue for the three and nine months ended September 30, 2023 and 2022 was as follows (in thousands, except percentages):

	Three months ended		Decrease from prior year	
	September 30, 2023	September 30, 2022	$	%
Product	$ 108,501	$ 111,152	$ (2,651)	(2.4)%
Service	94,660	95,975	(1,315)	(1.4)%
Total revenue	$ 203,161	$ 207,127	$ (3,966)	(1.9)%

	Nine months ended		Increase from prior year	
	September 30, 2023	September 30, 2022	$	%
Product	$ 319,166	$ 305,809	$ 13,357	4.4 %
Service	280,772	280,312	460	0.2 %
Total revenue	$ 599,938	$ 586,121	$ 13,817	2.4 %

Segment revenue for the three and nine months ended September 30, 2023 and 2022 was as follows (in thousands):

	Three months ended September 30, 2023			Three months ended September 30, 2022		
	Cloud and Edge	IP Optical Networks	Total	Cloud and Edge	IP Optical Networks	Total
Product	$ 42,305	$ 66,196	$ 108,501	$ 51,321	$ 59,831	$ 111,15
Service	73,460	21,200	94,660	73,364	22,611	95,97
Total revenue	$ 115,765	$ 87,396	$ 203,161	$ 124,685	$ 82,442	$ 207,12

	Nine months ended September 30, 2023			Nine months ended September 30, 2022		
	Cloud and Edge	IP Optical Networks	Total	Cloud and Edge	IP Optical Networks	Total
Product	$ 137,496	$ 181,670	$ 319,166	$ 153,081	$ 152,728	$ 305,80
Service	218,005	62,767	280,772	218,490	61,822	280,31
Total revenue	$ 355,501	$ 244,437	$ 599,938	$ 371,571	$ 214,550	$ 586,12

The decrease in our product revenue in the three months ended September 30, 2023 compared to the three months ended September 30, 2022 was the result of $9 million of lower sales of our Cloud and Edge products, partially offset by $6 million of higher sales of our IP Optical Networks products. The increase in our product revenue in the nine months ended September 30, 2023 compared to the nine months ended September 30, 2022 was due to $29 million of higher sales of our IP Optical Networks products, partially offset by $16 million of lower sales of our Cloud and Edge products. The increase in revenue from the sale of IP Optical Networks products was primarily attributable to higher sales in India and the U.S. markets following the introduction of new products and capabilities, including support for Long Haul Optical Transport, 5G Cell Site Routers, and a new series of IP Routers. The decrease in revenue from the sale of Cloud and Edge products was primarily attributable to lower sales to U.S. Tier One Service Providers, partially offset by increased sales to Enterprise customers, including U.S. Federal agencies to support voice network modernization.

Revenue from sales to enterprise customers was 30% of our product revenue in the three months ended September 30, 2023 and 2022. These sales were made through both our direct sales team and indirect sales channel partners. Revenue from sales to enterprise customers was 30% and 26% of our product revenue in the nine months ended September 30, 2023 and 2022, respectively. Our sales to Enterprise customers in the nine months ended September 30, 2023 increased by 25% compared to the nine months ended September 30, 2022.

Revenue from indirect sales through our channel partner program was 33% and 31% of our product revenue in the three months ended September 30, 2023 and 2022, respectively and 34% and 28% of our product revenue in the nine months ended September 30, 2023 and 2022, respectively. The increase in channel sales reflects stronger deployments through systems integrators as well as sell-through from our Service Provider channel partners.

The timing of the completion of customer projects and revenue recognition criteria satisfaction may cause our product revenue to fluctuate from one period to the next.

Service revenue is primarily comprised of hardware and software maintenance and support (“maintenance revenue”) and network design, installation and other professional services (“professional services revenue”).

Service revenue for the three and nine months ended September 30, 2023 and 2022 was comprised of the following (in thousands, except percentages):

	Three months ended		Increase/(Decrease) from prior year	
	September 30, 2023	September 30, 2022	$	%
Maintenance	$ 69,272	$ 71,989	$ (2,717)	(3.8)%
Professional services	25,388	23,986	1,402	5.8 %
	$ 94,660	$ 95,975	$ (1,315)	(1.4)%

	Nine months ended		Increase/(Decrease) from prior year	
	September 30, 2023	September 30, 2022	$	%
Maintenance	$ 209,488	$ 210,052	$ (564)	(0.3)%
Professional services	71,284	70,260	1,024	1.5 %
	$ 280,772	$ 280,312	$ 460	0.2 %

Segment service revenue for the three and nine months ended September 30, 2023 and 2022 was comprised of the following (in thousands):

	Three months ended September 30, 2023			Three months ended September 30, 2022		
	Cloud and Edge	IP Optical Networks	Total	Cloud and Edge	IP Optical Networks	Total
Maintenance	$ 55,004	$ 14,268	$ 69,272	$ 55,686	$ 16,303	$ 71,98
Professional services	18,456	6,932	25,388	17,678	6,308	23,98
Total service revenue	$ 73,460	$ 21,200	$ 94,660	$ 73,364	$ 22,611	$ 95,97

	Nine months ended September 30, 2023			Nine months ended September 30, 2022		
	Cloud and Edge	IP Optical Networks	Total	Cloud and Edge	IP Optical Networks	Total
Maintenance	$ 164,848	$ 44,640	$ 209,488	$ 165,895	$ 44,157	$ 210,05
Professional services	53,157	18,127	71,284	52,595	17,665	70,26
Total service revenue	$ 218,005	$ 62,767	$ 280,772	$ 218,490	$ 61,822	$ 280,31

Maintenance revenue was 3.8% lower in the three months ended September 30, 2023 compared to the three months ended September 30, 2022 primarily due to the timing of renewals in our IP Optical Network segment. Maintenance revenue was relatively flat in the nine months ended September 30, 2023 compared to the nine months ended September 30, 2022.

Professional services revenue was higher in the three and nine months ended September 30, 2023 compared to the same periods in 2022 by 5.8% and 1.5%, respectively, equally attributable to increases at both of our operating segments.

The following customers contributed 10% or more of our revenue in the three and nine months ended September 30, 2023 and 2022:

	Three months ended		Nine months ended	
Customer	September 30, 2023	September 30, 2022	September 30, 2023	September 30, 2022
Verizon Communications Inc.	11%	13%	11%	16%
AT&T	*	10%	*	*

* Less than 10% of total revenue.

Revenue from customers domiciled outside the United States was 58% in both the three months ended September 30, 2023 and 2022, and 55% and 56% of revenue in the nine months ended September 30, 2023 and 2022, respectively. Due to the timing of project completions, we expect that the domestic and international components as a percentage of revenue may fluctuate from quarter to quarter and year to year.

Our deferred product revenue was $19 million and $29 million at September 30, 2023 and December 31, 2022, respectively. Our deferred service revenue was $106 million and $104 million at September 30, 2023 and December 31, 2022, respectively. Our deferred revenue balance may fluctuate because of the timing of revenue recognition, customer payments, maintenance contract renewals, contractual billing rights and maintenance revenue deferrals included in multiple element arrangements.

We expect that our total revenue will increase modestly for 2023 compared to 2022 primarily due to the growth in our IP Optical sales, up 14% in the first nine months of 2023 versus the first nine months of 2022. From a regional perspective, we anticipate continued IP Optical revenue growth in 2023 from India, Japan, Europe, and North America including the U.S. Rural operators. In the Cloud & Edge segment, we anticipate continued growth in Enterprise including U.S. Federal agencies, offsetting lower spending from U.S. Service Providers.

Cost of Revenue/Gross Margin. Our cost of revenue consists primarily of amounts paid to third-party manufacturers for purchased materials and services, royalties, amortization of acquired technology, inventory valuation adjustments, warranty costs, and manufacturing and services personnel and related costs. Our cost of revenue, gross profit and gross margin for the three and nine months ended September 30, 2023 and 2022 were as follows (in thousands, except percentages):

	Three months ended		Decrease from prior year	
	September 30, 2023	September 30, 2022	$	%
Cost of revenue:				
Product	$ 59,436	$ 59,866	(430)	(0.7)%
Service	33,065	35,175	(2,110)	(6.0)%
Amortization of acquired technology	7,157	7,768	(611)	(7.9)%
Total cost of revenue	$ 99,658	$ 102,809	(3,151)	(3.1)%
Gross profit	$ 103,503	$ 104,318	$ (815)	(0.8)%
Gross margin	50.9 %	50.4 %		

	Nine months ended		Increase (decrease) from prior year	
	September 30, 2023	September 30, 2022	$	%
Cost of revenue:				
Product	$ 189,426	$ 169,226	20,200	11.9
Service	102,152	106,049	(3,897)	(3.7
Amortization of acquired technology	21,985	23,923	(1,938)	(8.1
Total cost of revenue	$ 313,563	$ 299,198	14,365	4.8
Gross profit	$ 286,375	$ 286,923	$ (548)	(0.2
Gross margin	47.7 %	49.0 %		

Our segment cost of revenue, gross profit and gross margin for the three and nine months ended September 30, 2023 and 2022 were as follows (in thousands, except percentages):

	Three months ended September 30, 2023			Three months ended September 30, 2022		
	Cloud and Edge	IP Optical Networks	Total	Cloud and Edge	IP Optical Networks	Total
Product	$ 15,222	$ 44,214	$ 59,436	$ 19,224	$ 40,642	$ 59,8
Service	22,495	10,570	33,065	24,378	10,797	35,1
Amortization of acquired technology	3,317	3,840	7,157	4,641	3,127	7,7
Total cost of revenue	$ 41,034	$ 58,624	$ 99,658	$ 48,243	$ 54,566	$ 102,8
Gross profit	$ 74,731	$ 28,772	$ 103,503	$ 76,442	$ 27,876	$ 104,3
Gross margin	64.6 %	32.9 %	50.9 %	61.3 %	33.8 %	50.4 %

	Nine months ended September 30, 2023			Nine months ended September 30, 2022		
	Cloud and Edge	IP Optical Networks	Total	Cloud and Edge	IP Optical Networks	Total
Product	$ 55,498	$ 133,928	$ 189,426	$ 55,260	$ 113,966	$ 169,226
Service	69,423	32,729	102,152	74,310	31,739	106,049
Amortization of acquired technology	10,442	11,543	21,985	14,577	9,346	23,923
Total cost of revenue	$ 135,363	$ 178,200	$ 313,563	$ 144,147	$ 155,051	$ 299,198
Gross profit	$ 220,138	$ 66,237	$ 286,375	$ 227,424	$ 59,499	$ 286,923
Gross margin	61.9 %	27.1 %	47.7 %	61.2 %	27.7 %	49.0 %

Our gross margin was slightly higher with a 0.5 percentage point increase in the three months ended September 30, 2023 compared to the three months ended September 30, 2022 due to a three percentage point increase for our Cloud & Edge segment, partially offset by a one percentage point decline in our IP Optical Networks segment. Our gross margin was one percentage point lower in the nine months ended September 30, 2023 compared to the nine months ended September 30, 2022 due to a one percentage point decrease for our IP Optical segment, partially offset by a one percentage point increase in our Cloud and Edge segment. The decline in gross margin for the nine months ended September 30, 2023 compared to the same period in 2022 was primarily due to the shift in the mix of sales, with higher IP Optical revenue and lower Cloud & Edge sales in 2023 as compared to the same periods in 2022. The higher margins in our Cloud and Edge segment, and lower margins in our IP Optical Networks segment, also contributed to the variation in margin year over year. The increase in gross margins in our Cloud and Edge segment were primarily attributable to favorable product mix and lower product costs. The decrease in gross margins for our IP Optical segment was due to customer and product mix, partially offset by a one-time benefit from a reduction in royalties due to the IIA.

We believe that our IP Optical Networks segment gross margin will improve in the remainder of 2023. Our overall gross margins may decrease in 2023 compared to 2022 as a result of higher expected sales from IP Optical Networks, which has lower margins due to the higher hardware content in its products and higher production costs.

Research and Development. Research and development ("R&D") expenses consist primarily of salaries and related personnel expenses and prototype costs for the design, development, testing, and enhancement of our products. R&D expenses for the three and nine months ended September 30, 2023 and 2022 were as follows (in thousands, except percentages):

	September 30, 2023	September 30, 2022	Decrease from prior year	
			$	%
Three months ended	$ 46,229	$ 49,366	$ (3,137)	(6.4)%
Nine months ended	$ 145,309	$ 153,159	$ (7,850)	(5.1)%

The decrease in our R&D expenses in the three months ended September 30, 2023 compared to the three months ended September 30, 2022 was primarily attributable to lower expenses in our IP Optical Networks segment. The reduced expenses are a combination of lower employee headcount and outside subcontractors.

The decrease in our R&D expenses in the nine months ended September 30, 2023 compared to the nine months ended September 30, 2022 was attributable to approximately $4 million of lower expenses in each of our two segments.

Our IP Optical Networks R&D investment is focused on significantly expanding our portfolio of IP Routing solutions, adding additional features to our Optical Transport portfolio, and supporting features in our next generation SDN management and orchestration platform.

Some aspects of our R&D efforts require significant short-term expenditures, the timing of which may cause significant variability in our expenses. We believe that rapid technological innovation is critical to our long-term success, and we are tailoring our investments to meet the requirements of our customers and market. We believe that our R&D expenses in 2023 will decrease compared to 2022, with reduced investment in both segments in areas such as element management and sustaining engineering, as well as cost savings from the 2023 and 2022 Restructuring Plans.

Sales and Marketing Expenses. Sales and marketing expenses consist primarily of salaries and related personnel costs, commissions, travel and entertainment expenses, promotions, customer trial and evaluations inventory and other marketing and sales support expenses. Sales and marketing expenses for the three and nine months ended September 30, 2023 and 2022 were as follows (in thousands, except percentages):

	September 30, 2023	September 30, 2022	Decrease from prior year	
			$	%
Three months ended	$ 32,795	$ 36,365	$ (3,570)	(9.8)%
Nine months ended	$ 102,099	$ 109,827	$ (7,728)	(7.0)%

The decrease in sales and marketing expenses in 2023 as compared to 2022 is primarily a result of a global sales organization re-alignment that reduced management layers, as well as reduced investment in under-performing regions. In the three months ended September 30, 2023 compared to the three months ended September 30, 2022, this resulted in a reduction of expenses of approximately $2 million in our IP Optical segment and approximately $1 million in our Cloud and Edge segment. In the nine months ended September 30, 2023 compared to the nine months ended September 30, 2022, this resulted in a reduction of expenses of approximately $5 million in our IP Optical Networks segment and approximately $3 million in our Cloud & Edge segment.

We believe that our sales and marketing expenses will be lower in 2023 compared to 2022 as we benefit from the re-aligned global sales structure and continue to implement additional efficiencies.

General and Administrative Expenses. General and administrative expenses consist primarily of salaries and related personnel costs for executive and administrative personnel, and audit, legal and other professional fees. General and administrative expenses for the three and nine months ended September 30, 2023 and 2022 were as follows (in thousands, except percentages):

	September 30, 2023	September 30, 2022	Increase from prior year	
			$	%
Three months ended	$ 12,885	$ 12,118	$ 767	6
Nine months ended	$ 41,276	$ 37,881	$ 3,395	9

The increase in general and administrative expenses in the three and nine months ended September 30, 2023 compared to the three and nine months ended September 30, 2022 was primarily attributable to higher stock-based and other incentive compensation.

We believe that our general and administrative expenses in 2023 will increase slightly compared to our 2022 levels, primarily due to higher employee costs and as a result of inflation.

Amortization of Acquired Intangible Assets included in Operating expenses. Amortization of acquired intangible assets included in Operating expenses ("Opex Amortization") for the three and nine months ended September 30, 2023 and 2022 was as follows (in thousands, except percentages):

	September 30, 2023	September 30, 2022	Decrease from prior year	
			$	%
Three months ended	$ 7,216	$ 7,508	$ (292)	(3
Nine months ended	$ 21,740	$ 22,296	$ (556)	(2

Opex Amortization was lower for the three and nine months ended September 30, 2023 compared to the three and nine months ended September 30, 2022. Opex Amortization is not recorded on a straight-line basis; rather, it is recorded in relation to expected future cash flows. Accordingly, such expense may vary from one period to the next.

Acquisition-, Disposal- and Integration-Related. Acquisition-, disposal- and integration-related expenses include those expenses related to acquisitions that we would otherwise not have incurred. Acquisition- and disposal-related expenses include professional and services fees, such as legal, audit, consulting, paying agent and other fees. Integration-related expenses represent incremental costs related to combining our systems and processes with those of acquired businesses, such as third-party consulting and other third-party services.

Our acquisition-, disposal- and integration-related expenses were $0.8 million and $1.0 million in the three months ended September 30, 2023 and 2022, respectively and $3.0 million and $4.4 million in the nine months ended September 30, 2023 and 2022, respectively. The amounts for the three and nine months ended September 30, 2023 and 2022 primarily related to integration-related expenses.

Restructuring and Related. We have been committed to streamlining our operations and reducing operating costs by closing and consolidating certain facilities and reducing our worldwide workforce. Please see the additional discussion of our restructuring initiatives in the "Restructuring and Cost Reduction Initiatives" section of the Overview of this MD&A.

We recorded restructuring and related expense of $2.7 million and $1.3 million in the three months ended September 30, 2023 and 2022, respectively, and $13.9 million and $9.0 million in the nine months ended September 30, 2023 and 2022, respectively. Although we have eliminated positions as part of our restructuring initiatives, we continue to hire in certain areas that we believe are important to our future growth.

Interest Expense, Net. Interest income and interest expense for the three and nine months ended September 30, 2023 and 2022 were as follows (in thousands, except percentages):

	Three months ended		Increase from prior year	
	September 30, 2023	September 30, 2022	$	%
Interest income	$ 157	$ 66	$ 91	137.9 %
Interest expense	(7,300)	(5,332)	1,968	36.9 %
Interest expense, net	$ (7,143)	$ (5,266)	$ 1,877	35.6 %

	Nine months ended		Increase from prior year	
	September 30, 2023	September 30, 2022	$	%
Interest income	$ 273	$ 164	$ 109	66.5 %
Interest expense	(20,604)	(14,033)	6,571	46.8 %
Interest expense, net	$ (20,331)	$ (13,869)	$ 6,462	46.6 %

Interest expense in the three and nine months ended September 30, 2023 and 2022 primarily represents interest and amortization of debt issuance costs in connection with the 2020 Credit Facility (as defined below). The increase in Interest expense in the three and nine months ended September 30, 2023 compared to the three and nine months ended September 30, 2022 was primarily due to higher margin costs on our 2020 Term Loan, higher costs in 2023 for factoring certain accounts receivable, and the write off of debt issuance costs in conjunction with the March 2023 Sixth Amendment to the 2020 Credit Facility, partially offset by the amortization of the gains in accumulated other comprehensive (loss) income from the sales of our interest rate swap. Our interest expense for the three and nine months ended September 30, 2023 and 2022 benefited from our interest rate swap, which was sold in March 2023. See Note 10 to our condensed consolidated financial statements.

Other Expense, Net. We recorded other expense, net of $2.6 million and $3.7 million in the three months ended September 30, 2023 and 2022, respectively. We recorded other expense, net of $0.5 million and $42.8 million in the nine months ended September 30, 2023 and 2022, respectively. Other expense in the three months ended September 30, 2023 was primarily attributable to foreign currency exchange losses. Other expense in the nine months ended September 30, 2023 was primarily comprised of foreign currency exchange losses of $1.2 million, the $1.6 million fair value adjustment of our Preferred Stock and Warrants, including dividends on the Preferred Stock, and $3.5 million of costs incurred in the Private Placement, partially offset by the gain of $7.3 million recognized from Accumulated other comprehensive income in connection with the sale of our interest rate swap. The primary component of other expense in the three and nine months ended September 30, 2022 was the decline of $1.9 million and $41.3 million, respectively, in the fair value of the AVCT Investment which was cancelled in a settlement agreement in August 2022.

Income Taxes. We recorded income tax provisions of $4.6 million and $6.1 million in the three months ended September 30, 2023 and 2022, respectively and $11.5 million and $12.4 million in the nine months ended September 30, 2023 and 2022, respectively. These amounts reflect our estimates of the effective rates expected to be applicable for the respective full fiscal years, adjusted for any discrete events, which are recorded in the period that they occur. These estimates are reevaluated each quarter based on our estimated tax rate for the full year. The estimated effective tax rate includes the impact of valuation allowances in various jurisdictions. We intend to continue to maintain a valuation allowance on our deferred tax assets until there is sufficient evidence to support the reversal of all or some portion of the respective allowances.

The Organization for Economic Co-operation and Development (the "OECD") announced on October 8, 2021 the OECD/G20 Inclusive Framework on Base Erosion and Profit Shifting (the "Framework"), an agreement to a two-pillar solution to address tax challenges arising from digitalization of the economy. On December 20, 2021, the OECD released Pillar Two Model Rules defining the global minimum tax rules, which contemplate a minimum tax rate of 15%. The OECD continues to release additional guidance on these rules and the Framework calls for law enactment by OECD and G20 members to take effect in 2023 and 2024. These changes, when enacted by various countries in which we do business, may increase our taxes in these countries. Changes to these and other areas in relation to international tax reform, including future actions taken by foreign governments in response to the Tax Cuts and Jobs Act of 2017, could increase uncertainty and may adversely affect our tax rate and cash flows in future years.

Off-Balance Sheet Arrangements

We have no off-balance sheet arrangements that have or are reasonably likely to have a current or future material effect on our financial position, changes in financial position, revenues or expenses, results of operations, liquidity, capital expenditures or capital resources.

Liquidity and Capital Resources

Our condensed consolidated statements of cash flows are summarized as follows (in thousands):

	Nine months ended		
	September 30, 2023	September 30, 2022	Change
Net loss	$ (73,285)	$ (118,571)	$ 45,286
Adjustments to reconcile net loss to cash flows used in operating activities	61,754	96,149	(34,395)
Changes in operating assets and liabilities	8,479	(20,040)	28,519
Net cash used in operating activities	$ (3,052)	$ (42,462)	$ 39,410
Net cash used in investing activities	$ (6,620)	$ (13,044)	$ 6,424
Net cash (used in) provided by financing activities	$ (32,163)	$ 6,207	$ (38,370)

We had cash and cash equivalents aggregating $25 million and $67 million at September 30, 2023 and December 31, 2022, respectively. We had cash held by our non-U.S. subsidiaries aggregating $15 million at both September 30, 2023 and December 31, 2022. If we elect to repatriate all of the funds held by our non-U.S. subsidiaries as of September 30, 2023, we do not believe that the amounts of potential withholding taxes that would arise from the repatriation would have a material effect on our liquidity.

We currently maintain the Senior Secured Credit Facilities Credit Agreement (as amended, the "2020 Credit Facility"), which we entered into on March 3, 2020, by and among us, as a guarantor, Ribbon Communications Operating Company, Inc., as the borrower ("Borrower"), Citizens Bank, N.A. ("Citizens"), Santander Bank, N.A., and others as lenders, ("Lenders"). For additional details regarding the terms of the 2020 Credit Facility, see Note 9 to our condensed consolidated financial statements.

On March 10, 2022, we entered into the Fourth Amendment to the 2020 Credit Facility to increase the Maximum Consolidated Net Leverage Ratio (as defined in the 2020 Credit Facility) and in conjunction we made a $15.0 million prepayment that was applied to the final payment due on the maturity date.

On June 30, 2022, we entered into the Fifth Amendment to the 2020 Credit Facility (the "Fifth Amendment") to increase the Maximum Consolidated Net Leverage Ratio (as defined in the 2020 Credit Facility) for 2022, with the fourth quarter of 2022 increased to 4.75:1.00. In the 1st and 2nd quarters of 2023, the Maximum Consolidated Net Leverage Ratio allowed declines to 3.25:1.00 and in all subsequent quarters the ratio will be fixed at 3.00:1.00. Also, the Fifth Amendment reduced the minimum Consolidated Fixed Charge Coverage Ratio (as defined in the 2020 Credit Facility) in 2022, with the fourth quarter of 2022 reduced to 1.10:1.00 and in all subsequent quarters the ratio will be fixed at 1.25:1.00. In addition, the Fifth Amendment increased the maximum rate at which loans bear interest if our Consolidated Net Leverage Ratio for any quarter is greater than 4.50:1.00. Specifically, loans incurred bear interest, at our option, at either LIBOR plus a margin ranging from 1.50% to 4.50% per year, or the base rate plus 0.50%, or the prime rate plus a margin ranging from 0.50% to 3.50% per year. The Fifth Amendment also allows us to incur junior secured or unsecured debt in an amount no less than $50 million, subject to certain conditions, including the requirement that 50% of the aggregate amount of such incurred debt (net of certain costs, fees and other amounts) must be applied to prepay the 2020 Credit Facility, and compliance with certain leverage ratio-based covenant exceptions. In connection with the Fifth Amendment, we made a $10.0 million voluntary prepayment that was applied to the final payment due on the maturity date. Subsequent to the Fifth Amendment, we are required to make quarterly principal payments on the 2020 Term Loan aggregating approximately $5.0 million per quarter through March 31, 2024 and $10.0 million in each of the three quarters thereafter, with the remaining and final payment due on the maturity date in March 2025.

On March 24, 2023, we entered into the Sixth Amendment to the 2020 Credit Facility (the “Sixth Amendment”) effective March 30, 2023. The Sixth Amendment, among other things, increased the Maximum Consolidated Net Leverage Ratio (as defined in the 2020 Credit Facility), with the first, second and third quarters of 2023 increasing to 4.50:1.00. In the fourth quarter of 2023 and the first quarter of 2024, the Maximum Consolidated Net Leverage Ratio declines to 4.25:1.00 and 4.00:1.00, respectively. In all subsequent quarters, the Maximum Consolidated Senior Net Leverage Ratio will be fixed at 3.00:1.00 and the Maximum Consolidated Net Leverage Ratio will be fixed at 4.00:1.00. Also, the Sixth Amendment reduced the minimum Consolidated Fixed Charge Coverage Ratio (as defined in the 2020 Credit Facility) to 1.10:1.00 through the first quarter of 2024 and in all subsequent quarters the ratio will be fixed at 1.25:1.00. The Sixth Amendment reduced the maximum borrowings allowed under the 2020 Revolving Credit Facility from $100 million to $75 million and the sublimit available for letters of credit was reduced from $30 million to $20 million. In addition, the Sixth Amendment replaced LIBOR with the Secured Overnight Financing Rate ("SOFR") as the alternative rate that may be used by the Company for calculating interest owed under the 2020 Credit Facility with the margin now fixed at 4.5%. In conjunction with the Sixth Amendment, we made a $75 million prepayment that was applied to the final payment due upon maturity in March 2025 of approximately $200.3 million. The $75 million prepayment was almost entirely funded with the net proceeds from the Private Placement and the sales of our interest rate swap. Debt issuance costs associated with the Sixth Amendment totaled $1.7 million and are being amortized on a straight line basis over the remaining life of the 2020 Credit Facility to Interest expense, net.

At September 30, 2023, we had an outstanding balance under the 2020 Term Loan of $240.4 million at an average interest rate of 9.9%, an outstanding balance under the 2020 Revolving Credit Facility of $10.0 million at an average interest rate of 9.9%, and $3 million of letters of credit outstanding with an interest rate of 4.5%. The Company's interest rates under our 2020 Term Loan for the nine months ended September 30, 2023 and 2022 benefited from a hedge instrument that was in place, specifically a fixed rate swap, which was sold in March 2023 (see Note 10). We were in compliance with all covenants of the 2020 Credit Facility at both September 30, 2023 and December 31, 2022, including the current Consolidated Net Leverage Ratio calculation that considers our debt to include Preferred Stock.

We use letters of credit, performance and bid bonds in the course of our business. At September 30, 2023, we had $6.7 million letters of credit, bank guarantees, and performance and bid bonds outstanding (collectively, "Guarantees"), comprised of the $3.0 million of letters of credit under the 2020 Credit Facility described above (the "Letters of Credit") and $3.7 million of bank guarantees and performance and bid bonds (collectively, the "Other Guarantees") under various uncommitted facilities. At December 31, 2022, we had $8.3 million of Guarantees, comprised of $3.3 million of Letters of Credit and $5.0 million of Other Guarantees.

We are exposed to financial market risk related to foreign currency fluctuations and changes in interest rates. These exposures are actively monitored by management. To manage the volatility related to the exposure to changes in interest rates, we may enter into a derivative financial instrument. Management's objective has been to reduce, where it is deemed appropriate to do so, fluctuations in earnings and cash flows associated with changes in interest rates. Our policies and practices are to use derivative financial instruments only to the extent necessary to manage exposures. We do not hold or issue derivative financial instruments for trading or speculative purposes.

As a result of exposure to interest rate movements, during March 2020, we entered into an interest rate swap arrangement, which effectively converted our $400 million term loan with its variable interest rate based upon one-month LIBOR to an aggregate fixed rate of 0.904%, plus a leverage-based margin as defined in the 2020 Credit Facility. On July 22, 2022, we sold $30 million of the notional amount of our interest rate swap back to our counterparty for $1.5 million, reducing the notional amount of this swap to $370 million. On August 16, 2022, we sold another $30 million of the notional amount of our interest rate swap back to our counterparty for $1.6 million, reducing the notional amount to $340 million, which approximated the term loan debt then outstanding. The gain in accumulated other comprehensive (loss) income related to the $60 million notional amount sold of $3.1 million is being released into earnings on a straight line basis over the remaining term of the 2020 Credit Facility as a decrease to interest expense, the amortization of which totaled $0.2 million and $0.7 million for the three and nine months ended September 30, 2023. On March 24, 2023, the Company received $9.4 million, consisting of $0.4 million of interest and $9.0 million for the sale of $170 million of its $340 million notional amount interest rate swap back to its counterparty, reducing the notional amount to $170 million. On March 27, 2023, the Company received $9.8 million, consisting of $0.4 million of interest and $9.4 million for the sale of the remaining $170 million of its interest rate swap back to its counterparty. The portion of the gain in accumulated other comprehensive (loss) income related to the term loan debt prepaid on the date of the final sale of our swap totaled $7.3 million and was released into earnings immediately as Other expense, net. The portion of the gain in accumulated other comprehensive (loss) income related to our remaining term loan debt balance totaled $12.0 million and is being released into earnings on a straight line basis over the remaining term of the 2020 Credit Facility as a decrease to interest expense, the amortization of which was $1.5 million and $3.1 million for the three and nine months ended September 30, 2023, respectively.

Our objectives in using interest rate derivatives have been to add stability to interest expense and to manage our exposure to interest rate movements. To accomplish this objective, we have used an interest rate swap as part of our interest rate risk management strategy. Interest rate swaps designated as cash flow hedges involve the receipt of variable amounts from a counterparty in exchange for making fixed-rate payments over the life of the related agreements without exchange of the underlying notional amount.

The effective portion of changes in the fair value of designated derivatives that qualify as cash flow hedges is recorded in accumulated other comprehensive income in the condensed consolidated balance sheet and is subsequently reclassified into earnings in the period that the hedged forecasted transactions affect earnings. During the nine months ended September 30, 2023 and 2022, such a derivative was used to hedge the variable cash flows associated with the outstanding borrowings under the 2020 Credit Facility and the Company has accounted for this derivative as an effective hedge until the final portion of the swap was sold on March 27, 2023. Any ineffective portion of the change in the fair value of the derivative was recognized directly in earnings. During the nine months ended September 30, 2023, we recorded $7.3 million of Other expense, net due to the sale of our swap.

Cash Flows from Operating Activities

Our primary source of cash from operating activities has been from cash collections from our customers. We expect cash flows from operating activities to be affected by increases and decreases in sales volumes and timing of collections, and by purchases and shipments of inventory. Our primary uses of cash for operating activities have been for personnel costs and investment in our research and development and in our sales and marketing, and general and administrative departments.

Our operating activities used cash of $3.1 million in the nine months ended September 30, 2023, primarily as a result of lower accounts payable, accrued expenses and other long-term liabilities, our net loss adjusted for non-cash expenses, and lower deferred revenue and higher inventory, partially offset by lower accounts receivable and other operating assets. Higher product revenue in our IP Optical Networks segment and lower operating expenses company-wide due to our various cost saving initiatives, including lower employee and facilities expenses, have all positively affected our operating cash flow in 2023.

Cash used in operating activities in the nine months ended September 30, 2022 was $42.5 million, primarily resulting from our net loss, higher inventory, and lower accounts payable, accrued expenses and deferred revenue. These amounts were partially offset by certain non-cash expenses, such as amortization of intangible assets, the decrease in the fair value of the AVCT Investment, stock-based compensation, depreciation and amortization of property and equipment, as well as lower accounts receivable.

Cash Flows from Investing Activities

Our investing activities used $6.6 million and $13.0 million of cash in the nine months ended September 30, 2023 and 2022, respectively, to purchase property and equipment and software licenses.

Cash Flows from Financing Activities

Our financing activities used $32.2 million of cash in the nine months ended September 30, 2023, primarily due to $90.0 million of principal payments on our term debt, including a $75.0 million prepayment in connection with the Sixth Amendment to the 2020 Credit Facility, $1.6 million of debt issuance costs also paid in connection with the Sixth Amendment, and $3.9 million for the payment of tax withholding related to the net share settlements of restricted stock awards upon vesting. In addition, we received $53.4 million of proceeds from the issuance of the Preferred Stock and Warrants in the Private Placement and had $10.0 million of net borrowings under our 2020 Revolving Credit Facility.

Our financing activities provided $6.2 million of cash in the nine months ended September 30, 2022, primarily due to $50.4 million of net proceeds from our private placement sale of 17,071,311 shares of our common stock, par value $0.0001 per share, at a price of $3.05 per share (the “Equity Offering”), partially offset by $40.0 million of principal payments on the 2020 Credit Facility, including the voluntary $15.0 million incremental principal payment in connection with the Fourth Amendment and voluntary $10.0 million incremental principal payment in connection with the Fifth Amendment, and $2.7 million for the payment of tax withholding related to the net share settlements of restricted stock awards upon vesting. Payments of debt issuance costs and principal payments of finance leases together totaled approximately $1.5 million.

Based on our current expectations, we believe our current cash and available borrowings under the 2020 Credit Facility will be sufficient to meet our anticipated cash needs for working capital and capital expenditures for at least twelve months from the date of issuance of these financial statements. The rate at which we consume cash is dependent on the cash needs of our future operations, including our contractual obligations at September 30, 2023, primarily comprised of our debt principal and interest obligations as described above, and our operating lease and purchase obligations. Our operating lease obligations totaled \$63.4 million at September 30, 2023, with payments aggregating \$4.7 million in the remainder of 2023, \$17.0 million in 2024, \$9.2 million in 2025 and \$32.5 million thereafter. Estimated payments for purchase obligations for the full year 2023 aggregate approximately \$143 million. We anticipate devoting substantial capital resources to continue our research and development efforts, to maintain our sales, support and marketing, to complete acquisition-related integration activities and for other general corporate activities. We further believe that our financial resources, along with managing discretionary expenses, will allow us to manage the ongoing impact of inflation and the supply chain disruptions on our business operations. Looking ahead, we have developed contingency plans to reduce costs further if the situation deteriorates. However, it is difficult to predict future liquidity requirements with certainty, and our cash and available borrowings under the 2020 Credit Facility may not be sufficient to meet our future needs, which would require us to refinance our debt and/or obtain additional financing. We may not be able to refinance our debt or obtain additional financing on favorable terms or at all.

Recent Accounting Pronouncements

In March 2022, the Financial Accounting Standards Board (the "FASB") issued ASU 2022-02, *Financial Instruments – Credit Losses (Topic 326): Troubled Debt Restructurings and Vintage Disclosures* (“ASU 2022-02”), which eliminates the accounting guidance on troubled debt restructurings for creditors in ASC 310, *Receivables (Topic 310)*, and requires entities to provide disclosures about current period gross write-offs by year of origination. Also, ASU 2022-02 updates the requirements related to accounting for credit losses under ASC 326, *Financial Instruments – Credit Losses (Topic 326)*, and adds enhanced disclosures for creditors with respect to loan refinancings and restructurings for borrowers experiencing financial difficulty. ASU 2022-02 was effective for the Company January 1, 2023. The adoption of ASU 2022-02 did not have a material impact on our consolidated financial statements.

In October 2021, the FASB issued ASU 2021-08, *Business Combinations (Topic 805): Accounting for Contract Assets and Contract Liabilities from Contracts with Customers* ("ASU 2021-08"), which amends ASC 805, *Business Combinations (Topic 805)*, to add contract assets and contract liabilities to the list of exceptions to the recognition and measurement principles that apply to business combinations and to require that an acquiring entity recognize and measure contract assets and contract liabilities acquired in a business combination in accordance with ASC 606, *Revenue from Contracts with Customers (Topic 606)* ("ASC 606"). Under current GAAP, an acquirer generally recognizes such items at fair value on the acquisition date. While primarily related to contract assets and contract liabilities that were accounted for by the acquiree in accordance with ASC 606, ASU 2021-08 also applies to contract assets and contract liabilities from other contracts to which the provisions of ASC 606 apply, such as contract liabilities from the sale of nonfinancial assets within the scope of ASU 2017-05, *Other Income - Gains and Losses from the Derecognition of Nonfinancial Assets (Subtopic 610-20)*. ASU 2021-08 was effective for us January 1, 2023. We believe that the adoption of ASU 2021-08 could have a material impact on our consolidated financial statements for periods including and subsequent to significant business acquisitions.

Item 3. Quantitative and Qualitative Disclosures About Market Risk

We are exposed to financial market risk related to foreign currency fluctuations and changes in interest rates. Except as presented below, there have been no material changes in market risk from the information provided in Item 7A. Quantitative and Qualitative Disclosures About Market Risk of our Annual Report on Form 10-K, for the year ended December 31, 2022.

To manage the volatility related to the exposure to changes in interest rates, we have historically entered into a derivative financial instrument, specifically an interest rate swap. Our objective has been to reduce, where it is deemed appropriate to do so, fluctuations in earnings and cash flows associated with changes in interest rates. Our policies and practices are to use derivative financial instruments only to the extent necessary to manage exposures. We do not hold or issue derivative financial instruments for trading or speculative purposes.

In March 2023, we disposed of our interest rate swap by selling the remaining notional value totaling $340 million back to our counterparty. We received $19.2 million from our counterparty, consisting of $0.8 million of interest and $18.4 million for the sale. We recognized a gain from accumulated other comprehensive income (loss) of $7.3 million to Other expense, net in our condensed consolidated statement of operations for the three months ended March 31, 2023. Amounts remaining in accumulated other comprehensive income (loss) related to our derivative totaled $12.0 million and are being amortized to interest expense over the remaining term of our variable-rate debt on a straight-line basis.

Item 4. Controls and Procedures

Disclosure Controls and Procedures

Evaluation of Disclosure Controls and Procedures. Our management, with the participation of our principal executive officer and principal financial officer, evaluated the effectiveness of our disclosure controls and procedures (as defined in Rules 13a-15(e) and 15d-15(e) under the Securities Exchange Act of 1934, as amended (the "Exchange Act")) as of the end of the period covered by this Quarterly Report on Form 10-Q. Based on this evaluation, our principal executive officer and principal financial officer concluded that our disclosure controls and procedures were effective as of September 30, 2023.

Changes in Internal Control over Financial Reporting. There have been no changes in our internal control over financial reporting (as defined in Rules 13a-15(f) and 15d-15(f) under the Exchange Act) during the fiscal quarter ended September 30, 2023 that have materially affected, or are reasonably likely to materially affect, our internal control over financial reporting.

PART II OTHER INFORMATION

Item 1. Legal Proceedings

We are subject to legal proceedings and claims that have not been fully resolved and that have arisen in the ordinary course of business. Our material legal proceedings as described in Part I, Item 1 of this Form 10-Q in the notes to the condensed consolidated financial statements in Note 19, "Commitments and Contingencies," under the heading "Litigation."

The outcome of litigation is inherently uncertain. If one or more legal matters were resolved against the Company in a reporting period for amounts above management's expectations, our financial condition and operating results for that reporting period could be materially adversely affected. We settled certain matters during the nine months ended September 30, 2023 that did not individually or in the aggregate have a material impact on our financial condition or results of operations.

Item 1A. Risk Factors

Our business faces significant risks and uncertainties, which may have a material adverse effect on our business prospects, financial condition and results of operations, and you should carefully consider them. There have been no material changes in the nine months ended September 30, 2023 to the risk factors described in Part I, Item 1A. of our Annual Report on Form 10-K for the year ended December 31, 2022 and our Quarterly Report on Form 10-Q for the quarter ended June 30, 2023, with the exception of the risk factor below.

Conditions in Israel may materially and adversely affect the Company’s business.

We have a significant number of employees located in Israel. As a result, political, economic and military conditions in Israel may directly affect the Company’s business. In October 2023, Hamas conducted several terrorist attacks in Israel resulting in ongoing war across the country, forcing the closure of our offices in Israel for several days. In addition, there continue to be hostilities between Israel and Hezbollah in Lebanon and Hamas in the Gaza Strip, both of which resulted in rockets being fired into Israel, causing casualties and disruption of economic activities. In early 2023, there were a number of changes proposed to the political system in Israel by the current government which, if implemented as planned, could lead to large-scale protests and additional uncertainty, negatively impacting the operating environment in Israel. Popular uprisings in various countries in the Middle East over the last few years have also affected the political stability of those countries and have led to a decline in the regional security situation. Such instability may also lead to deterioration in the political and trade relationships that exist between Israel and these countries. Any armed conflicts, terrorist activities or political instability involving Israel or other countries in the region could adversely affect our business, results of operations, financial condition, cash flows and prospects. Although the Israeli Government currently covers the reinstatement value of direct damages that are caused by terrorist attacks or acts of war, we cannot ensure stockholders that this coverage will be maintained or will be adequate in the event we submit a claim.

A number of countries, principally in the Middle East, still restrict doing business with Israel and Israeli companies, and additional countries may impose restrictions on doing business with Israel and Israeli companies if hostilities in Israel or political instability in the region continue or increase. In addition, there have been increased efforts by activists to cause companies and consumers to boycott Israeli goods based on Israeli Government policies. Such actions, particularly if they become more widespread, may adversely impact our ability to sell our products.

Our operations could also be disrupted by the absence for significant periods of one or more key employees or a significant number of other employees because of military service. Some of our employees in Israel are obliged to perform military reserve duty, which generally accumulates over a period of three years from several days to up to a maximum of 84 days (and up to 108 days, in special circumstances specified under applicable law) and, in certain emergency circumstances, employees may be called to immediate and unlimited active duty. In response to the terrorist attacks in October 2023, a number of our employees in Israel have been activated for military duty and we expect that additional employees will also be activated if the war in Israel continues. While we have business continuity plans in place to address the military call-ups, any of these circumstances could have a material adverse effect on our business, results of operations, financial condition, cash flows and prospects.

Item 2. Unregistered Sales of Equity Securities and Use of Proceeds

(c) Issuer Purchases of Equity Securities

The following table provides information with respect to the shares of common stock repurchased by us for the periods indicated:

Period	Total Number of Shares Purchased (1)	Average Price Paid per Share	Total Number of Shares Purchased as Part of Publicly Announced Plans or Programs	Approximate Dollar Value of Shares that May Yet be Purchased Under the Plans or Programs
July 1, 2023 to July 31, 2023	55,911	$ 2.80	—	$ —
August 1, 2023 to August 31, 2023	4,843	$ 2.95	—	$ —
September 1, 2023 to September 30, 2023	99,991	$ 2.83	—	$ —
Total	160,745	$ 2.82	—	$ —

(1) Upon vesting of restricted stock awards, certain of our employees surrender to us a portion of the newly vested shares of common stock to satisfy the tax withholding obligations that arise in connection with such vesting. During the third quarter of 2023, 160,745 shares of restricted stock were returned to us by employees to satisfy tax withholding obligations arising in connection with vesting of restricted stock.

Item 5. Other Information

During the three months ended September 30, 2023, none of the Company’s directors or officers adopted, terminated or modified a Rule 10b5-1 trading arrangement or non-Rule 10b5-1 trading arrangement (as such terms are defined in Item 408 of Regulation S-K of the Securities Act of 1933, as amended).

Item 6. Exhibits

Exhibit No.	Description
2.1	Agreement and Plan of Merger, dated as of November 14, 2019, by and among the Registrant, Ribbon Communications Israel Ltd., Eclipse Communications Ltd., ECI Telecom Group Ltd. and ECI Holding (Hungary) Korlátolt Felelősségű Társág (incorporated by reference to Exhibit 2.1 to the Registrant's Current Report on Form 8-K, filed November 14, 2019 with the SEC).
2.2	Amended and Restated Purchase Agreement, dated December 1, 2020, among Ribbon Communications Inc., Ribbon Communications Operating Company, Inc., Ribbon Communications International Limited and American Virtual Cloud Technologies, Inc. (incorporated by reference to Exhibit 2.1 to the Registrant's Current Report on Form 8-K, filed December 7, 2020 with the SEC).
3.1	Restated Certificate of Incorporation of the Registrant (incorporated by reference to Exhibit 3.2 to the Registrant's Current Report on Form 8-K12B, filed October 30, 2017 with the SEC).
3.2	Certificate of Amendment of the Restated Certificate of Incorporation of the Registrant (incorporated by reference to Exhibit 3.1 to the Registrant's Current Report on Form 8-K, filed November 28, 2017 with the SEC).
3.3	Certificate of Designation of Series A Preferred Stock (incorporated by reference to Exhibit 3.1 to the Registrant's Current Report on Form 8-K, filed March 30, 2023 with the SEC).
3.4	Certificate of Amendment of the Restated Certificate of Incorporation of the Registrant (incorporated by reference to Exhibit 3.1 to the Registrant's Current Report on Form 8-K, filed August 4, 2023 with the SEC).
3.5	Amended and Restated By-Laws of the Registrant (incorporated by reference to Exhibit 3.3 to the Registrant's Annual Report on Form 10-K, filed March 8, 2018 with the SEC).
4.1	Form of Warrant (incorporated by reference to Exhibit 4.1 to the Registrant's Current Report on Form 8-K, filed March 30, 2023 with the SEC).
31.1 *	Certificate of Ribbon Communications Inc. Chief Executive Officer Pursuant to Section 302 of the Sarbanes-Oxley Act of 2002.
31.2 *	Certificate of Ribbon Communications Inc. Chief Financial Officer Pursuant to Section 302 of the Sarbanes-Oxley Act of 2002.
32.1 #	Certificate of Ribbon Communications Inc. Chief Executive Officer Pursuant to Section 906 of the Sarbanes-Oxley Act of 2002.
32.2 #	Certificate of Ribbon Communications Inc. Chief Financial Officer Pursuant to Section 906 of the Sarbanes-Oxley Act of 2002.
101.INS *	Inline XBRL Instance Document
101.SCH *	Inline XBRL Taxonomy Extension Schema
101.CAL *	Inline XBRL Taxonomy Extension Calculation Linkbase
101.DEF *	Inline XBRL Taxonomy Extension Definition Linkbase
101.LAB *	Inline XBRL Taxonomy Extension Label Linkbase
101.PRE *	Inline XBRL Taxonomy Extension Presentation Linkbase
104 *	Cover Page Interactive Data File (formatted as Inline XBRL and contained in Exhibit 101)

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* Filed herewith.

\# Furnished herewith.

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.

Date: October 26, 2023	RIBBON COMMUNICATIONS INC.
	By: /s/ Miguel A Lopez
	Miguel A. Lopez Executive Vice President and Chief Financial Officer (Principal Financial Officer)

EXHIBIT 31.1

CERTIFICATION

I, Bruce McClelland, certify that:

1. I have reviewed this Quarterly Report on Form 10-Q of Ribbon Communications Inc.;
2. Based on my knowledge, this report does not contain any untrue statement of a material fact or omit to state a material fact necessary to make the statements made, in light of the circumstances under which such statements were made, not misleading with respect to the period covered by this report;
3. Based on my knowledge, the financial statements, and other financial information included in this report, fairly present in all material respects the financial condition, results of operations and cash flows of the registrant as of, and for, the periods presented in this report;
4. The registrant's other certifying officer and I are responsible for establishing and maintaining disclosure controls and procedures (as defined in Exchange Act Rules 13a-15(e) and 15d-15(e)) and internal control over financial reporting (as defined in Exchange Act Rules 13a-15(f) and 15d-15(f)) for the registrant and have:

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

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

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

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

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

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

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

Date: October 26, 2023

/s/ Bruce McClelland

Bruce McClelland
President and Chief Executive Officer
(Principal Executive Officer)

EXHIBIT 31.2

CERTIFICATION

I, Miguel A. Lopez, certify that:

1. I have reviewed this Quarterly Report on Form 10-Q of Ribbon Communications Inc.;
2. Based on my knowledge, this report does not contain any untrue statement of a material fact or omit to state a material fact necessary to make the statements made, in light of the circumstances under which such statements were made, not misleading with respect to the period covered by this report;
3. Based on my knowledge, the financial statements, and other financial information included in this report, fairly present in all material respects the financial condition, results of operations and cash flows of the registrant as of, and for, the periods presented in this report;
4. The registrant's other certifying officer and I are responsible for establishing and maintaining disclosure controls and procedures (as defined in Exchange Act Rules 13a-15(e) and 15d-15(e)) and internal control over financial reporting (as defined in Exchange Act Rules 13a-15(f) and 15d-15(f)) for the registrant and have:

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

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

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

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

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

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

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

Date: October 26, 2023

/s/ Miguel A. Lopez

Miguel A. Lopez
Executive Vice President and Chief Financial Officer
(Principal Financial Officer)

EXHIBIT 32.1

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

In connection with the Quarterly Report on Form 10-Q of Ribbon Communications Inc. (the "Company") for the period ended September 30, 2023 as filed with the Securities and Exchange Commission on the date hereof (the "Report"), the undersigned, Bruce McClelland, President and Chief Executive Officer of the Company, hereby certifies, pursuant to 18 U.S.C. Section 1350, as adopted pursuant to Section 906 of the Sarbanes-Oxley Act of 2002, that to his knowledge:

(1) the Report fully complies with the requirements of Section 13(a) or 15(d) of the Securities Exchange Act of 1934; and

(2) the information contained in the Report fairly presents, in all material respects, the financial condition and results of operations of the Company.

Date: October 26, 2023

/s/ Bruce McClelland

Bruce McClelland
President and Chief Executive Officer
(Principal Executive Officer)

EXHIBIT 32.2

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

In connection with the Quarterly Report on Form 10-Q of Ribbon Communications Inc. (the "Company") for the period ended September 30, 2023 as filed with the Securities and Exchange Commission on the date hereof (the "Report"), the undersigned, Miguel A. Lopez, Executive Vice President and Chief Financial Officer of the Company, hereby certifies, pursuant to 18 U.S.C. Section 1350, as adopted pursuant to Section 906 of the Sarbanes-Oxley Act of 2002, that to his knowledge:

(1) the Report fully complies with the requirements of Section 13(a) or 15(d) of the Securities Exchange Act of 1934; and

(2) the information contained in the Report fairly presents, in all material respects, the financial condition and results of operations of the Company.

Date: October 26, 2023

/s/ Miguel A. Lopez

Miguel A. Lopez
Executive Vice President and Chief Financial Officer
(Principal Financial Officer)