UNITED STATES
SECURITIES AND EXCHANGE COMMISSION

Washington, D.C. 20549

FORM 10-K

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

For the Fiscal Year Ended December 31, 2024

☐ 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 000-41446

ADTRAN Holdings, Inc.

(Exact name of registrant as specified in its charter)

Delaware	**87-2164282**
(State or Other Jurisdiction of Incorporation or Organization)	**(I.R.S. Employer Identification Number)**
901 Explorer Boulevard **Huntsville, Alabama**	**35806-2807**
(Address of Principal Executive Offices)	**(Zip code)**

256-963-8000

(Registrant's telephone number, including area code)

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 $0.01	ADTN	The Nasdaq Global Select Market

Securities registered pursuant to Section 12(g) of the Act: None

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

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

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

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

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

Large Accelerated Filer	☐	Accelerated Filer	☒
Non-accelerated Filer	☐	Smaller Reporting Company	☐
		Emerging growth company	☐

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

Indicate by check mark whether the registrant has filed a report on and attestation to its management's assessment of the effectiveness of its internal control over financial reporting under Section 404(b) of the Sarbanes-Oxley Act (15 U.S.C. 7262(b)) by the registered public accounting firm that prepared or issued its audit report. ☒

If securities are registered pursuant to Section 12(b) of the Act, indicate by check mark whether the financial statements of the registrant included in the filing reflect the correction of an error to previously issued financial statements. ☒

Indicate by check mark whether any of those error corrections are restatements that required a recovery analysis of incentive-based compensation received by any of the registrant's executive officers during the relevant recovery period pursuant to § 240.10D-1(b). ☒

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

The aggregate market value of the registrant's outstanding common stock held by non-affiliates of the registrant on June 30, 2024 was $410,464,716 based on a closing market price of $5.26 as reported on the NASDAQ Global Select. There were 79,860,033 shares of common stock outstanding as of February 28, 2025.

DOCUMENTS INCORPORATED BY REFERENCE

Portions of the Proxy Statement for the registrant's 2025 Annual Meeting of Stockholders are incorporated herein by reference into Part III of this report to the extent described in Part III.

ADTRAN Holdings, Inc.
Annual Report on Form 10-K
For the Fiscal Year Ended December 31, 2024

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GENERAL

Unless the context otherwise indicates or requires, references in this Annual Report on Form 10-K to "Adtran," the "Company," "we," "us" and "our" refer to ADTRAN, Inc. and its consolidated subsidiaries prior to the merger of Acorn MergeCo, Inc., a subsidiary of ADTRAN Holdings, Inc., with and into ADTRAN, Inc., on July 8, 2022, after which ADTRAN, Inc. became a wholly-owned direct subsidiary of ADTRAN Holdings, Inc. (the "Merger"), and to ADTRAN Holdings, Inc. and its consolidated subsidiaries following the Merger. Furthermore, unless the context otherwise indicates or requires, references in this Annual Report on Form 10-K to Adtran Networks refer to Adtran Networks SE (formerly ADVA Optical Networking SE).

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We own or have rights to trademarks, service marks or trade names that we use in connection with the operation of our business. In addition, our names, logos and website names and addresses are owned by us or licensed by us. We also own or have the rights to copyrights that protect the content of our solutions. Solely for convenience, the trademarks, service marks, trade names and copyrights referred to in this report are listed without the ©, ® and ™ symbols, but we will assert, to the fullest extent under applicable law, our rights or the rights of the applicable licensors to these trademarks, service marks, trade names and copyrights.

This report may include trademarks, service marks or trade names of other companies. Our use or display of other parties' trademarks, service marks, trade names or products is not intended to, and does not imply a relationship with, or endorsement or sponsorship of us by, the trademark, service mark or trade name owners.

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Unless otherwise indicated, information contained in this report concerning our industry and the markets in which we operate is based on information from independent industry and research organizations, other third-party sources (including industry publications, surveys and forecasts), and management estimates. Management estimates are derived from publicly available information released by independent industry analysts and third-party sources, as well as data from our internal research, and are based on assumptions made by us upon reviewing such data and our knowledge of such industry and markets that we believe to be reasonable. Although we believe the data from these third-party sources is reliable, we have not independently verified any third-party information.

CAUTIONARY NOTE REGARDING FORWARD-LOOKING STATEMENTS AND RISK FACTOR SUMMARY

The Private Securities Litigation Reform Act of 1995 provides a safe harbor for forward-looking statements made by or on behalf of Adtran. Adtran and its representatives may from time to time make written or oral forward-looking statements, including statements contained in this report, our other filings with the SEC and other communications with our stockholders. Any statement that does not directly relate to a historical or current fact is a forward-looking statement. Generally, the words "believe", "expect", "intend", "estimate", "anticipate", "would", "will", "may", "might", "could", "should", "can", "future", "assume", "plan", "seek", "predict", "potential", "objective", "expect", "target", "project", "outlook", "forecast" and similar expressions identify forward-looking statements. We caution you that any forward-looking statements made by us or on our behalf are subject to uncertainties and other factors that could affect the accuracy of such statements. Forward-looking statements are based on management's current expectations, as well as certain assumptions and estimates made by, and information available to, management at the time the statements are made. Those statements are based on general assumptions and are subject to various risks, and because they also relate to the future, they are likewise subject to inherent uncertainties and other factors that may cause actual results to differ materially from the views, beliefs and projections expressed in such statements. These risks, uncertainties and other factors include, but are not limited to, the risks identified in Item 1A. "Risk Factors" of this report and those described below:

Risks related to our financial results and Company success

- We are obligated to comply with covenants related to our Wells Fargo Credit Agreement that could restrict our operating activities, and the failure to comply with such covenants could result in defaults that accelerates our debt obligations.
- We have experienced significant fluctuations in revenue and such fluctuations may continue. Fluctuations in revenue can cause our operating results in a given reporting period to be higher or lower than expected.
- Accurately matching necessary inventory levels to customer demand within the current environment is challenging, and we may incur additional costs or be required to write off significant inventory that would adversely impact our results of operations.
- The lengthy sales and approval process required by Service Providers for new products has resulted in fluctuations in our revenue and may result in future revenue fluctuations.
- We require a significant amount of cash to service our indebtedness, our payment obligations to Adtran Networks shareholders under the DPLTA, and other obligations.
- The terms of the DPLTA may have a material adverse effect on our financial results and condition.
- Our significant indebtedness exposes us to various risks.
- We depend heavily on sales to certain customers; the loss of any of these customers or a significant project would significantly reduce our revenue and net income.
- Our exposure to the credit risks of our customers and distributors may make it difficult to collect accounts receivable and could adversely affect our operating results, financial condition and cash flows.
- We expect gross margins to continue to vary over time, and our levels of product and services gross margins may not be sustainable.
- Our dependence on a limited number of suppliers for certain raw materials, key components and ODM products, combined with supply shortages, has prevented and may continue to prevent us from delivering our products on a timely basis, which has had and may continue to have a material adverse effect on operating results and could have a material adverse effect on customer relations.
- We compete in markets that have become increasingly competitive, which may result in reduced gross profit margins and market share.
- Our estimates regarding future warranty obligations may change due to product failure rates, installation and shipment volumes, field service repair obligations and other rework costs incurred in correcting product failures. If our estimates change, our liability for warranty obligations may increase or decrease, impacting future cost of revenue.
- Managing our inventory is complex and has included and may continue to include write downs of excess or obsolete inventory.
- Our international operations have and may continue to expose us to additional risks, increase our costs and adversely affect our operating results, financial condition and cash flows.

- Our success depends on attracting and retaining key personnel.
- We are exposed to adverse currency exchange rate fluctuations in jurisdictions where we transact in local currency, which could harm our financial results and cash flows.
- We have recognized impairment charges related to goodwill and other intangible assets in the past and may be required to do so in the future.
- We may be unable to successfully and effectively manage and integrate acquisitions, divestitures and other significant transactions, which could harm our operating results, business and prospects.
- Ongoing inflationary pressures have negatively impacted our revenue and profitability.

Risks related to our control environment

- We have had to restate our previously issued consolidated financial statements and, as part of that process, have identified material weaknesses in our internal control over financial reporting. If we are unable to develop and maintain effective internal control over financial reporting, we may not be able to accurately report our financial results in a timely manner, which may adversely affect investor confidence in us and may adversely affect our business, financial condition and results of operations.
- We may face litigation and other risks as a result our material weaknesses in our internal control over financial reporting and any resulting restatement of our previously issued consolidated financial statements.
- Breaches of our information systems and cyberattacks could compromise our intellectual property and cause significant damage to our business and reputation.

Risks related to the telecommunications industry

- We must continue to update and improve our products and develop new products to compete and to keep pace with improvements in communications technology.
- Our failure or the failure of our contract manufacturers to comply with applicable environmental regulations could adversely impact our results of operations.
- If our products do not interoperate with our customers' networks, installations may be delayed or canceled, which could harm our business.
- We engage in research and development activities to develop new, innovative solutions and to improve the application of developed technologies, and as a consequence may miss certain market opportunities enjoyed by larger companies with substantially greater research and development efforts and which may focus on more leading-edge development.
- Our strategy of outsourcing a portion of our manufacturing requirements to subcontractors located in various international regions may result in us not meeting our cost, quality or performance standards.
- Our failure to maintain rights to intellectual property used in our business could adversely affect the development, functionality and commercial value of our products.
- Third party hardware or software that is used with our portfolios may not continue to be available or at commercially reasonable terms.
- Our use of open source software could impose limitations on our ability to commercialize our products.
- We may incur legal related liabilities or become subject to litigation that would have a material effect on our business.
- If we are unable to successfully develop and maintain relationships with SIs, Service Providers and enterprise VARs, our revenue may be negatively affected.
- We depend on a third-party cloud platform provider to host our Mosaic One SaaS network and other operating platforms, and if we were to experience a material disruption or interference in service, our business and reputation could suffer.

Risks related to the Company's stock price

- Our financial performance and operating results historically have fluctuated and are likely to continue to fluctuate in future periods, which may adversely affect our stock price.

- Future issuances of additional equity securities could result in dilution of existing stockholders' equity ownership.
- The price of our common stock has been volatile and may continue to fluctuate significantly.

Risks related to the regulatory environments in which we do business

- We are subject to complex and evolving U.S. and foreign laws, regulations and standards governing the conduct of our business. Violations of these laws and regulations may harm our business, subject us to penalties and to other adverse consequences.
- Changes in trade policy in the U.S. and other countries, including the imposition of additional tariffs and the resulting consequences, may adversely impact our gross profits, gross margins, results of operations and financial condition.
- New or revised tax regulations, changes in our effective tax rate, recognition of a valuation allowance or assessments arising from tax audits may have an adverse impact on our results.
- Interest rate fluctuations could increase our costs of borrowing money and negatively impact our financial condition and future operations.
- Expectations relating to ESG considerations expose the Company to potential liabilities, increased costs, reputational harm, and other adverse effects on the Company's business.
- Further downgrades of the U.S. credit rating, impending automatic spending cuts or a government shutdown could negatively impact our liquidity, financial condition and earnings.

We caution investors that other factors may prove to be important in the future in affecting our operating results. New factors emerge from time to time, and it is not possible for us to predict all of these factors, nor can we assess the impact each factor, or a combination of factors, may have on our business.

You are further cautioned not to place undue reliance on these forward-looking statements because they speak only of our views as of the date that the statements were made. We undertake no obligation to publicly update or revise any forward-looking statements, whether as a result of new information, future events or otherwise, except as required by law.

GLOSSARY OF SELECTED TERMS

Below are certain acronyms, concepts and defined terms commonly used in our industry and in this report along with their meanings:

Acronym/Concept/ Defined Term	Meaning
ACI-E	Access Integrator Ethernet
Adtran Networks	Adtran Networks SE, a European stock corporation incorporated under the laws of the European Union and Germany
Adtran GmbH	ADTRAN Gesellschaft mit beschränkter Haftung; Limited liability subsidiary of ADTRAN, Inc. in Germany
ALM	Active line monitoring
AI	Artificial Intelligence
AOE	Advanced Operational Environment
APAC	Asia Pacific
ASU	Accounting Standards Update
ATIS	Alliance for Telecommunications Industry Solutions; Standards organization that develops technical and operational standards and solutions for the information and technology industry
BBF	Broadband Forum
Carrier	Entity that provides voice, data or video services to consumers and businesses
CBAM	Carbon Border Adjustment Mechanism
COSO	Committee of Sponsoring Organizations of the Treadway Commission
CPE	Customer-Premises Equipment
CSRD	Corporate Sustainability Reporting Directive
C-TPAT	United States Customs Trade Partnership Against Terrorism
DPLTA	Domination and Profit and Loss Transfer Agreement
DPU	Distribution Point Unit
DSL	Digital Subscriber Line
DSO	Days Sales Outstanding
EMEA	Europe, Middle East and Africa
EPON	Ethernet Passive Optical Network
ESG	Environmental, Social and Governance
ESPR	Environmentally Sustainable Products Regulation
Ethernet	Means of connecting computers over a LAN (as defined below)
ETSI	European Telecommunications Standards Institute
EU	European Union
EURIBOR	Euro Interbank Offered Rate
FCPA	Foreign Corrupt Practices Act
FOB	Free on Board
FTTN	Fiber to the Node
GDPR	General Data Protection Regulation
Gfast	Digital subscriber line protocol standard for local loops (telephone lines) shorter than 500 meters with performance targets between 100 Mbps (as defined below) and 1 gigabit per second, depending on loop length
GPON	Gigabit Passive Optical Network
hiX	ADTRAN Multiservice Access Platform sold in the EU
ICT	Information and Communications Technology
IoT	Internet of Things

IP	Internet Protocol
IPCEI ME/CT	Important Projects of Common European Interest - Microelectronics and Communication Technologies
ISDA	International Swaps and Derivatives Association
ISO	International Organization for Standardization
ITU-T	International Telecommunication Union – Telecommunication Standardization Sector
LAN	Local Area Network
Mbps	Megabits Per Second
MEF	Metro Ethernet Forum
MSO	Multiple System Operator
MSP	Managed Service Provider
NASDAQ	National Association of Securities Dealers Automated Quotations, an American stock exchange based in New York City
ODM	Original Design Manufacturer
OLT	Optical Line Terminal
ONE	Optical Networking Edge
ONT	Optical Network Terminal
Operator	Entity that provides voice, data or video services to consumers and businesses
OS	Operating System
OTT	Over the Top
PCAOB	Public Company Accounting Oversight Board
PON	Passive Optical Network
PSU	Performance Stock Unit
RNCI	Redeemable Non-Controlling Interest
RoHS	Restriction of the Use of Certain Hazardous Substances in Electrical and Electronic Equipment
RSU	Restricted Stock Unit
SaaS	Software-as-a-Service
SDN	Software Defined Networking
SDX	Software Defined Everything
SDO	Standards Developing Organizations
SEC	Securities and Exchange Commission
Service Provider or SP	An entity that provides voice, data or video services to consumers and businesses
SLA	Service Level Agreement
SMB	Small- to Medium-sized Business
SOFR	Secured Overnight Financing Rate
System Integrator or SI	Person or company that specializes in bringing together component subsystems into a whole and ensuring that those subsystems function together
TIA	Telecommunications Industry Association
TIP	Telecom Infra-Project
TL 9000	Standard developed by and for the ICT industry to drive consistency in the quality of products and services down the supply chain through the implementation of a common body of QMS requirements and defined performance-based measurements
U.K.	United Kingdom
U.S.	United States

VAR	Value-Added Reseller
VoIP	Voice over Internet Protocol
WEEE	Waste from Electrical and Electronic Equipment directive
Wi-Fi	Family of wireless network protocols, based on the IEEE 802.11 family of standards, which are commonly used for local area networking of devices and Internet access
XGS-PON	Updated standard for PONs that can support 10 Gbps symmetrical data transfer

PART I

ITEM 1. BUSINESS

Company Overview

ADTRAN Holdings, Inc. ("Adtran" or the "Company") is a leading global provider of networking and communications platforms, software, systems and services focused on the metro optical transport, data center interconnect, and broadband access market, serving a diverse domestic and international customer base in multiple countries that includes large, medium and small Service Providers, alternative Service Providers, such as utilities, municipalities and fiber overbuilders, cable/MSOs, SMBs and distributed enterprises, including Fortune 500 companies with sophisticated business continuity applications; and federal, state and local government agencies. Our innovative solutions and services enable voice, data, video and internet-communications across a variety of network infrastructures and are currently in use by millions worldwide. We support our customers through our direct global sales organization and our distribution networks. Our success depends upon our ability to have customers adopt our technology, and increase unit volume and market share through the introduction of new products and succeeding generations of products having optimal selling prices and increased functionality as compared to both the prior generation of a product and to the products of competitors in order to gain market share. To service our customers and grow revenue, we are continually conducting research and developing new products addressing customer needs and testing those products for the specific requirements of the particular customers. We offer a broad portfolio of flexible software and hardware network solutions and services that enable Service Providers to meet today's service demands, while enabling them to transition to the fully converged, scalable, highly-automated, cloud-controlled voice, data, internet and video network of the future. In addition to our global headquarters in Huntsville, Alabama, and our European headquarters in Munich, Germany, we have sales and research and development facilities in strategic global locations.

The Company solely owns ADTRAN, Inc. and is the majority shareholder of Adtran Networks SE ("Adtran Networks"). ADTRAN, Inc. is a leading global provider of open, disaggregated networking and communications solutions. Adtran Networks is a global provider of network solutions for data, storage, voice and video services. We believe that the combined technology portfolio can best address current and future customer needs for high-speed connectivity from the network core to the end consumer, especially upon the convergence of solutions at the network edge.

We operate under two reportable segments: (1) Network Solutions, which includes hardware and software products, and (2) Services & Support, which includes a portfolio of network design and implementation services, support services and cloud-hosted SaaS applications that complement our product portfolio and can be utilized to support other platforms as well. These two segments span across our three revenue categories: (1) Subscriber Solutions, (2) Access & Aggregation Solutions and (3) Optical Networking Solutions. See below for a detailed discussion of these reportable segments and revenue categories.

We are focused on being a top global supplier of fiber-based communications infrastructure and SaaS applications spanning from the network core to the cloud edge (data center) to the subscriber edge (customer premise) serving both the residential and enterprise connectivity markets including fiber-based infrastructure for mobile networks. We offer a broad portfolio of flexible network infrastructure solutions, customer premises equipment, software applications, and global services and support that enable Service Providers to meet their service demands now and in the future. These products and services enable Service Providers to transition to a common network supporting the simplified delivery of high-capacity services, regardless of subscriber density, network topology and infrastructure diversity.

We began operations in January 1986. Our global headquarters are located at Cummings Research Park in Huntsville, Alabama, the second largest research park in the U.S. and fourth largest in the world. Our mailing address is 901 Explorer Boulevard, Huntsville, Alabama, 35806. Our telephone number at that location is (800) 923-8726. Our website is www.adtran.com. The information found on our website is not incorporated by reference in this report or any other report that we file or furnish to the SEC.

Domination and Profit and Loss Transfer Agreement

The DPLTA between the Company, as the controlling company, and Adtran Networks, as the controlled company, was executed on December 1, 2022 in connection with the Company's business combination with Adtran Networks, and became effective on January 16, 2023. Pursuant to the DPLTA, the Company has effective control over Adtran Networks subject to the terms of DPLTA. *For more information on the DPLTA, see "Management's Discussion and Analysis of Financial Condition and Results of Operations – Adtran Networks Domination and Profit and Loss Transfer Agreement" in Part II, Item 7 of this report.*

Reportable Segments

Our business operates under two reportable segments: (1) Network Solutions and (2) Services & Support. We review our financial performance, specifically revenue and gross profit, based on these two segments.

Network Solutions Segment

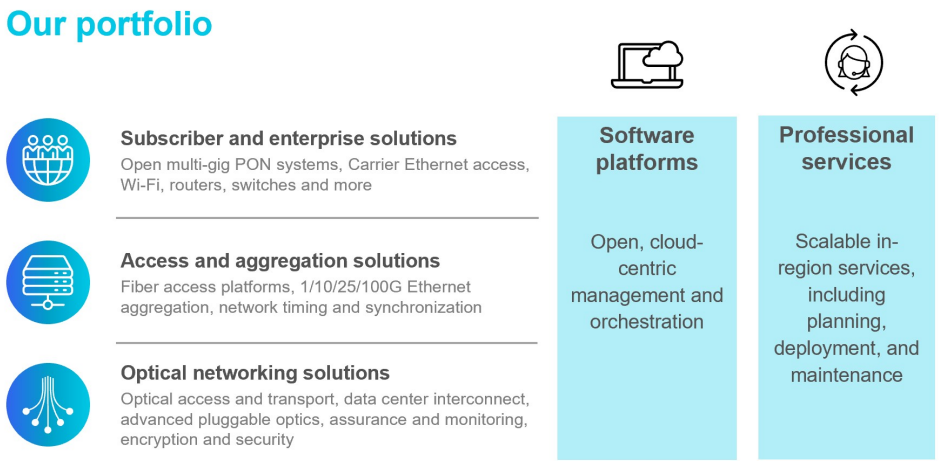
The Network Solutions segment includes hardware and software products that enable a digital future which support the Company's Subscriber, Access and Aggregation, and Optical Networking Solutions. The Company's cloud-managed Wi-Fi gateways, virtualization software, and switches provide a mix of wired and wireless connectivity at the customer premises. In addition, its Carrier Ethernet products support a variety of applications at the network edge ranging from mobile backhaul to connecting enterprise customers (“Subscriber Solutions"). The Company's portfolio includes products for multi-gigabit service delivery over fiber or alternative media to homes and businesses.

Services & Support Segment

The Services & Support segment offers a comprehensive portfolio of network design, implementation, maintenance and cloud-hosted services supporting its Subscriber, Access & Aggregation, and Optical Networking Solutions. These services assist operators in the deployment of multi-vendor networks while reducing their cost to maintain these networks. The cloud-hosted services include a suite of SaaS applications under the Company's Mosaic One platform that manages end-to-end network and service optimization for both fiber access infrastructure and mesh Wi-Fi connectivity. The Company backs these services with a global support organization that offers on-site and off-site support services with varying SLAs.

Revenue Categories

In addition to operating under two reportable segments, we also report revenue across three categories – Subscriber Solutions, Access & Aggregation Solutions and Optical Networking Solutions.



Our Subscriber Solutions portfolio is used by Service Providers to terminate their access services infrastructure at the customer's premises while providing an immersive and interactive experience for residential, business and wholesale subscribers. This revenue category includes hardware- and software-based products and services. These solutions include fiber termination solutions for residential, business and wholesale subscribers, Wi-Fi access solutions for residential and business subscribers, Ethernet switching and network edge virtualization solutions for business subscribers, and cloud software solutions covering a mix of subscriber types.

The Subscriber Solutions category includes the following products, software and services:

Residential Gateways ("RGs"): • Residential Gateways	Optical Networking Terminals ("ONTs"): • EPON ONUs • GPON/XGS-PON ONTs
Enterprise Connectivity: • Traditional SSE • Routers • Switches	Edge Compute: • Edge Cloud (VEC)
Carrier Ethernet Network Interface Devices ("CE NIDs"): • FSP 150-GE110 • FSP 150-XG100 • FSP 150-XG210 • FSP 150-XG300 • FSP 150-XG400-NIDs	Software: • Mosaic One SaaS applications • n-Command • Procloud
Service: • Build • Care • Training • Professional Services • Software Services • Managed Services	

Our Access & Aggregation Solutions are solutions that are used by communications Service Providers to connect residential subscribers, business subscribers and mobile radio networks to the Service Providers' metro network, primarily through fiber-based connectivity. This revenue category includes hardware- and software-based products and services. Our solutions within this category are a mix of fiber access and aggregation platforms, precision network synchronization and timing solutions, and access orchestration solutions that ensure highly reliable and efficient network performance.

The Access & Aggregation category includes the following products, software and services:

Optical Line Terminals ("OLTs"): • TA5000 OLT • SDX OLT • EPON OLT • Pluggable Optics	Optical Networking Terminals ("ONTs"): • EPON ONUs
Packet Aggregation: • FSF 150-XG400 Aggregators • SDX Aggregation • Activator	Copper Access: • Gfast DPUs • hiX • Total Access FTTN • Traditional Broadband
Oscilloquartz: • OSA AccessSync • OSA Edge Sync	Software: • MCP • AOE and ACI-E

• OSA CoreSync • OSA Inside	• Mosaic One SaaS Applications • Mosaic Network Controller
Service: • Build • Care • Training • Professional Services • Software Services • Managed Services	

Our Optical Networking Solutions are used by communications Service Providers, internet content providers and large-scale enterprises to securely interconnect metro and regional networks over fiber. This revenue category includes hardware- and software-based products and services. Our solutions within this category include open optical terminals, open line systems, optical subsystems and modules, network infrastructure assurance systems, and automation platforms that are used to build high-scale, secure and assured optical networks.

The Optical Networking Solutions category includes the following products, software and services:

Optical Transport: • FSP 3000 CC • FSP 3000 R7	Optical Engines: • AOE Coherent Pluggables • AOE MicroMax • AOE AccessWave
Infrastructure Monitoring: • ALM Fiber Monitoring	Software: • Mosaic Network Controller
Services: • Build • Care • Training • Professional Services • Software Services • Managed Services	

Industry Overview

The global growth of the cloud and mobility (5G), home office and mobile working, industrial applications and AI are accelerating the demand for more bandwidth, requiring more flexible provisioning of telecommunications services and more precise network synchronization. Communications Service Providers' investment in their networks is being driven by the pursuit of growth in subscriber acquisition, retention, and average revenue per user, as well as by the aims of streamlining operations, lowering energy consumption and improving their overall ESG position. Drivers facilitating this network investment cycle include the evolution of government funding programs, private equity infrastructure investment appetite, regulatory broadband policies, competition and ever-increasing subscriber demand for higher-speed broadband.

Subscriber demand for greater bandwidth continues to increase as connectivity is being woven ever more tightly into the fabric of everyone's day-to-day lives. Specifically, subscriber demand for greater bandwidth is being driven by increasing numbers of connected devices, shifting working arrangements, the transition of entertainment over to OTT video, and the evolution of gaming platforms towards subscription models where new hybrids of download and streaming are emerging globally. This is further compounded by the rapid adoption of AI, the prevalence of IoT and the increasing transition of applications over to cloud-based services and internet applications where recurring revenues replace one-time sales. Performance and user satisfaction are directly related to bandwidth availability and service robustness. As the demand for high-definition video and game streaming services, symmetric bandwidth for online collaboration, lower latency for interactive AI and cloud applications and smart home video surveillance applications continue to increase, so too does the need increase for fiber-based broadband to be in every home and business.

In order to satisfy these complex requirements and deliver on the efficiency improvements demanded by operators, communications Service Providers are transitioning to full fiber access networks.

We aim to serve as a trusted partner to our customers. Working side-by-side with our customers, we assist them with maximizing the performance of their networks by providing a flexible path for their networks to evolve cost-effectively over to full fiber while availing themselves of the benefits that web-scale architectures deliver and helping to further monetize their investments.

Our Strategy

Our strategy is to provide innovative and cost-effective solutions for our customers that enable them to address their increasing broadband demand. Our solutions focus on technology transformations that are happening in broadband network infrastructure, home and business CPE and software platforms, and services needed to help our customers address increasing complexity while scaling to meet increasing consumer demands.

We aspire to be one of the top communication technology players in the world and an innovation leader around the converged edge, enabling the intelligent, self-optimizing, fiber-everywhere future. We plan to achieve this goal through innovation in network, home and business technology paired with a customer-focused organizational structure that tailors solutions to meet the needs of our target customers. We have one of the most comprehensive solutions portfolios that empowers operators to build a converged infrastructure from the metro core to the customer premise, serving all networking applications for residential, business, wholesale and mobile users. We take an approach to our portfolio in which we are focused in specific markets where we can offer competitive differentiation and scale while also having enough diversity and breadth in the portfolio to provide end-to-end connectivity solutions that offer value to our customers. More specifically, our corporate strategy consists of the following elements:

- *Leadership in fiber networking*: Breadth of portfolio, open and advanced architecture, assured and secure connectivity.
- *Growth in focus markets:* Increased turnkey solutions and in-region resources, especially North America and EMEA.
- *Investment in converged edge:* Innovation in optics, security, AI-driven networking, virtualization, SaaS, etc.
- *Transformation through software:* Open and cloud-centric systems, end-to-end programmability, simplification through software, and innovative SaaS offerings.
- *Diversification of customers:* Cross-selling current portfolio, acquisition of new customers and partners based on larger portfolio and trusted supplier status.
- *Focus on sustainability:* Science-based emissions targets, process-based product eco-design, optimization of operations, logistics and all packaging, circular-economy processes.

Business Efficiency Program

On November 6, 2023, due to the uncertainty around the current macroeconomic environment and its impact on customer spending levels, the Company's management decided to implement a business efficiency program ("Business Efficiency Program") targeting the reduction of ongoing operating expenses and focusing on capital efficiency inclusive of certain salary reductions, an early retirement program, a site consolidation plan to include lease impairments and the sale of owned real estate (including the probable sale of our headquarters), inventory write downs from product discontinuances, and the suspension of the quarterly dividend. The Business Efficiency Program expanded upon other recently implemented restructuring efforts and synergy costs following the Business Combination. For instance, on August 17, 2023, the Company's management determined to discontinue its copper-based Digital Subscriber Line broadband access technology products and its fixed wireless access products in its Network Solutions segment. Furthermore, on September 29, 2023, the Company's management decided to exit the "IoT" gateway market (indoor and outdoor), a subset of the broader IoT market (together with the other product discontinuations, the "Discontinuations"). On October 25, 2023, all employees were informed of certain personnel measures, which included the reduction of salary for select management, a reduction of approximately 5% of the workforce, an early retirement program and a hiring freeze. Additionally, on April 11, 2024, Management determined to close a facility in Greifswald, Germany which was completed in November 2024. As of December 31, 2024, the Company classified the Company's property, specifically the North and South Towers located on our Huntsville, Alabama campus, as assets held for sale, *see Note 1 and Note 6 of the Notes to Consolidated Financial Statements included in Part II, Item 8 of this report for additional information*. Other than our stated aim of selling our headquarters, the restructuring program was substantially complete as of December 31, 2024. *For additional information regarding the Business Efficiency Program, see "Management's Discussion and Analysis of Financial Condition and Results of Operations" in Part II, Item 7 or Note 20 of the Notes to Consolidated Financial Statements included in Part II, Item 8 of this report.*

Customers

We have a diverse global customer base that includes large, medium and small Service Providers, alternative Service Providers, such as utilities, municipalities and fiber overbuilders; cable/MSOs; SMBs and distributed enterprises.

During 2024, we had one customer who comprised greater than 10.0% of our revenue, which was an international Service Provider and our next five largest customers comprised 21.7% of our revenue. Additionally, our revenue in the U.S., U.K. and Germany each comprised more than 10% of our revenue in 2024. The revenue from this Service Provider and these countries is reported in both our Network Solutions and Services & Support segments.

For a discussion of risks associated with customers, Service Providers and approval processes, see "Risk Factors – The lengthy sales and approval process required by Service Providers for new products could result in fluctuations in our revenue," "Risk Factors – We depend heavily on sales to certain customers; the loss of any of these customers would significantly reduce our revenue and net income," in Part I, Item 1A of this report.

Distribution, Sales and Marketing

We sell our products through our direct sales organization and our distribution network. Our direct sales organization supports major accounts and has offices in global locations. Sales to most smaller and independent telephone companies are fulfilled through a combination of direct sales and distributors. Our services offerings can be purchased directly from us or through one of our Service Providers, channel partners or distribution partners.

Before placing an order, Service Providers typically require lengthy product qualification and standardization processes that can extend for several months or even years. Once approved, product orders are typically placed under single or multi-year supply agreements that are generally not subject to minimum volume commitments. Service Providers generally prefer having two or more suppliers for most products. Therefore, individual orders are usually subject to competitive combinations of total value, service, price, delivery and other terms.

Orders for end-user products are fulfilled through a combination of direct sales and distributors. This is supported by a direct sales organization for major accounts and a channel-based sales organization to facilitate sales to our partners. MSPs, VARs and SIs may be affiliated with us as channel partners, or they may purchase from a distributor in an unaffiliated fashion. Affiliated partners participate with us at various program levels, based on sales volume and other factors, to receive benefits such as product discounts, market development funds, technical support and training.

Outside of the U.S., most Service Provider products are sold through our direct sales organization and end-user products are sold direct or through distribution arrangements customized for each region. Some regions are supported from a field office that offers sales and support functions, and in some cases, warehousing and manufacturing support. Our field sales organizations, distributors and Service Provider customers receive support from regional-based marketing, sales and customer support groups.

Our marketing organization promotes all brands associated with us to key stakeholders, including customers, partners and prospects throughout the world. Marketing is complemented by product marketing and management teams that work with our engineering teams to develop and promote new products and services, as well as product enhancements.

Research and Development

Rapidly changing technologies, evolving industry standards, changing customer requirements, supply constraints and continuing developments in communications service offerings characterize the markets for our products. Our on-going ability to adapt to these changes and to develop new and enhanced products that meet or anticipate market demand is the main factor influencing our competitive position and our ability to grow.

Our product development activities are a central part of our strategy. We plan to maintain our emphasis on product development to enable us to respond to rapidly changing technology and evolving industry standards. Our research and development and engineering functions are global. We maintain research and development functions at multiple sites in the U.S., Europe, Israel and Asia. During the years ended December 31, 2024, 2023 and 2022, research and development expenditures totaled $221.5 million, $258.3 million and $173.8 million, respectively.

While we develop the majority of our products internally, we also leverage partners for some solutions. Additionally, we license intellectual property or acquire technologies. Internal development on advanced technology products gives us more control over design and manufacturing issues, while for traditional designs, ODM and/or licensed intellectual property provides us with the ability to leverage the economies of scale of our technology partners. This balanced approach ensures we provide best-in-class solutions for our customers.

As we continue to create more software-based intellectual property, such as our SDN/Edge Cloud portfolio, our use of lean agile practices in research and development ensures we remain responsive and customer-focused. This enables us to deliver products faster, at higher quality and more economically to our customers and the market on a continuous basis.

Our ability to continually reduce product costs, while focusing on delivery and quality, are important parts of our overall business strategy. Our product development efforts are often centered on entering a market with improved technology, enabling us to offer products at competitive prices and compete for market share.

Development activities focus on solutions that support both existing and emerging communications industry technologies in segments that we consider viable revenue opportunities. We are actively engaged in developing and refining technologies to support data, voice and video transport primarily over IP/Ethernet and optical network architectures. This includes optical transport, packet demarcation and aggregation, synchronization and fiber-optic access, DSL, access routing, ethernet switching, wireless LANs, integrated access, converged services, VoIP, network management and professional services. In addition, we focus on vertical optical technologies like Silicon Photonics, as well as microelectronics in order to differentiate and fully control the vertical value stack of our solutions. In 2024, we released many market-leading products like additions to our SDX OLT series, new residential gateway and ONT families, outdoor packet demarcation devices, packet demarcation, encryption/security products, edge and core transport solutions. We enhanced our market-leading synchronization & timing portfolio, as well as our SaaS delivery abilities and Mosaic One software.

Our research function and advanced technology team is driving many specific research projects in the fields of sustainable optical transmission, security, quantum communications, SDN and access technologies. This research fosters differentiated product concepts and guides our various product design and engineering teams in IPR creation, industry and network standards and technological forecasting.

We are an active participant in several SDOs and have assisted with the development of worldwide standards in many technologies. Our SDO activities are primarily in the areas of broadband access, optical networking and synchronization. This includes involvement with the ITU-T, ATIS, ETSI, ONF and the BBF. We are involved in the evolution of optical access technologies on next-generation PON. We also continue to be involved in driving optical networking, synchronization and SDN standardization and participate in industry-wide interoperability, performance-testing and system-level projects related to those standards in BBF and ONF. We are also members of MEF, TIA, CableLabs and TIP.

For a discussion of risks associated with our research and development activities, see "Risk Factors – We must continue to update and improve our products and develop new products to compete and to keep pace with improvements in communications technology" and "Risk Factors – We engage in research and development activities to develop new, innovative solutions and to improve the application of developed technologies, and as a consequence may miss certain market opportunities enjoyed by larger companies with substantially greater research and development effort and which may focus on more leading edge development," in Part I, Item 1A of this report.

Manufacturing and Operations

The principal steps in our manufacturing process include the purchase and management of materials, assembly, testing, final inspection, packing and shipping. We purchase parts and components for the assembly of some products from a large number of suppliers through a worldwide sourcing program. Additionally, we manage a process that identifies the components that are best purchased directly by contract manufacturers for use in the assembly of our products to achieve manufacturing efficiency, quality and cost objectives. Certain key components used in our products are currently available from a single source, and other key components are available from only a limited number of sources. In the past, we have experienced delays in the receipt of certain key components, which has resulted in delays in related product deliveries. We attempt to manage these risks through developing alternative sources, by staging inventories at strategic locations, through engineering efforts designed to prevent the necessity of certain components and by maintaining close contact and building long-term relationships with our suppliers. *See Inventory included in Part I, Item 1 of this report for additional information.*

We rely on subcontractors for the assembly and testing of certain printed circuit board assemblies, sub-assemblies, chassis, enclosures and equipment shelves, and to purchase some of the raw materials used in such assemblies. We typically manufacture our lower-volume, higher-mix products and build and test product prototypes and many of our initial production units at our manufacturing site in Huntsville, Alabama. We later transfer the production of higher-volume, lower-mix assemblies to our subcontractors. Subcontract assembly operations can lengthen fulfillment cycle times, but we believe we can respond more rapidly to uncertainties in incoming order rates by selecting assembly subcontractors that have significant reserve capacity and flexibility. Our subcontractors have generally proven to be flexible and able to meet our quality requirements.

We ship the majority of products to our U.S. customers from our facilities in Huntsville, Alabama. The majority of international customers are being served from our logistics hubs in Meiningen, Germany and York, United Kingdom. We also ship directly from subcontractors to a number of customers in the U.S. and international locations. Most of our facilities are certified pursuant to the most current releases of ISO 9001, TL 9000, ISO 14001 and ISO 27001. Our Huntsville, Alabama facilities and many of our key suppliers are C-TPAT certified. Our products are also certified to certain other customers' industry and privacy standards, including those relating to the emission of electromagnetic energy and safety specifications.

Our dependence on a limited number of suppliers for certain raw materials, key components and ODM products, has prevented and may in the future prevent us from delivering our products on a timely basis, which has had and may continue to have a material adverse effect on operating results and could have a material adverse effect on customer relations.

For a discussion of risks associated with manufacturing activities, see "Risk Factors – Our strategy of outsourcing a portion of our manufacturing requirements to subcontractors located in various international regions may result in us not meeting our cost, quality or performance standards" and "Risk Factors – Our dependence on a limited number of suppliers for certain raw materials, key components and ODM products, combined with supply shortages, have prevented and may continue to prevent us from delivering our products on a timely basis, which has had and may continue to have a material adverse effect on operating results and could have a material adverse effect on customer relations," in Part I, Item 1A of this report.

Competition

We compete in markets for networking and communications services and solutions for Service Providers, businesses, government agencies and other organizations worldwide. Our products and services provide solutions supporting voice, data and video communications across fiber-, copper-, and wireless-based infrastructure, as well as across wide area networks, local area networks and the internet.

We compete with a number of companies in the markets we serve. In the Subscriber Solutions & Experience category, our primary competitors include Calix, Ciena, DZS, Nokia, eero, and a growing number of Asian based ODM's selling direct to carriers. In our Access & Aggregation solutions category, key competitors include Nokia, Calix, Huawei, ZTE Corporation, DZS, Vecima, Harmonic and Microchip. Main competitors of our Optical Networking solutions portfolio are Ciena, Cisco, Ekinops, Huawei, Infinera, Nokia, Ribbon Communications and ZTE Corporation.

Across our markets and segments, the principal competitive factors can include, among others:

- differentiated feature functionality of our products and solutions;
- price performance of our solutions and lowest total cost of ownership for customers;
- quality and reliability of our products;
- financial stability and health of our company;
- ability to manage supply chains and produce and deliver products in accordance with customer wish date;
- ability to innovate and provide customers with differentiated solutions, advantageous to their business model;

- compelling technology roadmap and research and development power;
- industry thought leadership and time to market with innovative solutions;
- country of origin for products and solutions and trusted supplier status;
- security of enterprise value chain, from design to product development, support processes, to products and solutions;
- energy consumption of our products and commitment to sustainability, supporting customers in achieving their climate goals;
- customer relationship and incumbency;
- ability to deliver comprehensive solutions with a high degree of automation and ease-of-use, including hardware, software and services; and
- broad range of services and support capabilities.

For further discussion of risks associated with our competition, see "Risk Factors – We must continue to update and improve our products and develop new products to compete and to keep pace with improvements in communications technology" and "Risk Factors – We compete in markets that have become increasingly competitive, which may result in reduced gross profit margins and market share," in Part I, Item 1A of this report.

Seasonality

We experience quarterly fluctuations in our revenue that occur due to many factors, including the varying budget cycles and seasonal buying patterns of our customers. More specifically, our customers tend to spend less in the first fiscal quarter as they are finalizing their annual capital spending budgets. These seasonal effects may continue to vary and do not always correlate to our operating results. Accordingly, they should not be considered a reliable indicator of our future revenue or operating results. Additionally, the effects of the dynamic supply and demand environment we have experienced in recent periods may impact the traditional seasonality in our business. Due to the stabilizing supply chain environment and the associated reduction in lead times, our customers began to optimize their inventories in the past fiscal year. This has led to a slowdown in ordering behavior. In addition, the continuing uncertain macroeconomic conditions related to inflationary pressures and elevated interest rates has impacted the spending behavior of our customers. However, customers have started to replenish their inventories to meet increasing demand; therefore, we expect order and billings to steadily increase in 2025.

Foreign Currency

Transactions with customers that are denominated in foreign currencies are recorded using the appropriate exchange rates from throughout the year. Assets and liabilities denominated in foreign currencies are remeasured at the balance sheet dates using the closing rates of exchange between those foreign currencies and the functional currency with any transaction gains or losses reported in other income, net. Our primary exposures to foreign currency exchange rate movements are with the euro and the British pound sterling. Adjustments resulting from translating financial statements of international subsidiaries are recorded as a component of accumulated other comprehensive income.

Inventory

A substantial portion of our shipments in any fiscal period relate to orders received and shipped within that fiscal period for customers under agreements containing non-binding purchase commitments. Further, a significant percentage of orders require delivery within a few days.

We maintain substantial inventories of raw materials for long lead time components to support this demand and avoid expedite fees. In recent years, inflationary pressures on input costs, such as raw materials and labor, and distribution costs negatively impacted our operating results. However, inflationary pressures on our supply chain have eased somewhat, which has led to reductions in cost premiums on raw material costs and freight. We continue to support our customer demand for our products by working with our suppliers, contract manufacturers, distributors, and customers to address and to limit the disruption to our operations and order fulfillment. Additionally, maintaining sufficient inventory levels to assure prompt delivery of our products increases the amount of inventory that may become obsolete and increases the risk that the obsolescence of this inventory may have an adverse effect on our business and operating results. Also, not maintaining sufficient inventory levels to ensure prompt delivery of our products may cause us to incur expediting costs to meet customer delivery requirements, which may negatively impact our operating results.

For further discussion of risks associated with managing our inventory, see "Risk Factors – Managing our inventory is complex and may include write-downs of excess or obsolete inventory," in Part I, Item 1A of this report.

Government Regulation

Telecommunications Matters

Our products that are incorporated into wireless communications systems must comply with various government regulations, including those of the FCC. We strive to deliver innovative network access solutions that lower the total cost and reduce the time of deploying services, increase the level of performance achievable with established infrastructures, reduce operating and capital expenses for our customers, increase network bandwidth and functionality, and extend network reach. Our development process is conducted in accordance with ISO 9001, TL 9000, ISO 14001, and ISO 27001, all of which are international standards for quality and environmental management systems.

Environmental Matters

Our products must comply with various regulations, directives and standards established by communications authorities in various countries, as well as those of certain international bodies. Environmental legislation in particular within the EU may increase our cost of doing business as we amend our products to comply with these requirements. This includes the CSRD directive, the CBAM regulation, the WEEE directive and the ESPR adopted by the EU. We are also subject to disclosure and related requirements that apply to the presence of conflict minerals in our products or supply chain. We continue to implement measures to comply with these and other similar directives and regulations from additional countries.

Global Trade

As a global company, the import and export of our products and services are subject to various laws and regulations, including international treaties, U.S. trade policy, tariffs, export controls and sanctions laws, customs regulations, and local trade rules around the world. Such laws, rules, and regulations may delay the introduction of some of our products or impact our competitiveness through restricting our ability to do business in certain places or with certain entities and individuals, or the need to comply with domestic preference programs, laws concerning transfer and disclosure of sensitive or controlled technology or source code, unique technical standards, localization mandates, and duplicative in-country testing and inspection requirements. Furthermore, material changes in such laws, rules or regulations or the failure by us to comply with such laws, rules and regulations could limit our ability to conduct business globally.

For further discussion of risks associated with government regulation, see "Risk Factors – Changes in trade policy in the U.S. and other countries, including the imposition of additional tariffs and the resulting consequences, may adversely impact our gross profits, gross margins, results of operations and financial condition," in Part 1, Item 1A of this report.

Other Regulations

As a company with global operations, we are subject to complex foreign and U.S. laws and regulations, including anti-bribery and corruption laws; antitrust or competition laws; data privacy laws and regulations, such as the GDPR and the California Consumer Privacy Act; and cybersecurity laws and regulations, among others. We have policies and procedures in place to promote compliance with these laws and regulations. To date, our compliance actions and costs relating to these laws, rules and regulations have not resulted in a material cost or effect on our capital expenditures, earnings or competitive position. Government regulations are subject to change and, accordingly, we are unable to assess the possible effect of compliance with future requirements or whether our compliance with such regulations will materially impact our business in the future.

For further discussion of risks associated with government regulation, see "Risk Factors – We are subject to complex and evolving U.S. and foreign laws, regulations and standards governing the conduct of our business. Violations of these laws and regulations may harm our business, subject us to penalties and to other adverse consequences," in Part 1, Item 1A of this report.

Environmental, Social, and Governance

We believe that as we follow our corporate vision to enable a fully connected world, we must continue to be responsible corporate citizens. As more people are connected, work and life can be accomplished using fewer resources. We have established ESG and sustainability programs and policies that encompass the elements of Environmental, Health & Safety, Ethics, Labor, and the related management systems in alignment with the ISO 26000 Guidelines. We are committed to operating in full compliance with the laws, rules and regulations of all the countries in which we operate. The major aims of our program are reducing waste and emissions, maximizing energy efficiency and productivity and minimizing practices that can adversely affect utilization of natural resources by coming generations. Our ESG programs are important to us, consequently, ESG is a dedicated focus throughout the company. We have Board oversight including an ESG Committee, strong management support and engagement from our employees.

Areas of focus in our environmental sustainability program include:

- dedicated ESG Committee of the Board of Directors;
- maintained our mature environmental management system certified to ISO 14001:2015;

- advanced our Energy Management program with ISO 50001 readiness for the Huntsville site for 2025;
- submitted our Net Zero targets to SBTi in 2023 and got them approved in 2024;
- continued purchase of Renewable Energy Credits, equaling ~20% of total Adtran energy consumption;
- continued using IntegrityNext, a platform to engage suppliers to obtain an ESG assessment aligned with international standards, allowing us to monitor ESG risks in our supply chain;
- established Eco-Design guidelines in the Technology organization;
- continued with Life Cycle Assessments across the portfolio;
- continued with packaging optimization to reduce related materials and waste;
- increased visibility of our program internally and externally through customer engagement, joining peer sustainability groups, offering training to team members and web site enhancements;
- continued with the external CDP and EcoVadis assessments.

We will issue an ESG report for 2024 in early 2025, which will use the EU ESRS guidelines, in order to fulfill the reporting obligations set forth in the EU CSRD. Within the report is information on our environmental, social and governance programs, including quantitative and qualitative data for both Adtran Networks and the Company. This information can also be found on our website at: www.adtran.com/en/about-us/esg/environmental. The information found on our website is not incorporated by reference in this report or any other report that we file or furnish to the SEC.

For further discussion of risks associated with government regulation, see "Risk Factors – Expectations relating to environmental, social and governance considerations expose the Company to potential liabilities, increased costs, reputational harm, and other adverse effects on the Company's business," in Part 1, Item 1A of this report.

Human Capital

We believe that our most valuable asset is our people. To ensure we continue to succeed, our objective is to be able to recruit, hire and retain top talent. Our ability to attract and retain a high-quality workforce is dependent on our ability to maintain a diverse, equitable and inclusive workplace that provides opportunities for our employees to learn and grow in their careers. This is supported by competitive compensation and benefits, along with strong community service and other programs that enable employees to build connections within the community.

As part of our Business Efficiency Program, on October 25, 2023, all employees were informed of certain personnel measures, which included the reduction of salary for select management, a reduction of approximately 5% of the workforce, an early retirement program and a hiring freeze. The Company provided the employees subject to the salary reductions with stock option awards for retention purposes. Our Chief Executive Officer voluntarily reduced his salary by 50% and did not receive any stock option awards under the Business Efficiency Program. As of December 31, 2024, the Company had substantially completed the goals outlined in our Business Efficiency Program except for the Company's aim of selling its headquarters. *For additional information, see "Management's Discussion and Analysis of Financial Condition and Results of Operations – Business Efficiency Program" in Part II, Item 7 of this report.*

As of December 31, 2024 we had 3,234 total employees, of which 3,091 full-time employees and 143 part-time employees.We had 1,133 employees in the U.S. and 2,101 employees in our international subsidiaries located in North America, Latin America, EMEA and APAC regions. We also utilized 240 contractors and numerous temporary employees domestically and internationally in various manufacturing, engineering, sales and general and administrative capacities. We believe that our relationship with our employees is good. We have a diverse employee base located in 37 countries. We pride ourselves on a highly educated workforce, and the majority of our employees serve in engineering, information technology and technical roles within the organization.

As of December 31, 2024 approximately 90 employees (76%) of Adtran GmbH were subject to collective bargaining agreements of either the Association of Metal and Electrical Industry in Berlin and Brandenburg e.V. or NORDMETALL Association of Metal and Electrical Industry e.V. As of December 31, 2024, Adtran Networks had 94 employees in Switzerland, France, Italy, Finland and Spain that were subject to collective bargaining agreements of different associations. None of our other employees are subject to collective bargaining agreements.

Additionally, we continually work to recruit technical talent in diverse communities through our cooperative education program. This program seeks to identify college students that major in relevant technological areas and expose them to our work environment on an alternating semester basis. Our goal is to retain as many of these students as possible for full-time employment after graduation to build our organization's future.

Workplace Diversity

We believe that maintaining a diverse and inclusive workforce is important to the success of our business. We encourage an environment where individuality is embraced regardless of age, gender, identity, race, sexual orientation, physical or mental ability, ethnicity and perspective and where each employee is accepted.

Our Board of Directors is comprised of seven members, two of which are females and three of which are ethnically diverse. Additionally, the Board of Directors has a diversity of skills and experience with respect to accounting and finance, management and leadership, vision and strategy, business operations, business judgment, crisis management, risk assessment, industry knowledge, corporate governance and global markets.

Health, Safety and Wellness

The well-being of our employees is paramount to the continued success of our business. To this end, we are committed to each of our employees' health, safety and wellness. We provide our employees with access to various health and wellness benefits designed to enable them and their family members to have affordable access to health, dental and vision insurance. Additionally, we offer access to many programs that provide additional monetary support in the event of a qualifying incident, including accident insurance, life insurance and hospital indemnity insurance, among others. We understand that mental health is an essential aspect of our employees' well-being and we offer an employee assistance program at no charge to employees and their family members. This program provides access to qualified personnel to address various issues such as grief, financial stress, family and emotional issues.

Compensation and Benefits

We continually work to provide a competitive compensation and benefits program as this plays a key role in our ability to attract and retain a highly skilled workforce. In addition to salaries, these programs, which vary by country/region, include long-term equity incentive awards with certain vesting requirements, deferred compensation plans (which are offered to certain members of executive management), a 401(k) plan, healthcare and insurance benefits, health savings and flexible spending accounts, paid time off, paid volunteer time off, employee assistance program and tuition assistance. Additionally, at our global headquarters in Alabama, we offer our employees certain on-site services, including nurse practitioner care and a fitness center, among others.

Talent Development

We invest significant resources to develop the talent needed to remain a market-leading global supplier of broadband infrastructure. We offer numerous training opportunities on both technical and professional development topics. We utilize tools and processes to provide performance feedback which helps develop high potential employees into becoming our future leaders.

Our Career Development Program provides an opportunity for employees to shape their career journey. The program provides opportunities for employees to develop competencies in areas including technology, business acumen, emotional intelligence, design and systems thinking. As employees increase their competencies in these areas and master skills within their individual roles, this program offers a variety of career advancement paths.

Intellectual Property

We develop and own a significant amount of intellectual property. We hold over 1,000 patents worldwide related to our products and over 50 additional pending patent applications. Our patents expire at various dates between 2025 and 2041. We continue to seek additional patents related to our research and development activities. We do not derive any material amount of revenue from the licensing of our patents.

The name "Adtran" is a registered trademark of ours, as is the name “SmartRG” and a number of our product identifiers and names. We also claim rights to a number of unregistered trademarks.

We protect our intellectual property and proprietary rights in accordance with good legal and business practices. We believe, however, that our competitive success will not fully depend on the ownership of intellectual property, but instead will depend primarily on the innovative skills, technical competence and marketing abilities of our personnel.

The communications industry is characterized by the existence of an ever-increasing volume of patent litigation and licensing activities. We have received, and may continue to receive, notices of claims alleging that we are infringing upon patents or other intellectual property. We cannot predict whether we will prevail in any claims or litigation over alleged infringements, or whether we will be able to license any valid and infringed patents, or other intellectual property, on commercially reasonable terms. It is possible that such litigation may result in significant legal costs and judgments and that intellectual property infringement claims, or related litigation against or by us could have a material adverse effect on our business and operating results.

For a discussion of risks associated with our intellectual property and proprietary rights, see “Risk Factors – Our failure to maintain rights to intellectual property used in our business could adversely affect the development, functionality, and commercial value of our products” in Part I, Item 1A of this report.

Information about our Executive Officers

Our executive officers as of March 3, 2025, are listed below, along with their ages on that date, positions and offices held with the Company, and principal occupations and employment, focused primarily on the past five years (and all positions within the Company).

Thomas R. Stanton	Age 60
2007 to present	Chief Executive Officer and Chairman of the Board
2023 to present	Chief Executive Officer and Management Board member of Adtran Networks
Ulrich Dopfer	Age 51
2023 to present	Senior Vice President, Chief Financial Officer, Secretary and Treasurer Chief Financial Officer and Management Board member of Adtran Networks
2015 to 2023	Chief Financial Officer of Adtran Networks
Christoph Glingener	Age 56
2023 to present	Chief Technology Officer Chief Technology Officer and Management Board member of Adtran Networks
2022 to 2023	Chief Executive Officer of Adtran Networks
2007 to 2022	Chief Technology Officer of Adtran Networks
James D. Wilson, Jr.	Age 54
2019 to present	Chief Revenue Officer
2015 – 2019	Senior Vice President of Technology and Strategy
2006 – 2015	Senior Vice President and General Manager (Carrier Networks)

There are no family relationships among our directors or executive officers. Adtran Networks is a majority-owned subsidiary of the Company.

Availability of Information

We file annual reports on Form 10-K, quarterly reports on Form 10-Q, current reports on Form 8-K, proxy statements and other information as required with the SEC. The SEC maintains an internet website, http://www.sec.gov, that contains reports, proxy and information statements, and other information regarding issuers, including Adtran, that file electronically with them. Additionally, our annual reports on Form 10-K, quarterly reports on Form 10-Q, current reports on Form 8-K and amendments to those reports, if applicable, filed or furnished pursuant to Section 13(a) or 15(d) of the Securities and Exchange Act of 1934, as amended (the "Exchange Act"), are available free of charge under the Investor Relations section of our website, www.adtran.com, as soon as reasonably practicable after we electronically file them with, or furnish them to, the SEC. The reference to our website address does not constitute incorporation by reference of the information contained on the website, which information should not be considered part of this report.

ITEM 1A. RISK FACTORS

Our business involves substantial risks. Any of the risk factors described below or elsewhere in this report could significantly and adversely affect our business prospects, financial condition and results of operations. The risks described below are not the only ones facing us. Additional risks and uncertainties not presently known to us or that we currently deem to be immaterial may also adversely affect us.

Risks related to our financial results and Company success

We are obligated to comply with covenants related to our Wells Fargo Credit Agreement that restrict our operating activities, and the failure to comply with such covenants could result in defaults that accelerate our debt.

The Wells Fargo Credit Agreement governing our indebtedness contains restrictive covenants that limit our ability to engage in activities that may be in our long-term best interest. Our failure to comply with those covenants could result in an event of default that, if not cured or waived, could result in the acceleration of all its debt. Our Wells Fargo Credit Agreement along with the amendments thereto, contain various restrictive covenants which include, among others, provisions limiting our ability to:

- pay dividends or make other distributions or repurchase capital stock;
- incur or guarantee additional debt;
- make certain distributions, investments and other restricted payments;
- engage in transactions with affiliates;
- engage in mergers or consolidations;
- grant or incur liens on assets;
- dispose of assets;
- make loans and investments;
- modify our organization documents; and
- enter into certain restrictive agreements.

In addition, the Wells Fargo Credit Agreement contains customary events of default, such as misrepresentation and a default in the performance or observance of any covenant (subject to customary cure periods and materiality thresholds).

In addition, certain covenants in the Wells Fargo Credit Agreement, including covenants set forth in the amendments thereto, require us, among other things, to:

- maintain certain leverage ratios; and
- maintain certain fixed charge coverage ratios;

As a result of these restrictions, we have been and may be:

- limited in how we conduct our business;
- limited in how much additional funding we can draw on our line of credit;
- unable to raise additional debt or equity financing to operate during general economic or business downturns; and
- unable to compete effectively or to take advantage of new business opportunities.

Our failure to comply with the covenants set forth in the Credit Agreement could result in defaults that accelerate the payment under such debt which would likely have a material adverse impact on our financial condition and results of operations. In addition, an event of default under the Credit Agreement would permit the lenders to terminate all commitments to extend further credit under the applicable facility. Furthermore, if we were unable to repay the amounts due and payable under the Credit Agreement, the lenders could proceed against the collateral granted to them to secure that indebtedness. In the event our lenders accelerate the repayment of our borrowings, we and our subsidiaries may not have sufficient assets to repay that indebtedness. In addition, these defaults could impair our ability to access debt and equity capital markets. *For additional information on our debt covenants, see "Liquidity & Capital Resources" in Part II, Item 7 of this report.*

We have experienced significant fluctuations in revenue and such fluctuations may continue. Fluctuations in revenue can cause our operating results in a given reporting period to be higher or lower than expected.

As a result of the many factors discussed in this report, our revenue for a particular quarter is difficult to predict and will fluctuate from quarter to quarter. Visibility into customer spending levels is often uncertain, spending patterns are subject to change, and reductions in our expense levels can take significant time to implement. Typically, our customers request product delivery within a short period following our receipt of an order. Consequently, we do not typically carry a significant order backlog and are dependent upon obtaining orders and completing delivery in accordance with shipping terms that are predominantly within each quarter to achieve our targeted revenue. Our deployment/installation cycle can also vary depending on the customer's schedule, site readiness, network size and complexity and other factors, which can cause our revenue to fluctuate from period to period. Our ability to meet financial expectations could also be affected if the variable revenue patterns seen in prior quarters recur in future quarters. We have experienced periods of time during which manufacturing issues have delayed shipments, leading to variable shipping patterns. In addition, to the extent that manufacturing issues and any related component shortages continue to result in delayed shipments in the future, and particularly in quarters in which we and our subcontractors are operating at higher levels of capacity, it is possible that revenue for a quarter could be adversely affected, and we may not be able to remediate the conditions within the same quarter.

Under certain market conditions, long manufacturing lead times have caused our customers to place the same order multiple times. When multiple ordering occurs, along with other factors, it may cause difficulty in predicting our revenue and, as a result, could impair our ability to manage inventory effectively.

We plan our operating expense levels based primarily on forecasted revenue levels. Furthermore, our expenses and the impact of long-term commitments are relatively fixed in the short term. A shortfall in revenue has led and could again in the future lead to operating results being below expectations, partially due to an inability to quickly reduce these fixed expenses in response to short-term business changes.

Our customers in the subscriber solutions & experience technology category are increasingly focusing on working capital optimization and depletion of overstocked inventories, which has impacted and may continue to materially impact demand in that category. Our future revenue growth will depend, in part, on securing increased orders from customers.

Accurately matching necessary inventory levels to customer demand within the current environment is challenging, and we may incur additional costs or be required to write off significant inventory that would adversely impact our results of operations.

In recent years, we received unprecedented orders for our products and services, during a period when the supply environment was constrained. We took a number of steps to mitigate these challenges, including extending our purchase commitments and placing non-cancellable, advanced orders with or through suppliers, particularly for long lead-time components. As a result of this strategy and the inclusion of Adtran Networks' inventory following the closing of the Business Combination, our inventory increased to $427.5 million at the end of fiscal 2022. However, our inventory reduced to $269.3 million at the end of fiscal 2024, which is more in line with historical levels. These inventory practices and their associated costs have had, and could in the future continue to have, an adverse impact on our cash from operations.

In addition, these inventory practices, particularly when considered in the context of our backlog, further introduce obsolescence risk that can impact our results of operations and financial condition. During fiscal 2023 and fiscal 2024, certain customers that had earlier placed significant advanced orders, rescheduled deliveries for or cancelled a portion of such orders. Accordingly, our inventory needs for a particular period can fluctuate and be difficult to predict. If our customers were to cancel or delay orders for extended periods, inventory could become obsolete, and we could be required to write off or write down the inventory associated with those orders. In addition, if customers were to cancel or delay existing or forecasted orders for which we have significant outstanding commitments to our contract manufacturers or suppliers, we may be required to purchase inventory under these commitments that we are unable to sell. If we are required to write off or write down a significant amount of inventory, our results of operations for the applicable period would be materially adversely affected. For example, we recorded charges for excess and obsolete inventory of $8.6 million and $24.3 million in fiscal 2024 and 2023, respectively, primarily related to a strategy shift which included discontinuance of certain product lines in connection with the Business Efficiency Program. Our inability to effectively manage the matching of inventory with customer demand, particularly within any supply constrained environment, could adversely impact our results of operations and financial condition, and could result in loss of revenue, increased costs, or delays that could adversely impact customer satisfaction.

The lengthy sales and approval process required by Service Providers for new products has resulted in fluctuations in our revenue and may result in fluctuations of future revenue and financial results.

In the industry in which we compete, sales and approval cycles are often lengthy. Selling efforts often involve a significant commitment of time and resources by us and our customers that may include extensive product testing, laboratory or network certification, or region-specific product certification and homologation requirements for deployment in networks. Additionally, a supplier must first obtain product approval from a major or other Service Provider to sell its products to these Service Providers. This process can last from six to eighteen months, or longer, depending on the technology, the Service Provider and the demand for the product from the Service Provider's subscribers. Consequently, we are involved in a constant process of submitting for approval succeeding generations of

products, as well as products that deploy new technology or respond to new technology demands from a major or other Service Provider. We cannot be certain that we will obtain these approvals in the future or that sales of these products will continue to occur. Any attempt by a major or other Service Provider to seek out additional or alternative suppliers, or to undertake, as permitted under applicable regulations, the production of these products internally, could have a material adverse effect on our operating results. Furthermore, the delay in sales until the completion of the approval process, the length of which is difficult to predict, has and may continue to result in fluctuations of revenue and uneven operating results from quarter to quarter or year to year. For example, we have seen a decrease in volume of sales activity due to customers' focus on reducing inventory levels in our domestic ADTRAN, Inc. operations, which has impacted and may continue to materially impact demand in that category. Further, once customer approval or certifications are met, our supply chain customers typically do not guarantee us a minimum, or any, volume of sales.

We require a significant amount of cash to service our indebtedness, our payment obligations to Adtran Networks shareholders under the DPLTA, and other obligations.

Our ability to generate cash depends on many factors beyond our control and any failure to service our outstanding indebtedness could harm our business, financial condition and results of operations. Furthermore, we have entered into a DPLTA with Adtran Networks. Additionally, pursuant to the terms of the DPLTA, each Adtran Networks shareholder (other than the Company) has received an offer to elect either (1) to remain an Adtran Networks shareholder and receive from us an Annual Recurring Compensation payment, or (2) to receive Exit Compensation. For the year ended December 31, 2024, approximately 831 thousand shares of Adtran Networks stock were tendered to the Company. This resulted in total Exit Compensation payments of approximately €15.7 million, or approximately $17.4 million, based on exchange rates at the time of the transactions, being paid to Adtran Networks shareholders. Any failure to satisfy our payment obligations under the DPLTA could harm our business, financial condition and results of operations.

Our ability to make payments on and to refinance our indebtedness, to cover our payment obligations under the DPLTA, and to fund working capital needs and planned capital expenditures depends on our ability to generate cash in the future. This, to a certain extent, is subject to general economic, financial, competitive, business, legislative, regulatory and other factors that are beyond our control. If our business does not generate sufficient cash flow from operations, we do not sufficiently reduce costs in a timely manner, or if our future borrowings are not available to us in an amount sufficient to enable us and our subsidiaries to pay our indebtedness or to fund our other liquidity needs, we may need to raise additional debt or equity capital, refinance all or a portion of our indebtedness, sell assets, reduce or delay capital investments, any of which could have a material adverse effect.

The Company experienced revenue declines in 2024. There can be no assurance that the Company will be successful in effecting its plans to preserve cash liquidity and maintain compliance with the Company's covenants on commercially reasonable terms or at all. We may need to further reduce capital expenditure and/or take other steps to preserve working capital in order to ensure that we can meet our needs and obligations and maintain compliance with our debt covenants. Our ability to raise additional debt capital or to restructure or refinance our indebtedness will depend on the condition of the capital markets and our financial condition at such time. Any refinancing of our debt could be at higher interest rates and may require us to comply with more onerous covenants, which could further restrict our business operations. The terms of existing or future debt instruments or preferred stock may limit or prevent us from taking any of these actions.

In addition, any failure to make scheduled payments of interest and principal on our outstanding indebtedness or dividend payments on any future outstanding shares of preferred stock would likely result in a reduction of our credit rating, which could harm our ability to incur additional indebtedness or otherwise raise capital on commercially reasonable terms or at all. Our inability to generate sufficient cash flow to satisfy our debt service, payment obligations to Adtran Networks shareholders under the DPLTA, and other obligations, or to refinance or restructure our obligations on commercially reasonable terms or at all, would have an adverse effect, which could be material, on our business, financial condition and results of operations. Furthermore, if we raise additional funds through the issuance of equity or securities convertible into equity, or undertake certain transactions intended to address our existing indebtedness, our existing stockholders could suffer dilution in their percentage ownership of the Company, or our leverage and outstanding indebtedness could increase. Current capital market conditions, including the impact of inflation, have increased borrowing rates and can be expected to significantly increase our cost of capital as compared to prior periods should we seek additional funding.

The terms of the DPLTA may have a material adverse effect on our financial results and condition.

The DPLTA between the Company, as the controlling company, and Adtran Networks, as the controlled company, which was executed on December 1, 2022, became effective on January 16, 2023, as a result of its registration with the commercial register (*Handelsregister*) of the local court (*Amtsgericht*) at the registered seat of Adtran Networks (Jena).

Under the DPLTA, subject to certain limitations pursuant to applicable law and the specific terms of the DPLTA, (i) the Company is entitled to issue binding instructions to the management board of Adtran Networks, (ii) Adtran Networks will transfer its annual profit to the Company, subject to, among other things, the creation or dissolution of certain reserves, and (iii) the Company will generally absorb the annual net loss incurred by Adtran Networks. The Company's payment obligation in satisfaction of the requirement that it absorb Adtran Networks' annual net loss applied for the first time to the net loss generated in 2023.

Additionally, and subject to certain limitations pursuant to applicable law and the specific terms of the DPLTA, the DPLTA provides that Adtran Networks shareholders (other than the Company) be offered, at their election, (i) to put their Adtran Networks shares to the Company in exchange for compensation in cash of €17.21 per share, plus guaranteed interest (the "Exit Compensation"), or (ii) to remain Adtran Networks shareholders and receive a recurring compensation in cash of €0.52 per share for each full fiscal year of Adtran Networks (the "Annual Recurring Compensation"). The guaranteed interest under the Exit Compensation is calculated from the effective date of the DPLTA to the date the shares are tendered, less any Annual Recurring Compensation paid. The guaranteed interest rate is 5.0% plus a variable component that was 3.37% as of December 31, 2024. The Annual Recurring Compensation is due on the third banking day following the ordinary general shareholders' meeting of Adtran Networks for the respective preceding fiscal year (but in any event within eight months following expiration of the fiscal year). With respect to the 2023 fiscal year, Adtran Networks' ordinary general shareholders' meeting occurred on June 28, 2024, and therefore, the Annual Recurring Compensation was paid on July 3, 2024. With respect to the 2024 fiscal year, Adtran Networks' ordinary general shareholder meeting is scheduled for June 27, 2025, and therefore, the Annual Recurring Compensation will be due on July 2, 2025. The adequacy of both forms of compensation has been challenged by minority shareholders of Adtran Networks via court-led appraisal proceedings under German law and it is possible that the courts in such appraisal proceedings may adjudicate a higher Exit Compensation (including interest thereon) or Annual Recurring Compensation than agreed upon in the DPLTA. Our obligation to pay Annual Recurring Compensation under the DPLTA is a continuing payment obligation, which will amount to approximately €8.9 million or $9.3 million (based on the exchange rate as of December 31, 2024) per year assuming none of the minority Adtran Networks shareholders were to elect Exit Compensation. The foregoing amounts do not reflect any potential increase in payment obligations that we may have depending on the outcome of ongoing appraisal proceedings in Germany. For the year ended December 31, 2024, a total of 831 thousand shares of Adtran Networks stock was tendered to the Company and Exit Compensation payments of approximately €15.7 million or approximately $17.4 million, based on exchange rates at the time of the transactions, were paid to Adtran Networks shareholders. Assuming all the minority holders of currently outstanding Adtran Networks shares were to elect the first option, we would be obligated to make aggregate Exit Compensation payments, including guaranteed interest, of approximately €333.2 million or approximately $344.9 million, based on an exchange rate as of December 31, 2024. In addition to our cash and cash equivalents and the credit facility, we may fund a portion or all of the Annual Recurring Compensation and Exit Compensation through the sale of securities or additional alternative funding sources, if available. There can be no assurances that we would be successful in effecting these actions at commercially reasonable terms or at all. If we cannot raise additional funds as needed, it could have a material adverse impact on our financial results and financial condition. Additionally, the payment of the Annual Recurring Compensation and Exit Compensation could have a material adverse impact on our financial results and financial condition. S*ee "Liquidity and Capital Resources" in Part II, Item 7 of this report for additional information.*

The opportunity for minority Adtran Networks shareholders to tender Adtran Networks shares in exchange for Exit Compensation had been scheduled to expire on March 16, 2023. However, due to the appraisal proceedings that were initiated in accordance with applicable German law in 2023, this time period for tendering shares has been extended pursuant to the German Stock Corporation Act (*Aktiengesetz*) and will end two months after the date on which a final decision in such appraisal proceedings has been published in the Federal Gazette (*Bundesanzeiger*). The Company expects to receive a procedural decision during 2025 that will likely be appealed. The date of a decision by the court on the merits of the case is uncertain, but it is unlikely that such decision will be rendered in 2025. Thereafter an expected appeal process will take a further 12-24 months to resolve.

The amount of this Annual Recurring Compensation payment obligation pursuant to the DPLTA could exceed the amount of dividends that otherwise might be distributed by Adtran Networks to minority shareholders and would even have to be paid if Adtran Networks incurs losses, which could have a material adverse impact on our financial results and financial condition.

Our significant indebtedness exposes us to various risks.

As of December 31, 2024, our borrowings under the revolving line of credit were $189.6 million, of which approximately $141.0 million was borrowed by ADTRAN, Inc. and $48.6 million was borrowed by Adtran Networks. The credit facilities provided under the Credit Agreement mature in July 2027, but ADTRAN, Inc. may request extensions subject to customary conditions. As of December 31, 2024, we had a total of $3.6 million in letters of credit under ADTRAN, Inc. outstanding under the Credit Agreement, leaving a net amount (after giving effect to the $189.6 million of outstanding borrowings described above) of $180.8 million available for future borrowings; however, as of December 31, 2024, the Company was limited to additional borrowings of $56.1 million based on debt covenant compliance metrics. See "Cash Requirements" in Part II, Item 7 of this report for additional information.

Our indebtedness has and may continue to adversely affect our operations and liquidity. Our level of indebtedness:

- could make it more difficult for us to pay or refinance our debts as they become due during adverse economic and industry conditions because we may not have sufficient cash flows to make its scheduled debt payments;
- has caused us and may continue to cause us to use a larger portion of our cash flow to fund interest and principal payments, reducing the availability of cash to fund working capital, capital expenditures, research and development and other business activities;

- has contributed to our decision to suspend quarterly dividend payments to the Company's stockholders;
- limits our ability to assume debt in a future acquisitions. Specifically, our Credit Agreement with Wells Fargo limits the amount of debt we can assume in an acquisition. This could limit our ability to take advantage of significant business opportunities, such as acquisition opportunities, and to react to changes in market or industry conditions;
- could cause us to be more vulnerable to general adverse economic and industry conditions;
- could cause us to be disadvantaged compared to competitors with less leverage; and
- limits our ability to borrow additional money. Specifically, our Credit Agreement with Wells Fargo limits our ability to borrow additional money, which could limit our ability to fund working capital, capital expenditures, research and development and other general corporate needs in the future.

Our ability to satisfy our debt obligations and renew the credit facility is dependent upon our future performance and other risk factors discussed in this section. We cannot assure you that we will maintain a level of cash flows from operating activities sufficient to permit us to pay the principal, premium, if any, and interest on our indebtedness. If we fail to pay interest on, or repay, our borrowings under the Wells Fargo credit facility when required, we will be in default under the applicable loans, and may also suffer an event of default under the terms of other borrowing arrangements that we may enter into from time to time. We are attempting to further reduce our operating expenses in order to fund our obligations, and we may be forced to further reduce or delay capital expenditures, sell assets or operations, seek additional capital or restructure or refinance our indebtedness. We cannot assure you that we would be able to take any of these actions, that these actions would be successful and permit us to meet our scheduled obligations or that these actions would be permitted under the terms of our current or future debt agreements. If we fail to implement these reductions or are unable to achieve sufficient operating results and resources, we could face substantial liquidity challenges and might be required to dispose of material assets or operations to meet our debt service and other obligations. We may not be able to consummate those dispositions or obtain sufficient proceeds from those dispositions to meet our debt service and other obligations when due. Any of these events could have a material adverse effect on our business, results of operations and financial condition.

We may also incur additional long-term debt and working capital lines of credit to meet future financing needs, which would increase our total indebtedness. Although the terms of its existing and future credit agreements and of the indentures governing its debt contain restrictions on the incurrence of additional debt, including secured debt, these restrictions are subject to a number of important exceptions and debt incurred in compliance with these restrictions could be substantial. If we or our restricted subsidiaries incur significant additional debt, the relative risks may intensify.

We depend heavily on sales to certain customers; the loss of any of these customers or a significant project would significantly reduce our revenue and net income.

Historically, a large percentage of our revenue has been made to major Service Providers and larger independent communications companies. As long as the major and larger independent communications companies represent such a substantial percentage of our total revenue, our future success will significantly depend upon certain factors which are not within our control, including:

- the timing and size of future purchase orders, if any, from these customers;
- changes in strategic plans and capital budgets of these customers;
- the product requirements of these customers;
- the subscriber take rate, including subscriber loss or churn, of our customers;
- the financial and operational success of these customers;
- the impact of legislative and regulatory changes on these customers;
- consolidation, acquisition of, or corporate reorganization among these customers;
- the success of these customers' services deployed using our products; and
- the impact of work stoppages at these customers.

In the past, revenue generated by our large customers has fluctuated significantly from quarter to quarter and year to year, and it may continue to fluctuate in the future. The loss of, or a significant reduction or delay in, revenue to any such customer or the occurrence of revenue fluctuations could have a material adverse effect on our business and results of operations. Further, any attempt by a major or other Service Provider to seek out additional or alternative suppliers or to undertake, as permitted under applicable regulations, the production of these products internally, could have a material adverse effect on our operating results.

There has been a trend toward industry consolidation in our markets for several years. We expect this trend to continue as companies attempt to strengthen or hold their market positions or are unable to continue operations. This could lead to variability in our operating results and could have a material adverse effect on our business, operating results, financial condition and cash flow. In addition,

particularly in the Service Provider market, rapid consolidation will lead to fewer customers, with the effect that a loss of a major customer could have a material impact on our results that we would not have anticipated in a marketplace composed of more numerous participants.

Our exposure to the credit risks of our customers and distributors may make it difficult to collect accounts receivable and could adversely affect our operating results, financial condition and cash flows.

Most of our revenue is made on an open credit basis, generally with payment terms of 30 to 45 days in the U.S. and typically 45 to 60 days in many geographic markets outside the U.S. As our international revenue grows, our total accounts receivable balance has increased and will likely continue to increase. Our DSO could also increase as a result of a greater mix of international revenue. Additionally, international laws may not provide the same degree of protection against defaults on accounts receivable as provided under U.S. laws governing domestic transactions; therefore, as our international business grows, we may be subject to higher bad debt expense compared to historical trends. Overall, we monitor individual customer and distributor payment capability in granting such open credit arrangements, seek to limit such open credit to amounts that we believe customers and distributors can pay and maintain reserves we believe are adequate to cover exposure for credit losses and other macroeconomic indicators. In the course of our sales to customers and distributors, we may encounter difficulty collecting accounts receivable and could be exposed to risks associated with uncollectible accounts receivable due to various reasons, including potential declining operating cash flows or bankruptcy filings. While we attempt to monitor these situations carefully and attempt to take appropriate measures to collect accounts receivable balances, there are no assurances we can avoid write-downs and/or write-offs of accounts receivable as a result of declining financial conditions for our customers, including bankruptcy. Such write-downs or write-offs could negatively affect our operating results for the period in which they occur and could potentially have a material adverse effect on our results of operations, financial condition and cash flows.

We expect gross margins to continue to vary over time, and our levels of product and services gross margins may not be sustainable.

Our level of gross margins may not be sustainable and has been and may continue to be adversely affected by numerous factors, including:

- changes in customer, geographic or product or services mix, including software and the mix of configurations and professional services revenue within each product segment;
- mix of domestic versus international revenue;
- introduction of new products by competitors, including products with price-performance advantages;
- our ability to reduce product cost;
- increases in labor or material cost, including increases in material costs resulting from inflation or tariffs;
- foreign currency exchange rate movements;
- expediting costs incurred to meet customer delivery requirements;
- excess inventory and inventory holding charges;
- excess and obsolescence charges;
- changes in shipment volume;
- our ability to absorb fixed manufacturing costs during short-term fluctuations in customer demand;
- loss of cost savings due to changes in component pricing or charges incurred due to inventory holding periods if parts ordering does not correctly anticipate product demand;
- lower than expected benefits from value engineering;
- increased price competition, including competitors from Asia, specifically China;
- changes in distribution channels;
- increased warranty cost or quality issues;
- liquidated damages costs relating to customer contractual terms;
- our ability to manage the impact of foreign currency exchange rate fluctuations relating to our revenue or cost of revenue;
- slowdowns, recessions, economic instability (such as the instability in the financial services sector), political unrest, armed conflicts (such as the ongoing military conflict in Ukraine and in Israel and surrounding regions), or outbreaks of disease around the world; and

- an extended government shutdown resulting from budgetary decisions or other potential delays or changes in the government appropriations or other funding authorization processes.

Our dependence on a limited number of suppliers for certain raw materials, key components and ODM products, combined with supply shortages, have prevented and may continue to prevent us from delivering our products on a timely basis, which has had and may continue to have a material adverse effect on operating results and could have a material adverse effect on customer relations.

The fact that we are reliant on our extended supply chain could have an adverse impact on the supply of our products and on our business and operating results. The financial problems of our suppliers and industry consolidation occurring within one or more component supplier markets, such as the semiconductor market, in each case, could either limit supply or increase costs.

A reduction or interruption in supply, including disruptions on our global supply chain, caused in part by public health emergencies, geopolitical tensions (including as a result of the ongoing conflict in Ukraine and in Israel and surrounding regions, as well as China-Taiwan relations); a significant natural disaster (including as a result of climate change); tariffs or other trade restrictions; a significant increase in the price of one or more components (including as a result of inflation); a failure to adequately authorize procurement of inventory by our contract manufacturers; a failure to appropriately cancel, reschedule, or adjust our requirements based on our business needs; or a decrease in demand for our products could materially adversely affect our business, operating results, and financial condition and could materially damage customer relationships. Furthermore, as a result of binding price or purchase commitments with suppliers, we may be obligated to purchase raw materials or components at prices that are higher than those available in the current market. In the event that we become committed to purchasing raw materials or components at prices in excess of the current market price when the raw materials or components are actually used, our gross margins could decrease.

In addition, certain raw materials and key components used in our products are currently available from only one source, and others are available from only a limited number of sources. The availability of these raw materials and supplies may be subject to market forces beyond our control, such as inflation, merger and acquisition activity of our suppliers and consolidation in some segments of our supplier base. We have experienced and expect to continue to experience increased inflationary pressures on input costs, such as, raw materials, supplies, labor and distribution costs. Our attempts to offset these cost pressures, through increases in the selling prices of some of our products, may not be successful and could negatively affect our operating results. In addition, from time to time, there may not be sufficient quantities of raw materials and supplies in the marketplace to meet customer demand. Many companies utilize the same raw materials and supplies that we do in the production of their products. Suppliers may be under pressure to allocate product to certain customers for business, regulatory or political reasons, and/or demand changes in agreed pricing as a condition of supply. As a result, companies with more resources than our own may have a competitive advantage in obtaining raw materials and supplies. These factors have resulted in reduced supply, higher prices of raw materials and delays in the receipt of certain of our key components, which in turn has generated increased costs, lower margins and delays in product delivery, with a corresponding adverse effect on revenue. Delays in product deliveries and corresponding product price increases may likewise have an adverse effect on customer relationships. We attempt to manage these risks through developing alternative sources, by staging inventories at strategic locations, through engineering efforts designed to obviate the necessity of certain components and by building long-term relationships and close contact with each of our key suppliers; however, we cannot assure that delays in or failures of deliveries of key components, either to us or to our contract manufacturers, and consequent delays in product deliveries, will not continue to occur in the future.

We believe that we may be faced with the following challenges in the future: new markets in which we participate may grow quickly, which may make it difficult to quickly obtain significant raw materials and/or components; as we acquire companies and new technologies, we may be dependent on unfamiliar supply chains or relatively small supply partners; and we face competition for certain raw materials or components that are supply-constrained from existing competitors and companies in other markets.

We compete in markets that have become increasingly competitive, which may result in reduced gross profit margins and market share.

The markets for our products are intensely competitive. New manufacturers have entered the markets in recent years to offer products in competition with us. Additionally, certain companies have, in recent years, developed the ability to deliver competing products using coaxial cable and cellular transmission, especially in high-density metropolitan areas. Competition will further increase if new companies enter the market or existing competitors expand their product lines. Some of these potential competitors may have greater financial, technological, manufacturing, sales and marketing, and personnel resources. As a result, these competitors may be able to respond more rapidly or effectively to new or emerging technologies and changes in customer requirements, withstand significant price decreases, or devote greater resources to the development, promotion and sale of their products.

Furthermore, we face aggressive price competition and may continue to do so. As a consequence of higher supply chain and manufacturing costs, we have in the past increased the prices of many of our products and services to maintain or improve our revenue and gross margin, and we may do so again in the future. In addition, competitors who have a greater presence in some of the lower-cost markets in which we compete, or who can obtain better pricing, more favorable contractual terms and conditions, or more favorable allocations of products and components during periods of limited supply may be able to offer lower prices than we are able to offer. Our cash flows, results of operations, and financial condition may be adversely affected by these and other industry-wide pricing pressures.

In addition, our present and future competitors may be able to enter our existing or future markets with products or technologies comparable or superior to those that we offer. An increase in competition could cause us to reduce prices, decrease our market share, require increased spending by us on product development and sales and marketing, or cause delays or cancellations in customer orders, any one of which could reduce our gross profit margins and adversely affect our business and results of operations.

Our estimates regarding future warranty obligations may change due to product failure rates, installation and shipment volumes, field service repair obligations and other rework costs incurred in correcting product failures. If our estimates change, our liability for warranty obligations may increase or decrease, impacting future cost of revenue.

Our products are highly complex, and we cannot ensure that our extensive product development, manufacturing and integration testing will be adequate to detect all defects, errors, failures and quality issues. Material quality or performance problems for products covered under warranty could adversely impact our reputation and negatively affect our operating results, financial position and cash flows. The development and production of new products with high complexity often involves problems with software, components and manufacturing methods. If significant warranty obligations arise due to reliability or quality issues arising from defects in software, faulty components or manufacturing methods, our operating results, financial position and cash flows could be negatively impacted by:

- costs associated with fixing software or hardware defects;
- costs associated with internal or third-party installation errors;
- high service and warranty expenses;
- costs associated with recalling and replacing products with software or hardware defects, including costs from writing-off defective products recalled or recovering expenses from our suppliers;
- high inventory obsolescence expense;
- delays in collecting accounts receivable;
- payment of liquidated damages for performance failures;
- extended performance bond expenses; and
- a decline in revenue from existing customers.

Managing our inventory is complex and has included and may continue to include write downs of excess or obsolete inventory.

Managing our inventory of components and finished products is complicated by a number of factors, including the need to maintain a significant inventory of certain components that are in short supply, that have been discontinued by the component manufacturer, that must be purchased in bulk to obtain favorable pricing or that require long lead times. These issues have and may continue to result in our purchasing and maintaining significant amounts of inventory, which if not used or expected to be used based on anticipated production requirements, may become excess or obsolete. Any excess or obsolete inventory could also result in sales price reductions and/or inventory write- downs, which could adversely affect our business and results of operations. During the year ended December 31, 2023, we recognized write-downs of inventory of $24.3 million due to a discontinuation of certain product lines within our Network Solutions segment in connection with our Business Efficiency Program. Additionally, during the year ended December 31, 2024, we recognized write-downs of inventory and other charges of $8.6 million as a result of a strategy shift which included discontinuance of certain items in connection with the Business Efficiency Program, of which, $4.1 million relates to inventory write-downs and $4.5 million relates to other charges. Significant and unanticipated changes in our business could require additional charges for inventory write downs in a future period. Any future charges relating to such inventory write-downs could materially adversely affect our business, financial condition and results of operations in the periods recognized. *For additional details regarding the Business Efficiency Program, see "Management's Discussion and Analysis of Financial Condition and Results of Operations – Business Efficiency Program" in Part II, Item 7 of this report.*

Our international operations have and may continue to expose us to additional risks, increase our costs and adversely affect our operating results, financial condition and cash flows.

International sales represented 56.8% and 59.8% of our net revenue for the years ended December 31, 2024 and 2023. We have a significant international presence, and our international presence may continue to grow. If we continue to expand our presence in international markets, we expect to continue to experience increased revenue and operating costs in these markets. Furthermore, international expansion may continue to increase our operational risks and impact our results of operations, including:

- foreign currency exchange rate volatility has had and may continue to have an unfavorable impact on our cash flows, financial condition and results of operations;
- exposure to unfavorable commercial terms in certain countries;
- the time and cost to staff and manage foreign operations, including the time and cost to maintain good relationships with employee associations and work councils;
- the time and cost to ensure adequate business interruption controls, processes and facilities;
- the time and cost to manage and evolve financial reporting systems, maintain effective financial disclosure controls and procedures, and comply with corporate governance requirements in multiple jurisdictions;
- the cost to collect accounts receivable and extension of collection periods;
- the cost and potential disruption of facilities transitions required in some business acquisitions;
- risks as a result of less regulation of patents or other safeguards of intellectual property in certain countries;
- the potential impact of adverse tax, customs regulations and transfer-pricing issues;
- exposure to increased price competition from additional competitors in some countries;
- exposure to global social, political and economic instability, changes in economic conditions and foreign currency exchange rate movements;
- potential exposure to liability or damage of reputation resulting from a higher incidence of corruption or unethical business practices in some countries;
- potential regulations on data protection, regarding the collection, use, disclosure and security of data;
- potential trade protection measures, export compliance issues, domestic preference procurement requirements, qualification to transact business and additional regulatory requirements;
- potential exposure to natural disasters, epidemics and pandemics (and government regulations in response thereto) and acts of war or terrorism; and
- potential exposure to ongoing military conflicts, including the conflict in Ukraine and in Israel and surrounding regions. The U.S. and certain other countries-imposed sanctions on Russia in connection with the conflict in Ukraine and could impose further sanctions against it, which could damage or disrupt international commerce and the global economy. Other potential consequences of such military conflicts include, but are not limited to, a heightened risk of cyber-warfare, biological warfare or nuclear warfare, growth in the number of popular uprisings in the affected regions, increased political discontent, especially in the regions most affected by the conflicts or economic sanctions, continued displacement of persons to regions close to the areas of conflict and an increase in the number of refugees, among other unforeseen social and humanitarian effects which could impact our business, customers, and suppliers.

Our success depends on attracting and retaining key personnel.

Our business has grown significantly since its inception. Our success is dependent in large part on the continued employment of our executive officers, including Thomas R. Stanton, our Chief Executive Officer, and other key management personnel. There have been, and may continue to be, changes in our management team resulting from the hiring or departure of key personnel, and we have recently made, and may continue to make, changes in compensation that may be viewed as disruptive by our key personnel. These changes may result in increased attrition or reduced productivity of our key personnel as new reporting relationships are established, and as other companies may increasingly target our executives and other key personnel, particularly during the current highly competitive market for qualified personnel. Such changes have and may continue to result in a loss of institutional knowledge, and they may cause disruptions to our business, impede our ability to achieve our objectives, or distract or result in diminished morale in, or the loss of, key personnel. In addition, for Adtran to continue as a successful entity we must also be able to attract and retain key engineers and software developers and architects whose expertise helps us maintain competitive advantages. We believe that our future success will depend, in large part, upon our ability to continue to attract, retain, train and motivate highly-skilled employees who are in great demand. Stock awards are designed to reward employees for their long-term contributions and to provide incentives for them to remain with us. Changes to our overall compensation program, including changes in salaries and our stock incentive program, may adversely affect our ability to retain key employees. Properly managing our continued growth, avoiding the problems often resulting from such growth and expansion and continuing to operate in the manner which has proven successful to us to date remains critical to the future success of our business.

We are exposed to adverse currency exchange rate fluctuations in jurisdictions where we transact in local currency, which could harm our financial results and cash flows.

We are exposed to changes in foreign currencies relative to the U.S. dollar, which are references to the differences between the foreign-exchanges rates we use to convert the financial results of our international operations from local currencies into U.S. dollars for financial reporting purposes. This impact of foreign-exchange rate changes is calculated based on the difference between the current period's currency exchange rates and that of the comparable prior period. Our primary exposures to foreign currency exchange rate movements are the euro and the British pound sterling. As a result of our global operations, our revenue, gross margins, operating expense and operating income in some international markets have been and may continue to be affected by foreign currency fluctuations.

We have recognized impairment charges related to goodwill and other intangible assets in the past and may be required to do so in the future.

The Business Combination added a significant amount of goodwill and other intangible assets to our consolidated balance sheets. In accordance with U.S. GAAP, management periodically assesses these assets to determine if they are impaired. Significant negative industry or economic trends, disruptions to our business, the inability to effectively integrate acquired businesses, the under performance of our business as compared to management's initial expectations, unexpected significant changes or planned changes in use of the assets, divestitures, and market capitalization declines may impair goodwill and other intangible assets. During the year ended December 31, 2024, qualitative factors such as a decrease in the Company's market capitalization, lower service provider spending and delayed holding patterns of inventory with respect to customers caused us to reduce our forecasts, triggering a quantitative impairment assessment for our reporting units. The Company determined upon its quantitative impairment assessment to recognize a $292.6 million non-cash goodwill impairment charge for the Network Solutions reporting unit. The quantitative impairment analysis indicated there was no impairment of the Services & Support goodwill. The Company will continue to monitor its stock price, operating results and other macroeconomic factors to determine if there is further indication of a sustained decline in fair value requiring an event driven assessment of the recoverability of its remaining goodwill. If our assumptions and related estimates change in the future, or if we change our reporting unit structure or other events and circumstances change (e.g., a sustained decrease in the price of our common stock (considered on both absolute terms and relative to peers)), we may be required to record impairment charges when we perform these tests, or in other future periods. A non-cash goodwill impairment charge would have the effect of decreasing earnings or increasing losses in such period. If we are required to take a substantial impairment charge, such impairment charge could have a material adverse effect on our business, financial condition and results of operations in the periods recognized.

We may be unable to successfully and effectively manage and integrate acquisitions, divestitures and other significant transactions, which could harm our operating results, business and prospects.

As part of our business strategy, we frequently engage in discussions with third parties regarding possible investments, acquisitions, strategic alliances, joint ventures, divestitures and outsourcing arrangements, and we enter into agreements relating to such transactions in order to further our business objectives. In order to pursue this strategy successfully, we must identify suitable candidates, successfully complete transactions, some of which may be large and complex, and manage post-closing issues such as the integration of acquired companies or employees and the divestiture of combined businesses, operations and employees. Integration, divestiture and other risks of these transactions can be more pronounced in larger and more complicated transactions, or if multiple transactions are pursued simultaneously. If we fail to identify and successfully complete transactions that further our strategic objectives, we may be required to expend resources to develop products and technology internally. This may put us at a competitive disadvantage and we may be adversely affected by negative market perceptions, any of which may have a material adverse effect on our revenue, gross margin and profitability.

Integration and divestiture issues are complex, time-consuming and expensive and, without proper planning and implementation, could significantly disrupt our business. The challenges involved in integrating and divesting include:

- combining service and product offerings and entering into new markets in which we are not experienced;
- convincing customers and distributors that any such transaction will not diminish client service standards or business focus, preventing customers and distributors from deferring purchasing decisions or switching to other suppliers or Service Providers (which could result in additional obligations to address customer uncertainty), and coordinating service, sales, marketing and distribution efforts;
- consolidating and rationalizing corporate information technology infrastructure, which may include multiple legacy systems from various acquisitions and integrating software code;
- minimizing the diversion of the Board of Directors and management's attention from ongoing business concerns;
- persuading employees that business cultures are compatible, maintaining employee morale and retaining key employees, integrating employees into our company, correctly estimating employee benefit costs and implementing restructuring programs;
- coordinating and combining administrative, service, manufacturing, research and development and other operations, subsidiaries, facilities and relationships with third parties in accordance with local laws and other obligations while maintaining adequate standards, controls and procedures;
- increasing our responsibility for the liabilities of the businesses we acquire, some of which we may not anticipate, including costs of third-party advisors to resolve disputes;
- achieving savings from supply chain and administration integration; and
- efficiently divesting combined business operations which may cause increased costs as divested businesses are de-integrated from embedded systems and operations.

We evaluate and enter into these types of transactions on an ongoing basis. We may not fully realize all of the anticipated benefits of any transaction and the time frame for achieving benefits of a transaction may depend partially upon the actions of employees, suppliers or other third parties. In addition, the pricing and other terms of our contracts for these transactions require us to make estimates and assumptions at the time we enter into these contracts, and, during the course of our due diligence, we may not identify all of the factors necessary to estimate costs accurately. Any increased or unexpected costs, unanticipated delays or failure to achieve contractual obligations could make these agreements less profitable or unprofitable.

Managing these types of transactions require varying levels of management resources, which may divert our attention from other business operations. These transactions could result in significant costs and expenses and charges to earnings, including those related to severance pay, early retirement costs, employee benefit costs, asset impairment charges, charges from the elimination of duplicative facilities and contracts, in-process research and development charges, inventory adjustments, assumed litigation, regulatory compliance and other liabilities, legal, accounting and financial advisory fees and required payments to executive officers and key employees under retention plans. In the Business Combination with Adtran Networks, we have incurred significant restructuring and integration costs and we expect to incur additional restructuring and integration costs and such costs are expected to be material. Moreover, we could incur additional depreciation and amortization expense over the useful lives of certain assets acquired in connection with these transactions, and, to the extent that the value of goodwill or intangible assets acquired in connection with a transaction becomes impaired, we may be required to incur additional material charges relating to the impairment of those assets. For example, during the third quarter of 2023, we recognized a $37.9 million non-cash goodwill impairment charge related to the Business Combination with Adtran Networks. In order to complete an acquisition, we may issue common shares, potentially creating dilution for existing stockholders, or borrow funds, which could affect our financial condition, results of operations and potentially our credit ratings. Any prior or future downgrades in our credit rating associated with a transaction could adversely affect our ability to borrow and our borrowing cost, and result in more restrictive borrowing terms. In addition, our effective tax rate on an ongoing basis is uncertain, and such transactions could impact our effective tax rate. We also may experience risks relating to the challenges and costs of closing a transaction and the risk that an announced transaction may not close. As a result, any completed, pending or future transactions may contribute to financial results that differ materially from the investment community’s expectations.

Ongoing inflationary pressures have negatively impacted our revenues and profitability.

Ongoing inflationary pressures have resulted and may continue to result in decreased demand for our products and services, increased manufacturing and operating costs (including our labor costs), reduced liquidity, and limitations on our ability to access credit or otherwise raise debt and equity capital. In the current inflationary environment, because certain of our customer contracts provide for fixed pricing and/or due to our competitor’s pricing strategies, we are not always been able to raise the sales prices of our products and services at or above the rate at which our costs increase, which has reduced our profit and operating margins and has and could continue

to have a material adverse effect on our financial results. We also may experience lower than expected sales and potential adverse impacts on our competitive position if there is a decrease in customer spending or a negative reaction to any price increases we are able to implement. A reduction in our revenue would be detrimental to our profitability and financial condition and could also have an adverse impact on our future growth.

Risks related to our control environment

We have had to restate our previously issued consolidated financial statements and, as part of that process, have identified material weaknesses in our internal control over financial reporting. If we are unable to develop and maintain effective internal control over financial reporting, we may not be able to accurately report our financial results in a timely manner, which may adversely affect investor confidence in us and may adversely affect our business, financial condition and results of operations.

A material weakness is a deficiency, or a combination of deficiencies, in internal control over financial reporting, such that there is a reasonable possibility that a material misstatement of our annual or interim financial statements will not be prevented or detected on a timely basis. Effective internal control over financial reporting is necessary for us to provide reliable financial reporting and prevent fraud. We have had to restate our previously issued consolidated financial statements and, as part of that process, have identified material weaknesses in our internal control over financial reporting. We have implemented new controls with respect to one material weakness, and we plan to initiate remediation plans with respect to the other material weaknesses. These remediation measures have been time consuming and costly and there is no assurance that these initiatives will ultimately have the intended effects. Any failure to maintain effective internal control over financial reporting could adversely impact our ability to report our financial position and results from operations on a timely and accurate basis. If our financial statements are not accurate, investors do not have a complete understanding of our operations. Likewise, if our financial statements are not filed on a timely basis, we could be subject to sanctions or investigations by the stock exchange on which our common stock is listed, the SEC, the Federal Financial Supervisory Authority, or other regulatory authorities. In either case, there could be an adverse effect on our business, financial condition and results of operations. Ineffective internal control over financial reporting could also cause investors to lose confidence in our reported financial information, which could have a negative effect on the trading price of our stock.

We can provide no assurance that the measures that we have taken, are taking, and plan to take in the future will remediate the material weaknesses identified or that any additional material weaknesses or restatements of financial results will not arise in the future due to a failure to implement and maintain adequate internal control over financial reporting or circumvention of these controls. In addition, while we have strengthened our controls and procedures, in the future those controls and procedures may not be adequate to prevent or identify irregularities or errors or to facilitate the fair presentation of our consolidated financial statements.

Furthermore, as a public company, we are required to comply with U.S. GAAP, the Sarbanes-Oxley Act of 2002 ("SOX"), the Dodd-Frank Act and the rules and regulations subsequently implemented by the SEC and the Public Company Accounting Oversight Board. As such, Adtran Networks, as a subsidiary of a public company, has established and is required to maintain effective disclosure controls, as well as internal control over financial reporting under U.S. GAAP. Current and ongoing compliance efforts have and may continue to be costly and require the attention of management. There are a large number of processes, policies, procedures and functions that have been integrated, or enhanced at Adtran Networks, particularly those related to the implementation of internal controls for SOX compliance. The maintenance of these plans may lead to additional unanticipated costs and time delays. These incremental costs may exceed the savings we expect to achieve from the realization of efficiencies related to the combination of the businesses, particularly in the near term and in the event there are material unanticipated costs.

We may face litigation and other risks as a result our material weaknesses in our internal control over financial reporting and any resulting restatement of our previously issued consolidated financial statements.

We had to restate our previously issued consolidated financial statements in August 2023 and March 2024 and, in connection with those restatements, we identified material weaknesses in our internal control over financial reporting, certain of which have continued as of the date hereof. Until such time as we have remediated our material weaknesses or in the event that we experience an additional material weakness, there is a higher risk of there being an error in our financial statements, which error could be material, thereby resulting in a restatement of our financial statements. In connection with our material weaknesses in our internal control over financial reporting and any future restatement, we face potential for litigation or other disputes which may include, among others, claims invoking the federal and state securities laws, contractual claims or other claims. As of the date of this report, we have no knowledge of any such litigation or dispute. However, we can provide no assurance that such litigation or dispute will not arise in the future. Any such litigation or dispute, whether successful or not, could adversely affect our business, financial condition and results of operations.

Breaches of our information systems and cyberattacks could compromise our intellectual property and cause significant damage to our business and reputation.

We maintain sensitive data on our information systems and the networks of third-party providers, including intellectual property, financial data and proprietary or confidential business information relating to our business, customers, suppliers, and business partners. We also produce networking equipment solutions and software used by network operators to ensure security and reliability in their management and transmission of data. Our customers, particularly those in regulated industries, are increasingly focused on the security features of our technology solutions. Maintaining the security of information sensitive to us and our business partners is critical to our business and reputation. We rely upon several internal business processes and information systems to support key operations and financial functions, and the efficient operation of these processes and systems is critical. Companies are increasingly subjected to cyberattacks and other attempts to gain unauthorized access. Specifically, our network and storage applications and those systems and applications maintained by our third-party providers may be targeted by cyberattacks or potentially breached due to operator error, fraudulent activity, or other system disruptions. Furthermore, we, our employees and some of our third-party Service Providers have been, and anticipate continuing to be, the targets of various cybersecurity threats. These include hacking attacks, social engineering schemes such as "phishing," and business email compromise attacks, wherein attackers impersonate company executives or colleagues in emails to trick employees into transferring funds or revealing sensitive information. Our information systems are designed to reflect industry standards and are engineered to reduce downtime in the event of power outages, weather or climate events and cybersecurity issues. To date, these threats have not had a significant effect on our financial condition or operational results; however, we cannot ensure that future cybersecurity threats might not have a material impact on our business. Unauthorized access to or disclosure of our information could compromise our intellectual property and expose sensitive business information. Additionally, a significant failure or other compromise of our systems due to these issues could result in significant remediation costs, disrupt business operations, and divert management attention, which could result in harm to our business reputation, operating results, financial condition, and cash flows. These risks, as well as the number and frequency of cybersecurity events globally, may also be heightened during times of geopolitical tension or instability between countries. For example, a number of recent cybersecurity events have been alleged to have originated from the ongoing military conflict in Ukraine and in Israel and its surrounding areas. Further, we have incurred, and will continue to incur, expenses to comply with cybersecurity, privacy, and data protection standards and protocols imposed by law, regulation, industry standards and contractual obligations. Continued increases in legislation and regulation from a variety of international, federal and state authorities regarding cybersecurity incidents, including risk assessment, notification obligations, regulatory reporting and other requirements, could increase our cost of compliance and could subject us to additional liability and reputational harm. And while we may be entitled to damages if our third-party providers fail to satisfy their security-related obligations to us, any award may be insufficient to cover our damages, or we may be unable to recover such award. Additionally, while we have purchased cybersecurity insurance, there are no assurances that the coverage would be adequate in relation to any incurred losses or not subject to any exclusions. Moreover, as cyberattacks increase in frequency and magnitude, we may be unable to obtain cybersecurity insurance in amounts and on terms we view as adequate for our operations.

For information on our cybersecurity risk management, strategy and governance, see Part I, Item 1C of this report.

Risks related to the telecommunications industry

We must continue to update and improve our products and develop new products to compete and to keep pace with improvements in communications technology.

The markets for our products are characterized by rapidly changing technology, evolving industry standards and continuing improvements in the communications service offerings of Service Providers. If technologies or standards applicable to our products, or Service Provider offerings based on our products, become obsolete or fail to gain widespread commercial acceptance, our existing products or products under development may become obsolete or unmarketable, which can result in the discontinuation of products and write off of related inventory. For example, during the quarters ended March 31, 2024 and September 30, 2023, management determined that there would be a strategy shift which resulted in a discontinuation of certain product lines in the Network Solutions segment. For more information, *see Note 5 of Notes to Consolidated Financial Statements included in Part II, Item 8 of this report.* Moreover, the introduction of products embodying new technologies, the emergence of new industry standards, or changes in Service Provider offerings could adversely affect our ability to sell our products.

Our revenue and profitability in the past have, to a significant extent, resulted from our ability to anticipate changes in technology, industry standards and Service Provider offerings, and to develop and introduce new and enhanced products. Our continued ability to adapt will be a significant factor in maintaining or improving our competitive position and our prospects for growth. We cannot assure that we will be able to respond effectively to changes in technology, industry standards, Service Provider offerings or new product announcements by our competitors. We also cannot assure that we will be able to successfully develop and market new products or product enhancements, or that these products or enhancements will achieve market acceptance. We also may not have sufficient resources to make the technological advances necessary to be competitive and successful in the markets we serve. Any failure by us to continue to anticipate or respond in a cost-effective and timely manner to changes in technology, industry standards, Service Provider offerings or new product announcements by our competitors, or any significant delays in product development or introduction, could

have a material adverse effect on our ability to competitively market our products and on our revenue, results of operations, financial condition and cash flows.

Our failure or the failure of our contract manufacturers to comply with applicable environmental regulations could adversely impact our results of operations.

The manufacture, assembly and testing of our products at times requires the use of hazardous materials that are subject to environmental, health and safety regulations. In particular, our manufacturing operations use substances that are regulated by various federal, state, local, foreign and international laws and regulations governing health, safety and the environment, including U.S. Environmental Protection Agency regulations and the Waste Electrical and Electronic Equipment Directive, Directive on the Restriction of the Use of Certain Hazardous Substances in Electrical and Electronic Equipment and Registration, Evaluation, Authorization, and Restriction of Chemicals regulations adopted by the EU. Our failure or the failure of our contract manufacturers to comply with any of these applicable requirements could result in regulatory penalties, legal claims or disruption of production. In addition, our failure or the failure of our contract manufacturers to properly manage the use, transportation, emission, discharge, storage, recycling or disposal of hazardous materials could subject us to increased costs or liabilities. Existing and future environmental regulations may restrict our use of certain materials to manufacture, assemble and test products. Any of these consequences could adversely impact our results of operations by increasing our expenses and/or requiring us to alter our manufacturing processes.

If our products do not interoperate with our customers' networks, installations may be delayed or canceled, which could harm our business.

Our products must interface with existing networks, each of which may have different specifications, utilize multiple protocol standards and incorporate products from other vendors. Many of our customers' networks contain multiple generations of products that have been added over time as these networks have grown and evolved. Our products may be required to interoperate with many or all of the products within these networks, as well as future products to meet our customers' requirements. If we find errors in the existing software or defects in the hardware used in our customers' networks, we may have to modify our software or hardware to fix or overcome these errors so that our products will interoperate with the existing software and hardware. Implementation of product corrections involving interoperability issues could increase our costs and adversely affect our results of operations. Such issues may affect our ability to obtain product acceptance from other customers.

We engage in research and development activities to develop new, innovative solutions and to improve the application of developed technologies, and as a consequence may miss certain market opportunities enjoyed by larger companies with substantially greater research and development efforts and which may focus on more leading edge development.

A portion of our research and development activities are focused on the continued innovation of currently accepted access and edge transmission technologies in order to deliver faster internet speeds, more capacity, better quality of service and operational efficiency. These research and development efforts result in improved applications of technologies for which demand already exists or is latent. We also focus our research and development efforts on developing software, solutions and platforms that enable Service Providers to increase revenue-generating service velocity, reducing operational costs, increasing scale and providing service agility. We rarely engage in research projects that represent a vast departure from the current business practices of our key customers. While we believe our strategy provides a higher likelihood of producing nearer term or more sustainable revenue streams, this strategy could result in lost revenue opportunities and higher operating expenses should a new technology achieve rapid and widespread market acceptance. When we do engage in research and development activities for new, leading-edge technologies and market approaches, there is no guarantee that those technologies or market approaches will be successful or that they will be adopted and purchased by our customers.

Our strategy of outsourcing a portion of our manufacturing requirements to subcontractors located in various international regions may result in us not meeting our cost, quality or performance standards.

We are heavily dependent on subcontractors for the assembly and testing of certain printed circuit board assemblies, subassemblies, chassis, enclosures and equipment shelves, and the purchase of some raw materials used in such assemblies. This reliance involves several risks, including the unavailability of, or interruptions in, access to certain process technologies and reduced control over product quality, delivery schedules, transportation, manufacturing yields and costs. We may not be able to provide product order volumes to our subcontractors that are high enough to achieve sufficient cost savings. If shipments fall below forecasted levels, we may incur increased costs or be required to take ownership of excess inventory. In addition, these same suppliers may decide to no longer manufacture or support specific components necessary for some of our legacy products, which could lead to our inability to fulfill demand without increased engineering and material costs necessary to replace such components or cause us to transition such products to end-of-life status sooner than planned. Further, our suppliers could enter into exclusive arrangements with our competitors, refuse to sell their products or components to us at commercially reasonable prices or at all, go out of business or discontinue their relationships with us. We also have experienced and expect to continue to experience ongoing inflationary pressures on input costs, such as, raw materials, labor and distribution costs. Our attempts to offset these cost pressures, such as through increases in the selling prices of some of our products and services, may not be successful and could negatively affect our operating results. In addition, a significant component of maintaining cost competitiveness is the ability of our subcontractors to adjust their costs to compensate for possible adverse exchange

rate movements. To the extent that the subcontractors are unable to do so, and we are unable to procure alternative product supplies, then our competitiveness and results of operations could be adversely impaired. These risks may be exacerbated by economic, regulatory or political changes or uncertainties, terrorist actions, acts of war, the effects of climate change, natural disasters or pandemics in the foreign countries in which our subcontractors are located. These risks could also be heightened by geopolitical factors. For example, the renegotiation or termination of existing bilateral and multilateral trade agreements, as well as, changes in international tariff structures, could adversely impact our product costs. In addition, a number of the components we use in our products are sourced directly or indirectly through Taiwan. Deterioration of relations between Taiwan and China and the United States, the resulting actions taken by any of these parties, and other factors affecting the political or economic conditions of Taiwan in the future, could adversely impact our supply chain, international sales, and operations.

We cannot be assured that delays in product deliveries will not occur in the future because of shortages resulting from this limited number of subcontractors or from the financial or other difficulties of these parties. Our inability to identify and engage alternative subcontractors if and as required in the future, or the need to undertake required retraining and other activities related to establishing and developing a new subcontractor relationship, could result in delays or reductions in product shipments which, in turn, could have a negative effect on our customer relationships and operating results.

Our failure to maintain rights to intellectual property used in our business could adversely affect the development, functionality and commercial value of our products.

Our future success depends in part upon our proprietary technology. Although we attempt to protect our proprietary technology by contract, trademark, copyright and patent registration and internal security, including trade secret protection, these protections may not be adequate. Furthermore, our competitors can develop similar technology independently without violating our proprietary rights. From time to time, we receive and may continue to receive notices of claims alleging that we are infringing upon patents or other intellectual property. Any of these claims, whether with or without merit, could result in significant legal fees, divert our management's time, attention and resources, delay our product shipments or require us to enter into royalty or licensing agreements. We cannot predict whether we will prevail in any claims or litigation over alleged infringements, or whether we will be able to license any valid and infringed patents, or other intellectual property, on commercially reasonable terms. If claims of intellectual property infringement against us are successful and we fail to obtain a license or develop or license non-infringing technology, our business, operating results, financial condition and cash flows could be materially adversely affected.

Third party hardware or software that is used with our portfolios may not continue to be available or at commercially reasonable terms.

We integrate third-party software into certain of our products. Licenses for this technology may not be available or continue to be available to us on commercially reasonable terms. Difficulties with third-party technology licensors could result in the termination of such licenses, which may result in increased costs or require us to purchase or develop a substitute technology. Difficulty obtaining and maintaining third-party technology licenses may disrupt the development of our products and increase our costs, which could harm our business.

Our use of open source software could impose limitations on our ability to commercialize our products.

Several of our solutions utilize elements of open source or publicly available software. Although we closely monitor our use of open source software, the terms of many open source software licenses have not been interpreted by the courts, and there is a risk that such licenses could be construed in a manner that could impose unanticipated conditions or restrictions on our ability to sell our products. In such event, we could be required to make our proprietary software generally available to third parties, including competitors, at no cost, to seek licenses from third parties in order to continue offering our products, to re-engineer our products or to discontinue the sale of our products in the event re-engineering cannot be accomplished on a timely basis or at all, any of which could adversely affect our revenue and operating profitability.

We may incur liabilities or become subject to litigation that would have a material effect on our business.

In the ordinary course of business, we accept purchase orders, and enter into sales and other related contracts, for the marketing, sale, manufacture, distribution or use of our products and services. We may incur liabilities relating to our performance under such agreements, or which result from damage claims arising from certain events as outlined within the particular contract. While we attempt to include reasonable limitations of liability and other protective measures to all agreements, such agreements may not always contain, or be subject to, maximum loss clauses and liabilities arising from them may result in significant adverse changes to our results of operations, financial condition and cash flows.

In the ordinary course of business, we are subject to various legal proceedings and claims, including employment disputes, patent claims, disputes over contract agreements and other commercial disputes. In some cases, claimants seek monetary recovery, or other relief, including damages such as royalty payments related to patents, lost profits or injunctive relief, which, if granted, could require significant expenditures. Any such disputes may be resolved before trial, or if tried, may be resolved in our favor; however, the cost of claims sustained in litigation, and costs associated with the litigation process, may not be covered by our insurance. Such costs, and the demands

on management time during such an event, could harm our business, reputation and have a material adverse effect on our liquidity, results of operations, financial condition and cash flows.

In addition, as a result of the Business Combination with Adtran Networks SE, we continue to be exposed to litigation risk and uncertainty associated with the remaining minority shareholders of Adtran Networks. The terms of the DPLTA, including the adequacy of compensation payments to minority Adtran Networks shareholders under the terms of the DPLTA, have been challenged by minority shareholders of Adtran Networks by initiating court-led appraisal proceedings under German law. It is possible that the court in these appraisal proceedings may hold that we must pay higher Exit Compensation or Annual Recurring Compensation to such Adtran Networks SE shareholders than agreed upon in the DPLTA, the financial impact and timing of which is uncertain.

If we are unable to successfully develop and maintain relationships with SIs, Service Providers and enterprise VARs, our revenue may be negatively affected.

As part of our sales strategy, we are targeting SIs, Service Providers and enterprise VARs. In addition to specialized technical expertise, SIs, Service Providers and VARs typically offer sophisticated service capabilities that are frequently desired by enterprise customers. To expand our distribution channel to include resellers with such capabilities, we must be able to provide effective support to these resellers. If our sales, marketing or service capabilities are not sufficient to provide effective support to such SIs, Service Providers and VARs, our revenue may be negatively affected, and current SI, Service Provider and VAR partners may terminate their relationships with us, which would adversely impact our revenue and overall results of operations.

We depend on a third-party cloud platform provider to host our Mosaic One SaaS network and other operating platforms, and if we were to experience a material disruption or interference in service, our business and reputation could suffer.

Our quality of customer service and our continued growth depends in part on the ability of our existing and potential customers to use and access our Mosaic One SaaS network operating platform. We use third-party service providers that we do not control for key components of our infrastructure, particularly with respect to delivery of our SaaS products. The use of these service providers gives us greater flexibility in efficiently delivering a more tailored, scalable customer experience, but also exposes us to additional risks and vulnerabilities. Third-party service providers operate their own platforms that we access, and we are, therefore, vulnerable to their service interruptions. In the future, we may experience interruptions, delays and outages in service and availability from time to time as a result of our third-party service providers' infrastructure. Lack of availability of this infrastructure could be due to a number of potential causes including technical failures, natural disasters, fraud or security attacks that we cannot predict or prevent. Such outages could adversely impact our business, reputation, financial condition and results of operations.

Risks related to the Company's stock price

Our operating results historically have fluctuated and are likely to continue to fluctuate in future periods. Such fluctuations can adversely affect our stock price.

Our operating results have been, and will continue to be, subject to quarterly and annual fluctuations as a result of numerous factors. These factors include, but are not limited to:

- fluctuations in demand for our products and services, especially with respect to significant network expansion projects undertaken by Service Providers;
- continued growth of communications network traffic and the adoption of communication services and applications by enterprise and consumer end users;
- changes in sales and implementation cycles for our products and reduced visibility into our customers' spending plans and associated revenue, especially should a slowdown in communications industry spending occur due to economic downturns, tight capital markets, or declining liquidity trends;
- reductions in demand for our traditional products as new technologies gain acceptance;
- our ability, and that of our distributors, to maintain appropriate inventory levels and related purchase commitments;
- price and product competition in the communications and networking industries, which can change rapidly due to technological innovation;
- the overall movement toward industry consolidation among both our competitors and our customers;
- our dependence on sales of our products by channel partners and the timing of their replenishment orders. Specifically, our sales volume in 2024 has been negatively impacted due to our channel partners focus on reducing inventory levels;
- the potential for conflicts and competition involving our channel partners and large end-user customers and the potential for consolidation among our channel partners;

- variations in sales channels, product cost or mix of products and services sold;
- delays in receiving acceptance, as defined under contract, from certain customers for shipments or services performed near the end of a reporting period;
- our ability to maintain high levels of product support and professional services;
- manufacturing and customer order lead times, and potential restrictions in the supply of key components;
- fluctuations in our gross margin and the factors that contribute to this (as described above);
- our ability to achieve cost reductions;
- the ability of our customers, channel partners and suppliers to obtain financing or to fund capital expenditures;
- our ability to execute on our strategy and operating plans;
- benefits anticipated from our investments in engineering, sales and marketing activities;
- the effects of climate change and other natural events;
- the effect of political or economic conditions, including the effect of tariffs or so-called "trade wars" on us and our supply chain, acts of war, terrorist attacks or other unrest in certain international markets; and
- changes in tax laws and regulations or accounting pronouncements.

Future issuances of additional equity securities could result in dilution of existing stockholders' equity ownership.

We may determine from time to time to issue additional equity securities to raise additional capital, to support growth, or to make acquisitions. Furthermore, we may issue stock options, grant restricted stock awards or other equity awards to retain, compensate and/or motivate our employees and directors. The issuance of additional shares of common stock could result in the dilution of the voting and economic interests of existing stockholders. Furthermore, as part of our business strategy, we may acquire additional shares of Adtran Networks' common stock and issue equity securities to pay for any such acquisitions. In addition, we may seek additional capital due to favorable market conditions or strategic considerations even if we believe we have sufficient funds for our current or future operating plans. Any such issuances of additional share capital may cause stockholders to experience significant dilution of their ownership interests and the per share value of our common stock to decline.

The price of our common stock has been volatile and may continue to fluctuate significantly.

Our common stock is traded on the NASDAQ Global Select Market under the symbol ADTN and on the Frankfurt Stock Exchange under the symbol QH9. Since our initial public offering in August 1994, there has been, and may continue to be, significant volatility in the market for our common stock, based on a variety of factors, including factors listed in this section, some of which are beyond our control.

Risks related to the regulatory environments in which we do business

We are subject to complex and evolving U.S. and foreign laws, regulations and standards governing the conduct of our business. Violations of these laws and regulations may harm our business, subject us to penalties and to other adverse consequences.

We are subject to laws and regulations that govern conduct by our Company, our employees and agents and the manufacture, sale and use of our products. Our inability to comply with current and evolving laws and regulations governing our business domestically and internationally may adversely affect our revenue, results of operations, financial conditions and cash flows. New and changing laws, regulations and industry practices could require us to modify our business, products or services offered, potentially in a material manner, and may limit our ability to develop new products, services and features. If we violate these laws and regulations, governmental authorities in the U.S. and in foreign jurisdictions could seek to impose civil and/or criminal fines and penalties which could have an adverse effect on our reputation, as well as our results of operations, financial condition and cash flows.

These laws and regulations include, but are not limited to:

- various regulations and regional standards established by communications authorities and import/export control authorities that govern the manufacture, sale and use of our products. Changes in domestic or international communications regulations, tariffs, potential changes in trade policies by the U.S. and other nations, application requirements, import/export controls or expansion of regulation to new areas, including access, communications or commerce over the internet, may affect customer demand for our products or slow the adoption of new technologies which may affect our revenue. Further, the cost of complying with the evolving standards and regulations, including the cost of product re-design if necessary, or the failure to obtain timely domestic or foreign regulatory approvals or certification such that we may not be able to sell our products

where these standards or regulations apply, may adversely affect our revenue, results of operations, financial condition and cash flows.

- compliance with a wide variety of provincial, state, national and international laws and regulations applicable to the collection, use, retention, protection, disclosure, transfer and other processing of data, including personal data. Foreign data protection, privacy and other laws and regulations, including GDPR, are often more restrictive than those in the U.S. These data protection and privacy-related laws and regulations are varied, evolving, can be subject to significant change, may be augmented or replaced by new or additional laws and regulations and may result in ever-increasing regulatory and public scrutiny and escalating levels of enforcement and sanctions. For example, within the past three years, numerous states have adopted or are in the process of adopting various privacy-related laws and regulations. In addition, on July 16, 2020, the Court of Justice of the European Union issued a decision that invalidated the EU-U.S. Privacy Shield framework as a basis for transfers of personal data from the EU to the U.S., resulting in uncertainty and potential additional compliance obligations to ensure that a valid basis under the GDPR exists for these data transfers. Since that time, the E.U. and U.S. have developed the successor E.U.-U.S. Data Privacy Framework to address the 2020 decision, and on July 10, 2023, the European Commission issued an adequacy decision for the EU-US Data Privacy Framework, which entered in force on July 11, 2023; however, there are indications there may be legal challenges to the decision. Additionally, the European Commission published revised standard contractual clauses for data transfers from the European Economic Area in 2021, which were required to go into effect by December 2022. Finally, the U.K. has enacted a version of the GDPR the implementation of which occurred by way of the Data Protection Act 2018, collectively referred to as the "U.K. GDPR." Uncertainty remains, however, regarding how aspects of data protection in the U.K. will be handled in the medium to long term. There is also a risk that we, directly or as the result of a third-party Service Provider we use, could be found to have failed to comply with the laws and regulations applicable in a jurisdiction regarding the collection, consent, handling, transfer or disposal of personal data. In addition to the U.S. and Europe, we do business in numerous other countries around the globe. Those countries and jurisdictions may have, currently or in the future, data protection or privacy laws or regulations with similar or additional requirements, resulting in increased compliance costs and regulatory risk.
- the FCPA, which prohibits U.S. companies and their intermediaries from making corrupt payments to foreign officials for the purpose of directing, obtaining or keeping business, and requires companies to maintain reasonable books and records and a system of internal accounting controls. The FCPA applies to companies, individual directors, officers, employees and agents. Under the FCPA, U.S. companies may be held liable for the corrupt actions taken by employees, strategic or local partners or other representatives. On February 10, 2025, the U.S. government temporarily paused the enforcement of the FCPA. Whether FCPA enforcement will resume in the future and the extent to which it will be enforced remains uncertain.
- environmental, health and safety regulations governing the manufacture, assembly and testing of our products, including without limitation regulations governing the use of hazardous materials. Our failure or the failure of our contract manufacturers to properly manage the use, transportation, emission, discharge, storage, recycling or disposal of hazardous materials could subject us to increased costs or liabilities. Existing and future environmental regulations may restrict our use of certain materials to manufacture, assemble and test products.
- requirements by the SEC governing the disclosure regarding the use of conflict minerals mined from the Democratic Republic of the Congo and adjoining countries (the “DRC”) and disclosure with respect to procedures regarding a manufacturer’s efforts to prevent the sourcing of such minerals from the DRC. Certain of these minerals are present in our products. SEC rules implementing these requirements may have the effect of reducing the pool of suppliers that can supply “conflict free” components and parts, and we may not be able to obtain conflict free products or supplies in sufficient quantities for our operations. Because our supply chain is complex, we may face reputational challenges with our customers, stockholders and other stakeholders if we are unable to verify sufficiently the origins for the conflict minerals used in our products and cannot assert that our products are “conflict free.” Environmental or similar social initiatives may also make it difficult to obtain supply of compliant components or may require us to write off non-compliant inventory, which could have an adverse effect on our business and operating results.
- the insider trading prohibitions and the respective directors' dealing rules, as well as disclosure and reporting obligations under the German Securities Trading Act (*Wertpapierhandelsgesetz*) and Regulation (EU) No. 596/2014 of the European Parliament and of the Council of April 16, 2014, and other applicable regulations.

Moreover, changes in the U.S. political landscape can significantly impact our business. The recent changes in the U.S. government administration may result in substantial modifications to laws and regulations, including, but not limited to, those related to trade policies, tariffs, export controls and technology transfers. New executive orders and legislative actions could alter the business environment in which we operate.

Changes in trade policy in the U.S. and other countries, including the imposition of additional tariffs and the resulting consequences, may adversely impact our gross profits, gross margins, results of operations and financial condition.

In recent years, international market conditions and the international regulatory environment have been increasingly affected by competition among countries and geopolitical frictions. The U.S. government issued orders in February 2025 increasing tariffs on imports from certain countries, including Canada, China and Mexico, and it has discussed further tariffs, including plans to increase U.S. tariffs to match the rates that other countries charge on imports and tariffs on semiconductors, automobiles and pharmaceuticals imported into the U.S. While the implementation of tariffs on Canadian and Mexican imports was initially deferred, such tariffs are expected to go into effect in March 2025 and the U.S. has increased tariffs on goods imported into the U.S. from China by 10%. In response, China imposed a 15% tariff on U.S. coal and liquified natural gas products, along with a 10% tariff on crude oil. The U.S. government has indicated that an additional 10% duty on Chinese imports may be forthcoming, which may result in further tariffs on U.S. products being imported into China. The recent tariffs come on top of ongoing trade tensions and regulatory actions involving the governments of the U.S. and China. Moreover, on February 11, 2025, the U.S. government ordered tariffs of 25% on imports of steel and aluminum regardless of where they originate.

Because not all products can be sourced in all countries, we expect to experience increased costs in our supply chain as a result of such tariffs, which may lead to reduced margins or increased prices. At this time, it remains unclear what additional actions, if any, will be taken by the U.S. or other governments with respect to international trade agreements, the imposition of tariffs on goods imported into the U.S. or exported to other countries, tax policy related to international commerce, increased export control, sanctions and investment restrictions, import or use of foreign communications equipment, or other trade matters. Related costs and the uncertainty during transition periods could lead to changes in buying behavior, such as decreased demand. These impacts could have a negative effect on our financial results, including our revenue and profitability. There can also be no assurance that further trade tensions between the U.S. and China will not have an adverse impact on our business, operations and access to technology, or components thereof, sourced from China.

Furthermore, tariffs on our customers' products may adversely affect our gross profit margins in the future due to the potential for increased pressure on our selling prices by customers seeking to offset the impact of tariffs on their own products. In addition, tariffs could make our products less attractive relative to products offered by competitors, which may not be subject to similar tariffs. Increases in tariffs on imported goods or the failure to resolve current international trade disputes could further decrease demand and have a material adverse effect on our business and operating results.

New or revised tax regulations, changes in our effective tax rate, recognition of a valuation allowance or assessments arising from tax audits may have an adverse impact on our results.

We are subject to taxation in various jurisdictions, both domestically and internationally, in which we conduct business. Significant judgment is required in the determination of our provision for income taxes, and this determination requires the interpretation and application of complex and sometimes uncertain tax laws and regulations. Our effective tax rate may be adversely impacted by changes in the mix of earnings between jurisdictions with different statutory tax rates, in the valuation of our deferred tax assets, and by changes in tax rules and regulations. We continually monitor our deferred tax assets and when it becomes more likely than not that a tax benefit will not be recognized, a valuation allowance is recorded against those assets. In addition, we are subject to examination of our income tax returns by the Internal Revenue Service and various other tax authorities in the jurisdictions in which we conduct business. We regularly assess the likelihood of adverse outcomes resulting from these examinations to determine the adequacy of our provision for income taxes. There can be no assurance that the outcomes from these continuous examinations will not have an adverse effect on our results of operations, financial condition and cash flow. Additionally, we continually review the adequacy of the valuation allowance and recognize the benefits of deferred tax assets only as the reassessment indicates that it is more likely than not that the deferred tax assets will be recognized. As such, we may release a portion of the valuation allowance or establish a new valuation allowance based on operations in the jurisdictions in which these assets arose. Management continues to evaluate all evidence including historical operating results, the existence of losses in the most recent year, forecasted earnings, future taxable income and tax planning strategies. Should management determine that a valuation allowance is needed in the future due to not being able to absorb deferred tax assets, it would have a material impact on our consolidated financial statements.

In August 2022, the Inflation Reduction Act was signed into law, which made a number of changes to the Internal Revenue Code, including adding a 1% excise tax on stock buybacks by publicly traded corporations and a 15% corporate minimum tax on adjusted financial statement income of certain large companies. The impact of these provisions on our effective tax rate will also depend on additional guidance to be issued by the Secretary of the U.S. Department of the Treasury. We are currently evaluating the impact of these provisions on our effective tax rate. Further, the Tax Act amended the Internal Revenue Code to require that specific research and experimental ("R&E") expenditures be capitalized and amortized over five years (U.S. R&E) or fifteen years (non-U.S. R&E), which began in fiscal 2023. Although the U.S. Congress has considered legislation that would defer, modify, or repeal the capitalization and amortization requirement, there is no assurance that the provision will be deferred, repealed, or otherwise modified. If the requirement is not repealed or otherwise modified, it may increase our effective tax rate. Additionally, the Organization for Economic Co-operation and Development (the "OECD"), the G20, and other invited countries developed a global tax framework inclusive of a 15% global

minimum tax under the Pillar Two Global Anti-Base Erosion Rules ("Pillar Two"). On December 15, 2022, the Council of the European Union ("EU") formally adopted the OECD's framework to achieve a coordinated implementation amongst EU Member States consistent with EU law. The EU's Pillar Two Directive effective dates are January 1, 2024, and January 1, 2025, for different aspects of the directive. Various countries have enacted or are in the process of enacting legislation to adopt certain parts of the OECD's proposals. We have assessed the framework including OECD administrative guidance and expect, based upon available guidance, that these changes will not have a material impact to our results of operations; however, any future changes in OECD guidance or interpretations, could impact our initial assessment. Many aspects of the minimum tax directive will be effective beginning in fiscal 2025, with certain remaining impacts to be effective beginning in fiscal 2026. While it is uncertain whether the U.S. will enact legislation to adopt the minimum tax directive, certain countries in which we operate have adopted legislation, and other countries are in the process of introducing legislation to implement the minimum tax directive.

Interest rate fluctuations could increase our costs of borrowing money and negatively impact our financial condition and future operations.

Interest rates are highly sensitive to many factors, including governmental monetary and tax policies, domestic and international economic and political considerations and other factors beyond our control. Changes in interest rates have impacted and may in the future further impact our costs of borrowing money under certain of our debt facilities with variable interest rates, which could negatively impact our financial condition and future operations.

We seek to only enter into transactions with creditworthy banks and financial institutions. To assess the creditworthiness of banks, we utilize current credit ratings from rating agencies, such as S&P, Moody's and Fitch, as well as current default rates (credit default swaps). We are also in frequent dialogue with customers and suppliers to assess counterparty risks. Nevertheless, many of these transactions expose us to credit risk in the event of our counterparty's default. Any such losses could be material and could materially and adversely affect our business, financial condition and results of operations.

Expectations relating to ESG considerations expose the Company to potential liabilities, increased costs, reputational harm, and other adverse effects on the Company's business.

Many governments, regulators, investors, employees, customers and other stakeholders are increasingly focused on ESG considerations relating to businesses, including climate change and greenhouse gas emissions, human and civil rights, and diversity, equity and inclusion. In addition, we may make statements about our ESG goals and initiatives through our website, press statements and other communications. Responding to these environmental, social and governance considerations and implementation of these goals and initiatives involves risks and uncertainties, requires investments, and depends in part on third-party performance or data that is outside of our control. Any failure, or perceived failure, by us to achieve our targets, further our initiatives, adhere to our public statements, comply with federal, state or international ESG laws and regulations, or meet evolving and varied stakeholder expectations and standards could result in legal and regulatory proceedings against us and materially adversely affect our business, reputation, results of operations, financial condition and stock price.

In addition, simultaneous, disparate and divergent sentiments on ESG-related matters from multiple stakeholder groups must be considered. For example, there is an increasing number of anti-ESG initiatives in the U.S. that may conflict with other regulatory requirements or our various stakeholders' expectations. Such divergent, sometimes conflicting views on ESG-related matters increase the risk that any action or lack thereof by us on such matters will be perceived negatively by some stakeholders.

Further downgrades of the U.S. credit rating, impending automatic spending cuts or a government shutdown could negatively impact our liquidity, financial condition and earnings.

U.S. debt ceiling and budget deficit concerns have increased the possibility of additional credit-rating downgrades and economic slowdowns, or a recession in the United States. Although U.S. lawmakers passed legislation to raise the federal debt ceiling on multiple occasions, including a suspension of the federal debt ceiling in June 2023, ratings agencies have lowered or threatened to lower the long-term sovereign credit rating on the United States.

On January 21, 2025, the U.S. Treasury began taking extraordinary measures to prevent a default on U.S. government debt, which measures are expected to continue until such time as the U.S. Congress increases the debt ceiling. However, it is unclear how long such extraordinary measures will forestall a default in the event of extended Congressional negotiations or inaction.

The impact of this or any further downgrades to the U.S. government's sovereign credit rating or its perceived creditworthiness could adversely affect the U.S. and global financial markets and economic conditions. Absent further quantitative easing by the Federal Reserve, these developments could cause interest rates and borrowing costs to rise, which may negatively impact our ability to access the debt markets on favorable terms. On December 21, 2024, the previous administration signed a continuing resolution to extend federal spending and avert a government shutdown through March 14, 2025. Accordingly, without a final agreement regarding the federal budget in place prior to the expiration of the continuing resolution, or another continuing resolution, it is still possible that a partial shutdown of the U.S. government may occur. Continued adverse political and economic conditions could have a material adverse effect on our business, financial condition and results of operations.

ITEM 1B. UNRESOLVED STAFF COMMENTS

None.

ITEM 1C. CYBERSECURITY

Risk Management and Strategy

We recognize the importance of establishing governance and oversight over cybersecurity risks, and we have implemented mechanisms, controls, technologies, and processes designed to help us assess, identify, and manage these risks.

The landscape of cyber threats is constantly evolving, making it increasingly challenging to effectively defend against them or implement sufficient preventative measures. We have observed a rise in the volume, frequency, and sophistication of cyber-attacks. There can be no assurance that our controls and procedures in place to monitor and mitigate the risks of cyber threats, including the remediation of critical information security and software vulnerabilities, will be sufficient and/or timely and that we will not suffer material losses or consequences in the future. Additionally, while we have in place insurance coverage designed to address certain aspects of cyber risks, such insurance coverage may be insufficient to cover all insured losses or all types of claims that may arise. For more information regarding the cybersecurity risks that we face, see “Risks Related to Our Control Environment – Breaches of our information systems and cyberattacks could compromise our intellectual property and cause significant damage to our business and reputation” included as part of our risk factor disclosures in Part I, Item 1A of this report.

We have adopted and continue to maintain a cybersecurity risk management program that implements various controls, technology, and procedures for the evaluation, identification, and handling of significant cybersecurity risks that could impact the confidentiality, integrity, or availability of our information systems.

Our practices include providing ongoing security awareness training for our global workforce, conducting ransomware and phishing simulations, deploying advanced tools for detecting and analyzing anomalous network activities, and implementing robust containment and incident response procedures. We leverage threat intelligence from our security vendors, as well as from trusted sources such as CISA and the FBI, to enhance our defenses and stay ahead of emerging threats. Additionally, we are committed to staying aligned with the latest industry standards and actively participating in industry forums to exchange insights and proactively address evolving cybersecurity challenges.

A critical component of our cybersecurity strategy is the integration of a third-party Security Operations Center support, which monitors our global network environment on a 24/7/365 basis, and is designed to rapidly identify and respond to threats. This program monitors both internally detected and externally reported vulnerabilities that could impact our products, which are then evaluated for their cybersecurity implications according to Company protocols. We also utilize third-party service providers as part of our cybersecurity risk management program and maintain a framework for managing cybersecurity risks presented by our third-party Service Providers. This framework governs the third party’s security management system and mandates that the program (i) adhere to certain information handling and asset management protocols and (ii) promptly notify us of any cybersecurity incidents that impact its systems.

Our enterprise risk management ("ERM") framework is designed to systematically integrate the assessment, identification, and handling of cybersecurity-related risks into our broader risk management strategy. This process involves an annual evaluation of the spectrum of risks facing the enterprise, including those related to cybersecurity. When elevated cybersecurity risks are detected, designated risk owners are tasked with formulating and overseeing the execution of targeted mitigation strategies.

We did not experience any material losses relating to cybersecurity threats or incidents for the year ended December 31, 2024. We are not aware of any risks from cybersecurity threats, including as a result of any previous cybersecurity incidents, that have materially affected us or are reasonably likely to materially affect us, including our business strategy, results of operations, or financial condition.

Governance

Adtran maintains a cybersecurity governance structure led by its Information Security Management "ISM" team, which oversees the Company's cybersecurity risk management efforts. The ISM team ensures that appropriate controls are in place to protect Adtran’s corporate assets, ensuring their availability, confidentiality, and integrity. This risk management approach informs strategic decision-making, resource allocation, and oversight mechanisms. The governance of Adtran’s cybersecurity program is ultimately the responsibility of the Board of Directors, with the Audit Committee providing critical oversight through regular reviews and periodic updates at least quarterly, or more frequently as needed.

The Company’s cybersecurity leadership includes the Chief Information Officer "CIO"/Chief Information Security Officer "CISO", who is responsible for governing and protecting Adtran’s information assets, leading the cybersecurity strategy, and reporting directly to the Chief Executive Officer. The CIO/CISO ensures compliance with ISO 27001, oversees annual external audits, and leads the monthly Information Technology Cybersecurity meetings and the Data Privacy Committee. Since joining Adtran in November 2018, the CIO/CISO has leveraged extensive leadership experience to enhance the company’s security posture. Additionally, the Chief Technology Officer ("CTO"), who joined the company in January 2023 following the Business Combination, plays a key role in product

security oversight, drawing on prior experience as Adtran Networks' CTO leading their product management and advanced technology teams. Our CTO helps oversee our product security programs.

Adtran employs a comprehensive cybersecurity program that integrates proactive risk management strategies to identify, assess, and mitigate cybersecurity threats. Key elements of this program include an Incident Response Plan to manage and resolve security incidents, regular vulnerability scanning to identify and address potential risks, and a structured patch management process to ensure timely remediation of security vulnerabilities. Additionally, the Company has established a dedicated Product Security Incident Response Team (PSIRT) to assess and respond to product security vulnerabilities. To strengthen its security culture, Adtran implements a Cybersecurity Testing and Awareness Program, requiring all employees to participate in quarterly cybersecurity assessments and complete mandatory annual training. This initiative ensures that employees remain well-informed about emerging cybersecurity threats and best practices, reinforcing a proactive security mindset across the organization.

Cybersecurity risk management is integrated into Adtran's Enterprise Risk Management "ERM" program, in order to provide for continuous oversight and executive engagement. The ERM program undergoes quarterly executive reviews and annual assessments by the Board of Directors, and the Board receives regular briefings on cybersecurity risks, regulatory compliance, and security program updates from management. Key policies include the Information Security Program, which establishes governance principles across facilities, employees, business partners, and customers; the Cybersecurity Framework, which ensures compliance with ISO 27001 and industry standards; employee handbooks outlining security best practices; and the Incident Response Plan, which includes a material impact assessment workflow to support timely regulatory disclosures.

For additional discussion of risks associated with cybersecurity, see "Risk Factors – Breaches of our information systems and cyberattacks could compromise our intellectual property and cause significant damage to our business and reputation.

ITEM 2. PROPERTIES

Our global headquarters and certain administrative, engineering and manufacturing facilities are located on an 82-acre campus in Cummings Research Park in Huntsville, Alabama. The office buildings in Huntsville, Alabama serve both our Network Solutions and our Services & Support segments. We are currently in the process of selling a portion of our headquarters facility and expect to sell it within the next twelve months, so it is classified as assets held for sale on our balance sheet. In order to facilitate this, we have relocated the associated operations located in our North and South Towers to our East Tower without any significant disruption to our operations. We lease a facility for our European headquarters in Munich, Germany. We lease engineering facilities in the U.S., EMEA and APAC that are used to develop products sold by our Network Solutions segment. In addition, we lease office space in North America, Latin America, EMEA and APAC, which provide sales and service support for both of our segments. These cancelable and non-cancelable leases expire at various times through 2039. For more information, *see Note 7 of the Notes to Consolidated Financial Statements included in Part II, Item 8 of this report.*

We also have numerous sales and support staff operating from home-based offices serving both our Network Solutions and our Services & Support segments, which are located within the U.S. and abroad.

ITEM 3. LEGAL PROCEEDINGS

The information presented under the caption "DPLTA Appraisal Proceedings" in Note 18 "Commitments and Contingencies" of the Notes to Consolidated Financial Statements included in Part II, Item 8 of this report is incorporated herein by reference.

ITEM 4. MINE SAFETY DISCLOSURES

Not applicable.

PART II

ITEM 5. MARKET FOR REGISTRANT'S COMMON EQUITY, RELATED STOCKHOLDER MATTERS AND ISSUER PURCHASES OF EQUITY SECURITIES

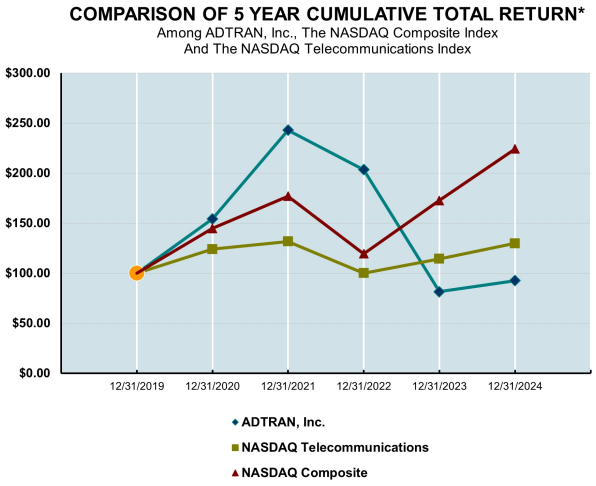
Our common stock is traded on the NASDAQ Global Select Market under the symbol "ADTN" and the Frankfurt Stock Exchange under the symbol "QH9". As of January 24, 2025, we had 47 stockholders of record and approximately 15,860 beneficial owners of shares held in street name.

Dividends

We declared a quarterly dividend of $0.09 per share of common stock to record holders during each of the quarters through September 30, 2023. On November 6, 2023, the Board of Directors suspended the Company's quarterly cash dividend in order to reduce debt and interest expense and support the Company's Business Efficiency Program. The payment of any future dividends will be at the discretion of the Board of Directors and will depend on the Company's financial condition, results of operations, capital requirements, and any other factors deemed relevant by the Board of Directors. In addition, the Wells Fargo Credit Agreement currently does not allow for the payment of dividends to stockholders. *For additional information, see Note 18 of the Notes to Consolidated Financial Statements included in Part II, Item 8 and Liquidity & Capital Resources included in Part II, Item 7 of this report*.

Performance Graph

The graph below matches our cumulative 5-Year total stockholder return on common stock (specifically, the total stockholder return on ADTRAN, Inc.'s common stock for all periods prior to the Merger and that of ADTRAN Holdings, Inc. following the Merger) with the cumulative total returns of the NASDAQ Telecommunications index and the NASDAQ Composite index. The graph tracks the performance of a $100 investment in our common stock and in each index (with the reinvestment of all dividends) from December 31, 2019 to December 31, 2024. In accordance with the rules of the SEC, this section, captioned "Performance Graph," is not incorporated by reference into any of our future filings made under the Exchange Act or the Securities Act of 1933, as amended (the "Securities Act"). The Performance Graph, including its accompanying table and footnotes, is not deemed to be soliciting material or to be filed under the Exchange Act or the Securities Act.



* $100 invested on 12/31/19 in stock or index-including reinvestment of dividends. Fiscal year ending December 31, 2024.

	12/31/19	12/31/20	12/31/21	12/31/22	12/31/23	12/31/24
ADTRAN Holdings, Inc.	$ 100.00	$ 154.37	$ 243.02	$ 203.51	$ 81.62	$ 92.62
NASDAQ Composite	$ 100.00	$ 144.93	$ 177.06	$ 119.45	$ 172.78	$ 224.34
NASDAQ Telecommunications	$ 100.00	$ 124.19	$ 131.83	$ 100.08	$ 114.43	$ 129.93

The stock price performance included in this graph is not necessarily indicative of future stock price performance. The Company's cumulative total returns for the period December 31, 2019 through December 31, 2021 relate to Adtran, Inc. prior to the Business Combination and the Company's cumulative total returns for the period December 31, 2022 through December 31, 2024 relate to Adtran Holdings, Inc. subsequent to the Business Combination.

Purchases of Equity Securities

The following table sets forth repurchases of our common stock for the months indicated.

Period	Total Number of Shares Purchased	Average Price Paid per Share	Total Number of Shares Purchased as Part of Publicly Announced Plans or Programs [1]	Maximum Number of Shares that May Yet Be Purchased Under the Plans or Programs
October 1, 2024 – October 31, 2024	5,477	$ 6.02	—	—
November 1, 2024 – November 30, 2024	62,046	$ 7.75	—	—
December 1, 2024 – December 31, 2024	86	$ 8.54	—	—
Total	**67,609**		**—**	

(1) During the year ended December 31, 2024, the Company did not repurchase any shares of Company common stock as part of a publicly announced plan or program and there is no current authorization to repurchase Company common stock. The shares purchased relate to shares withheld to cover taxes for vested stock awards.

ITEM 6. RESERVED

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

The following discussion should be read in conjunction with our audited consolidated financial statements and the related notes included in Part II, Item 8 of this report. We have omitted discussion of the earliest of the three years of financial condition and results of operations and this information can be found in Part I, Item 7, "Management's Discussion and Analysis of Financial Condition and Results of Operations" of our Annual Report on Form 10-K for the fiscal year ended December 31, 2023, Part II, Item 7, Management's Discussion and Analysis of Financial Condition and Results of Operations, and Part I, Item 1A, Risk Factors, included in Amendment No. 1 to our Annual Report on Form 10-K for the year ended December 31, 2023, filed with the SEC on March 15, 2024 (the "2023 Form 10-K"), as well as Part I, Item 1, Business, included in our Annual Report on Form 10-K filed with the SEC on March 15, 2024, which is available free of charge on the SEC's website at http://www.sec.gov *and on our website at www.adtran.com.*

This discussion is designed to provide the reader with information that will assist in understanding our consolidated financial statements, the changes in certain key items in those financial statements from period to period, and the primary factors that accounted for those changes, as well as how certain accounting principles affect our consolidated financial statements. See "Cautionary Note Regarding Forward-Looking Statements" on page 2 of this report for a description of important factors that could cause actual results to differ from expected results. See also Part I, Item 1A, Risk Factors, of this Form 10-K.

Unless the context otherwise indicates or requires, references in this Annual Report on Form 10-K to "Adtran", the "Company," "we", "us" and "our" refer to ADTRAN Holdings, Inc. and its consolidated subsidiaries for periods subsequent to the Merger and to ADTRAN, Inc. and its consolidated subsidiaries for periods prior to the Merger. The prior period results do not include the results of Adtran Networks prior to the Business Combination which occurred on July 15, 2022. Furthermore, unless the context otherwise indicates or requires, references in this Annual Report on Form 10-K to "Adtran Networks" refer to Adtran Networks SE (formerly ADVA Optical Networking SE).

Overview

The Company is a leading global provider of networking and communications platforms, software, systems and services focused on carrier networks, data center interconnect for private enterprise networks and mission critical infrastructure. It is serving a diverse domestic and international customer base in multiple countries that includes Large, Medium and Small Service Providers, alternative Service Providers, such as utilities, municipalities and fiber overbuilders; cable/MSOs; SMBs; distributed enterprises, including Fortune 500 companies with sophisticated business continuity applications; and federal, state and local government agencies.

Our innovative solutions and services enable voice, data, video and internet-communications across a variety of network infrastructures and are currently in use by millions worldwide. We support our customers through our direct global sales organization and our distribution networks. Our success depends upon our ability to have customers adopt our technology, increase unit volume and market share through the introduction of new products and succeeding generations of products having optimal selling prices and increased functionality as compared to both the prior generation of a product and the products of competitors in order to gain market share. To service our customers and grow revenue, we are continually conducting research and developing new products addressing customer needs and testing those products for the specific requirements of the particular customers. We offer a broad portfolio of flexible software and hardware network solutions and services that enable Service Providers to meet today's service demands while enabling them to transition to the fully converged, scalable, highly-automated, cloud-controlled voice, data, internet and video network of the future. In addition to our global headquarters in Huntsville, Alabama, and our European headquarters in Munich, Germany, we have sales and research and development facilities in strategic global locations.

The Company solely owns ADTRAN, Inc. and is the majority shareholder of Adtran Networks (formerly ADVA Optical Networking SE). Adtran is a leading global provider of open, disaggregated networking and communications solutions. Adtran Networks is a global provider of network solutions for data, storage, voice and video services. We believe that the combined technology portfolio can best address current and future customer needs for high-speed connectivity from the network core to the end consumer, especially upon the convergence of solutions at the network edge.

The chief operating decision maker regularly reviews the Company's financial performance based on two reportable segments: (1) Network Solutions and (2) Services & Support. In addition to operating under two reportable segments, the Company also reports revenue across three categories – Subscriber Solutions, Access & Aggregation Solutions and Optical Networking Solutions.

Our Subscriber Solutions portfolio is used by Service Providers to terminate their access services infrastructure at customers' premises while providing an immersive and interactive experience for residential, business and wholesale subscribers. This revenue category includes hardware- and software-based products and services. These solutions include our Mosaic One SaaS applications, fiber termination solutions for residential, business and wholesale subscribers, Wi-Fi access solutions for residential and business subscribers, Ethernet switching and network edge virtualization solutions for business subscribers and cloud software solutions covering a mix of subscriber types.

Our Access & Aggregation Solutions are solutions that are used by communications Service Providers to connect residential subscribers, business subscribers and mobile radio networks to the Service Providers' metro network, primarily through fiber-based connectivity. This revenue category includes hardware- and software-based products and services. Our solutions within this category are a mix of fiber access and aggregation platforms, precision network synchronization and timing solutions and access orchestration solutions that ensure highly reliable and efficient network performance.

Our Optical Networking Solutions are used by communications Service Providers, internet content providers and large-scale enterprises to securely interconnect metro and regional networks over fiber. This revenue category includes hardware- and software-based products and services. Our solutions within this category include open optical terminals, open line systems, optical subsystems and modules, network infrastructure assurance systems and automation platforms that are used to build high-scale, secure and assured optical networks.

Adtran Networks Domination and Profit and Loss Transfer Agreement

The DPLTA between the Company, as the controlling company, and Adtran Networks, as the controlled company, which was executed on December 1, 2022, became effective on January 16, 2023, as a result of its registration with the commercial register (*Handelsregister*) of the local court (*Amtsgericht*) at the registered seat of Adtran Networks (Jena).

Under the DPLTA, subject to certain limitations pursuant to applicable law and the specific terms of the DPLTA, (i) the Company is entitled to issue binding instructions to the management board of Adtran Networks, (ii) Adtran Networks will transfer its annual profit to the Company, subject to, among other things, the creation or dissolution of certain reserves, and (iii) the Company will generally absorb the annual net loss incurred by Adtran Networks. The Company's payment obligation in satisfaction of the requirement that it absorb Adtran Networks' annual net loss applied for the first time to the net loss generated in 2023.

Additionally, and subject to certain limitations pursuant to applicable law and the specific terms of the DPLTA, the DPLTA provides that Adtran Networks shareholders (other than us) be offered, at their election, (i) to put their Adtran Networks shares to the Company in exchange for compensation in cash of €17.21 per share plus guaranteed interest (the "Exit Compensation"), or (ii) to remain Adtran Networks shareholders and receive a recurring compensation in cash of €0.52 per share for each full fiscal year of Adtran Networks (the "Annual Recurring Compensation"). The guaranteed interest component under the Exit Compensation is calculated from the effective date of the DPLTA to the date the shares are tendered, less any Annual Recurring Compensation paid. The guaranteed interest rate is 5.0% plus a variable component that was 3.37% as of December 31, 2024. The Annual Recurring Compensation is due on the third banking day following the ordinary general shareholders' meeting of Adtran Networks for the respective preceding fiscal year (but in any event within eight months following expiration of the fiscal year). With respect to the 2023 fiscal year, Adtran Networks' ordinary general shareholders' meeting occurred on June 28, 2024, and therefore, the Annual Recurring Compensation was paid on July 3, 2024. With respect to the 2024 fiscal year, Adtran Networks' ordinary general shareholder meeting is scheduled for June 27, 2025, and therefore, the Annual Recurring Compensation will be due on July 2, 2025. The adequacy of both forms of compensation has been challenged by minority shareholders of Adtran Networks via court-led appraisal proceedings under German law, and it is possible that the courts in such appraisal proceedings may adjudicate a higher Exit Compensation (including interest thereon) or Annual Recurring Compensation than agreed upon in the DPLTA.

The opportunity for outside Adtran Networks shareholders to tender Adtran Networks shares in exchange for Exit Compensation had been scheduled to expire on March 16, 2023. However, due to the appraisal proceedings that have been initiated in accordance with applicable German law, this time period for tendering shares has been extended pursuant to the German Stock Corporation Act (*Aktiengesetz*) and will end two months after the date on which a final decision in such appraisal proceedings has been published in the Federal Gazette (*Bundesanzeiger*). The Company expects to receive a procedural decision during 2025 that will likely be appealed. The date of a decision by the court on the merits of the case is uncertain, but it is unlikely that such decision will be rendered in 2025. Thereafter, an expected appeal process will take a further 12-24 months to resolve. For the year ended December 31, 2024, approximately 831 thousand shares of Adtran Networks stock were tendered to the Company. This resulted in total Exit Compensation payments of approximately €15.7 million, or approximately $17.4 million, based on exchange rates at the time of the transactions, being paid to Adtran Networks shareholders. For the year ended December 31, 2023, 67 thousand shares of Adtran Networks stock were tendered to the Company and Exit Compensation payments of approximately €1.2 million or approximately $1.3 million based on an exchange rate as of December 31, 2023, were paid to Adtran Networks' shareholders.

In addition to our cash and cash equivalents and the credit facility, we may fund a portion or all of the Exit Compensation through the sale of securities or additional alternative funding sources, if available. There can be no assurances that we would be successful in effecting these actions on commercially reasonable terms or at all. If we cannot raise additional funds as needed, it could have a material adverse impact on our financial results and financial condition.

We currently hold 34,856,232 no-par value bearer shares of Adtran Networks, representing 67.0% of Adtran Networks outstanding shares as of December 31, 2024.

The foregoing description of the DPLTA does not purport to be complete and is qualified in its entirety by reference to the DPLTA, a non-binding English translation of which is incorporated by reference to Exhibit 10.7 included in our Annual Report on Form 10-K for the year ended December 31, 2023.

Business Efficiency Program

During the fourth quarter of 2023, the Company initiated a Business Efficiency Program designed to optimize the assets, business processes, and information technology systems of the Company in relation to the Business Combination with Adtran Networks. The Business Efficiency Program included expenses specifically associated with achieving run-rate synergies as well as Business Efficiency Program expenses described below. Other than the Company's aim of selling its headquarters, the Business Efficiency Program was substantially complete as of December 31, 2024. *See Note 20 of the Notes to Consolidated Financial Statements, included in Part II, Item 8 of this report for additional information.*

During the years ended December 31, 2024 and 2023, we recognized $44.7 million and $25.1 million of costs relating to the Business Efficiency Program, respectively. Future cash payments include severance costs, outplacement fees and site consolidation that are anticipated to be approximately $10.3 million.

Business Combination Integration Costs

During the years ended December 31, 2024 and 2023, we recognized $1.9 million and $4.9 million, respectively, of integration costs related to the Business Combination were incurred. These transaction costs are included in selling, general and administrative expenses, research & development expenses and cost of revenue in the Consolidated Statement of Loss. The Company does not anticipate additional material expenses to be incurred in connection with this integration program.

Financial Performance and Trends

We ended 2024 with a year-over-year revenue decrease of 19.7%, driven by decreased volume of sales activity due to customers' focus on reducing inventory levels and continuing uncertain macroeconomic conditions related to elevated inflation, elevated interest rates and currency fluctuation which impacted the spending behavior of our customers. During 2024, we had one customer with revenues greater than 10.0% which was an international Service Provider customer and our next five largest customers comprised 21.7% of our revenue. Our year-over-year domestic revenue decreased by 13.6% and continued to be impacted by elevated customer inventory levels, continuing effects of uncertain macroeconomic conditions and decreased shipments to distributor customers. Internationally, our year-over-year revenue decreased by 23.8%, primarily driven by decreased shipments to network operators in Europe and the unfavorable impact of foreign exchange on revenue as a result of the strengthened U.S. dollar.

Access & Aggregation and Optical Networking revenue categories experienced a general slowdown in revenue as a result of reduced spending by our Service Provider customers as they continue to reduce excess inventory levels and monitor the uncertain macroeconomic conditions. Despite these challenges, we have maintained our emphasis on product development to enable us to respond to rapidly changing technology and evolving industry standards. For example, we expect public funding through projects such as IPCEI ME/CT to further our research and development for new communication technologies. Additionally, public funding through the Broadband Equity, Access and Deployment Program is expected to commence in 2025, which provides a positive outlook for the future. Nevertheless, these government-supported loan programs and grants generally include conditions such as deployment criteria, domestic preference provisions and other requirements that apply to the project and selected equipment as conditions for funding, which we expect will influence the extent to which such programs will have an impact on our revenue. In Europe, we continue to see increased activity from high-risk vendor replacement and broadband subsidy programs.

While our 2023 and 2024 revenues have fluctuated and may continue to fluctuate on a quarterly basis, during the fourth quarter of 2024, our operating results have improved due to slowly stabilizing revenues, improving margins and tight operational cost controls. Nevertheless, a significant percentage of orders require delivery within a few days, requiring us to maintain higher inventory levels. These factors may result in limited order flow visibility. We have taken decisive steps to transform our business into a leaner, more efficient and more profitable company, including the substantial completion of our Business Efficiency Program (other than the Company’s aim of selling its headquarters), which included a significant cost efficiency program targeting a reduction of ongoing operating expenses and a capital efficiency program inclusive of certain salary reductions, an early retirement program, a site consolidation plan to include lease impairments and the partial sale of owned real estate (including the potential sale of portions of our headquarters), inventory write downs from product discontinuances, and the suspension of the quarterly dividend. Our operating expenses are relatively fixed in the short term, therefore, a shortfall in quarterly revenues has and may again in the future significantly impact our financial results in a given quarter.

Our operating results have significantly fluctuated and may do so in the future as a result of a number of other factors, including a decline in general economic and market conditions, foreign currency exchange rate movements, inflation, increased competition, customer order patterns, changes in product and services mix, trade policies, timing differences between price decreases and product cost reductions, product warranty returns, expediting costs, tariffs and announcements of new products by us or our competitors. In recent years, inflationary pressures on input costs, such as raw materials and labor, and distribution costs had a negative impact on our operating

results. However, inflationary pressures on our supply chain have eased somewhat, which has led to reductions in cost premiums on raw material costs and freight. We continue to support our customer demand for our products by working with our suppliers, contract manufacturers, distributors, and customers to address and to limit the disruption to our operations and order fulfillment. Additionally, maintaining sufficient inventory levels to assure prompt delivery of our products increases the amount of inventory that may become obsolete and increases the risk that the obsolescence of this inventory may have an additional adverse effect on our business and operating results beyond the effects of the most recent inventory write-downs. Also, not maintaining sufficient inventory levels to ensure prompt delivery of our products may cause us to incur expediting costs to meet customer delivery requirements, which may negatively impact our operating results.

The U.S. government issued orders in February 2025 increasing tariffs on imports from certain countries, including Canada, China and Mexico, and it has discussed further tariffs, including plans to increase U.S. tariffs to match the rates that other countries charge on imports and tariffs on semiconductors, automobiles and pharmaceuticals imported into the U.S. While the implementation of tariffs on Canadian and Mexican imports was initially deferred, such tariffs are expected to go into effect in March 2025 and the U.S. has increased tariffs on goods imported into the U.S. from China by 10%. In response, China imposed a 15% tariff on U.S. coal and liquified natural gas products, along with a 10% tariff on crude oil. The U.S. government has indicated that an additional 10% duty on Chinese imports may be forthcoming, which may result in further tariffs on U.S. products being imported into China. The recent tariffs come on top of ongoing trade tensions and regulatory actions involving the governments of the U.S. and China. Moreover, on February 11, 2025, the U.S. government ordered tariffs of 25% on imports of steel and aluminum regardless of where they originate.

We are exposed to changes in foreign currencies relative to the U.S. dollar, which are references to the differences between the foreign-exchanges rates we use to convert the financial results of our international operations from local currencies into U.S. dollars for financial reporting purposes. This impact of foreign-exchange rate changes is calculated based on the difference between the current period's currency exchange rates and that of the comparable prior period. Our primary exposures to foreign currency exchange rate movements are with the euro and the British pound. As a result of our global operations, our revenue, gross margins, operating expense and operating loss in some international markets have been and may continue to be affected by foreign currency fluctuations.

The Company's policy is to assess the realizability of assets (long-lived assets, intangibles and goodwill) held within our reporting units and to evaluate such assets for impairment whenever events or changes in circumstances indicate that the carrying amount of such assets may not be recoverable. During the third quarter of 2023, the Company identified a triggering event due to a decrease in its market capitalization and changes in projections (decrease in estimated cash flows). While the quantitative impairment analysis indicated that there was no impairment of Network Solutions goodwill, the Company determined a $37.9 million non-cash impairment charge for goodwill was warranted for the Services & Support reporting unit. During the fourth quarter of 2023, the Company completed its annual impairment test. There were no significant market changes or changes to cash flow projections, as such no triggering event was identified during the fourth quarter of 2023.

During the first quarter of 2024, qualitative factors such as a decrease in the Company's market capitalization, lower service provider spending and delayed holding patterns of inventory with respect to customers caused us to reduce our forecasts, triggering a quantitative impairment assessment for our reporting units. The Company determined the fair value of the Network Solutions reporting unit using a combination of an income approach and a market approach. The Company determined upon its quantitative impairment assessment to recognize a $292.6 million non-cash goodwill impairment charge for the Network Solutions reporting unit during the three months ended March 31, 2024. The quantitative impairment analysis indicated there was no impairment of the Services & Support goodwill during the three months ended March 31, 2024. There have been no triggering events identified affecting the valuation of goodwill in our Services & Support reporting unit during the remainder of 2024.

Our historical financial performance is not necessarily a meaningful indicator of future results, and in general, management expects that our financial results may vary from period to period. *For a discussion of risks associated with our operating results, see Part I, Item 1A, Risk Factors of this report.*

Results of Operations

The following table presents selected financial information derived from our Consolidated Statements of Loss expressed as a percentage of revenue for the years indicated. Amounts may not foot due to rounding.

	Year Ended December 31,		
	2024	*2023*	*2022*
Revenue			
Network Solutions	80.1 %	84.8 %	89.4 %
Services & Support	19.9	15.2	10.6
Total Revenue	**100.0**	**100.0**	**100.0**
Cost of Revenue			
Network Solutions	55.4	62.9	63.1
Network Solutions - other (credits), charges and inventory write-down	0.9	2.1	—
Services & Support	7.9	6.0	5.0
Total Cost of Revenue	**64.2**	**71.0**	**68.1**
Gross Profit	**35.8**	**29.0**	**31.9**
Selling, general and administrative expenses	25.3	22.5	20.4
Research and development expenses	24.0	22.5	16.9
Asset impairment	—	—	1.7
Goodwill impairments	31.7	3.3	—
Operating Loss	**(45.2)**	**(19.3)**	**(7.1)**
Interest and dividend income	0.3	0.2	0.2
Interest expense	(2.4)	(1.4)	(0.3)
Net investment gain (loss)	0.4	0.2	(1.1)
Other income, net	—	0.1	1.4
Loss Before Income Taxes	**(46.8)**	**(20.1)**	**(6.9)**
Income tax (expense) benefit	(1.0)	(2.4)	6.1
Net Loss	**(47.8)%**	**(22.6)%**	**(0.9)%**
Net Income (loss) attributable to non-controlling interest	1.1	0.6	(0.7)
Net Loss attributable to ADTRAN Holdings, Inc.	**(48.9)%**	**(23.2)%**	**(0.2)%**

The following discussion and financial information are presented to aid in an understanding of our current consolidated financial position, changes in financial position, results of operations and cash flows and should be read in conjunction with the audited consolidated financial statements and notes thereto included herein. The emphasis of the discussion is a comparison of the years ended December 31, 2024 and December 31, 2023. For a discussion of a comparison of the years ended December 31, 2023 and December 31, 2022, please refer to 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, 2023, filed with the SEC on March 15, 2024.

Comparison of Years Ended December 31, 2024 and December 31, 2023

Revenue

Our revenue decreased 19.7% from $1,149.1 million for the year ended December 31, 2023 to $922.7 million for the year ended December 31, 2024. The decrease in revenue for the year ended December 31, 2024 is primarily driven by a decrease in volume of sales activity due to customers' focus on reducing inventory levels and the completion of significant customer projects. The decrease in revenue by category for the year ended December 31, 2024 was primarily attributable to $192.0 million decrease in Optical Networking Solutions products and a $67.4 million decrease in Access & Aggregation Solutions partially offset by a $33.1 million increase in Subscriber Solutions category. Continued customer concerns over inventory stocking levels have affected our revenue year-to-date in our Optical Networking Solutions category, Access & Aggregation category and our Subscriber Solutions category. This includes our two largest Optical Networking Solutions customers, which we believe are focused on reducing existing inventory.

Network Solutions segment revenue decreased 24.2% from $974.4 million in 2023 to $739.0 million in 2024, primarily attributable to $196.6 million decrease in Optical Networking Solutions products and a $71.1 million decrease in Access & Aggregation Solutions partially offset by a $32.3 million increase in Subscriber Solutions category. More specifically, for the year ended December 31, 2024, the decrease in revenue for our Subscriber Solutions products was primarily due to lower volume of sales of our residential solutions products as a result of customers focus on reducing inventory levels.

Services & Support revenue increased 5.2% from $174.7 million in 2023 to $183.8 million in 2024. The increase in revenue for 2024 was primarily attributable to $4.6 million increase in revenue for Optical Networking Solutions products, a $3.7 million increase in revenue for Access & Aggregation Solutions revenue and a $0.7 million increase in revenue for Subscriber Solutions services. More specifically, the increase in revenue for the year ended December 31, 2024 of our ADTRAN, Inc. operations was primarily due to higher volume of sales of our software services and business solutions services.

Domestic revenue decreased 13.6% from $461.0 million in 2023 to $398.2 million in 2024, driven by lower volume of sales of our residential solutions products as a result of customers' focus on reducing inventory levels in our Subscriber Solutions segment, partially offset by an increase in volume of sales activity during the first half of 2024 from the Business Combination with Adtran Networks.

International revenue, which is defined as revenue generated from the Network Solutions and Services & Support segments provided to a customer outside of the U.S., decreased 23.8% from $688.1 million for the year ended December 31, 2023 to $524.6 million for the year ended December 31, 2024. International revenue, as a percentage of total revenue, decreased from 59.8% for the year ended December 31, 2023 to 56.8% for the year ended December 31, 2024. The decrease in international revenue in 2024 was primarily due to the conclusion of specific customer projects and customer concerns over inventory levels. For the year ended December 31, 2024 as compared to the year ended December 31, 2023, changes in foreign currencies relative to the U.S dollar increased our net revenue by approximately $5.4 million.

Our ADTRAN, Inc. international revenue is largely focused on broadband infrastructure and is consequently affected by the decisions of our customers as to timing for installation of new technologies, expansion of their networks and/or network upgrades. Our international customers must make these decisions in the regulatory and political environment in which they operate – both nationally and in some instances, regionally – whether of a multi-country region or a more local region within a country. Consequently, while we expect the global trend towards deployment of more robust broadband speeds and access to continue creating additional market opportunities for us, the factors described above may result in pressure on revenue and operating income. Our Adtran Networks international revenue is largely focused on the manufacture and selling of networking solutions that are based on three core areas of expertise: fiber-optic transmission technology (cloud interconnect), cloud access technology for rapid creation of innovative services around the network edge and solutions for precise timing and synchronization of networks. In addition, Adtran Networks' international operations offers a comprehensive portfolio of network design, implementation and maintenance services to assist operators in the deployment of market-leading networks while reducing their cost to maintain these networks.

Cost of Revenue

As a percentage of revenue, cost of revenue decreased from 71.0% for the year ended December 31, 2023 to 64.2% for the year ended December 31, 2024. The decrease for the twelve months ended December 31, 2024 was attributable to (1) a 2.6% decrease in expense as a percentage of revenue related to decreased amortization of intangible backlog, developed technology and fair value adjustments to inventory costs that flow through to cost of revenue as a result of the Business Combination with Adtran Networks, (2) a 2.7% decrease in expense as a percentage of revenue related to decreased acquisition costs, (3) a 1.4% decrease in expense as a percentage of revenue in connection with our Business Efficiency Program (primarily a decrease in inventory write-offs related to our strategy shift which included discontinuance of certain product lines, partially offset by increases in severance and employee related costs), (4) a 0.1% decrease in expense as a percentage of revenue attributable to changes in customer and product mix. For the year ended December 31, 2024, changes in foreign currencies relative to the U.S. dollar increased our cost of revenue by approximately $0.7 million.

Network Solutions cost of revenue, as a percentage of that segment’s revenue, decreased from 76.7% of revenue in 2023 to 70.3% of revenue in 2024. The decrease in cost of revenue as a percentage of revenue for the twelve months ended December 31, 2024 was attributable to (1) a 3.3% decrease in expense as a percentage of revenue related to decreased amortization of intangible backlog, developed technology and fair value adjustments to inventory costs that flow through to cost of revenue as a result of the Business Combination with Adtran Networks, (2) a 3.4% decrease in expense as a percentage of revenue related to decreased acquisition costs, and (3) a 1.9% decrease in expense as a percentage of revenue in connection with our Business Efficiency Program, which resulted in an inventory write down and other charges of $8.6 million incurred as a result of a strategy shift including discontinuance of certain product lines, partially offset by (4) a 2.2% increase in expense as a percentage of revenue attributable to changes in customer and product mix.

Services & Support cost of revenue, as a percentage of that segment’s revenue, remained flat at 39.6% of revenue in 2023 and 2024.

Services & Support revenue is comprised of network planning and implementation, maintenance, support and cloud-based management services, with network planning and implementation being the largest and fastest growing component in the long-term. Compared to our other services, such as maintenance, support and cloud-based management services, our network planning and implementation services typically utilize a higher percentage of internal and subcontracted engineers, professionals and contractors to perform the work for customers. The additional costs incurred to perform these infrastructure and labor-intensive services inherently result in lower average gross margins as compared to maintenance and support services. Within the Services & Support segment, we do expect variability in gross margins from quarter-to-quarter based on the mix of the services recognized.

Gross Profit

As a percentage of revenue, gross profit increased from 29.0% for the year ended December 31, 2023 to 35.8% for the year ended December 31, 2024. The increase for the twelve months ended December 31, 2024 was attributable to (1) a 2.6% increase in gross profit as a percentage of revenue related to decreased amortization of intangible backlog, developed technology and fair value adjustments to inventory costs that flow through to cost of revenue as a result of the Business Combination with Adtran Networks, (2) a 2.7% increase in gross profit as a percentage of revenue related to decreased acquisition costs, (3) a 1.4% increase in gross profit as a percentage of revenue in connection with decreased expenses with our Business Efficiency Program (primarily a decrease in inventory write-offs related to our strategy shift which included discontinuance of certain product lines, partially offset by increases in severance and employee related costs), (4) a 0.1% increase in gross profit as a percentage of revenue attributable to changes in customer and product mix.

As a percentage of that segment's revenue, Network Solutions gross profit increased from 23.3% for the year ended December 31, 2023 to 29.7% for the year ended December 31, 2024. The increase for the twelve months ended December 31, 2024 was attributable to (1) a 3.3% increase in gross profit as a percentage of revenue related to decreased amortization of intangible backlog, developed technology and fair value adjustments to inventory costs that flow through to cost of revenue as a result of the Business Combination with Adtran Networks, (2) a 3.4% increase in gross profit as a percentage of revenue related to decreased acquisition costs, and (3) a 1.9% increase in gross profit as a percentage of revenue in connection with decreased expenses with our Business Efficiency Program, which resulted in an inventory write down and other charges of $8.6 million incurred as a result of a strategy shift including discontinuance of certain product lines, (4) partially offset by a 2.2% decrease in gross profit as a percentage of revenue attributable to changes in customer and product mix.

As a percentage of that segment's revenue, Services & Support gross profit remained flat at 60.4% for the years ended December 31, 2023 and 2024.

Selling, General and Administrative Expenses

As a percentage of revenue, selling, general and administrative expenses increased from 22.5% for the year ended December 31, 2023, to 25.3% for the year ended December 31, 2024. Selling, general and administrative expenses as a percentage of revenue will generally fluctuate whenever there is a significant fluctuation in revenue for the periods being compared. Other than our stated aim of selling our headquarters, we have substantially completed implementation of our Business Efficiency Program. We expect to continue to see lower selling, general and administrative expenses as a percentage of revenue over time.

Selling, general and administrative expenses decreased 9.6% from $258.1 million for the year ended December 31, 2023, to $233.4 million for the year ended December 31, 2024. Selling, general and administrative expenses include personnel costs for management, accounting, information technology, human resources, sales and marketing, as well as independent auditor, tax and other professional fees, contract services and legal and litigation related costs. The decrease in selling, general and administrative expenses for the twelve months ended December 31, 2024, compared to the twelve months ended December 31, 2023, was primarily attributable to the impact of the Company's Business Efficiency Program and integration programs. Specifically, the Company reduced its employee-related costs by $20.4 million. For the year ended December 31, 2024, as compared to the year ended December 31, 2023, changes in foreign currencies relative to the U.S dollar increased our selling, general and administrative expenses by approximately $0.6 million.

Research and Development Expenses

As a percentage of revenue, research and development expenses increased from 22.5% for the year ended December 31, 2023, to 24.0% for the year ended December 31, 2024. Research and development expenses as a percentage of revenue will generally fluctuate whenever there are incremental product development activities or significant fluctuations in revenue for the periods being compared. Other than our stated aim of selling our headquarters, we have substantially completed implementation of our Business Efficiency Program. We expect to continue to see lower research and development expense as a percentage of revenue over time.

Research and development expenses decreased 14.3% from $258.3 million for the year ended December 31, 2023, to $221.5 million for the year ended December 31, 2024. The decrease in research and development expenses for the twelve months ended December 31, 2024, was primarily attributable to the impact of the Company's Business Efficiency Program and integration programs. Specifically, the Company reduced its employee-related costs by $16.7 million and contract services by $7.9 million. For the year ended December 31, 2024 as compared to the year ended December 31, 2023, changes in foreign currencies relative to the U.S. dollar increased our research and development expenses by approximately $1.4 million.

Adtran Networks has arrangements with governmental entities for the purposes of obtaining funding for research and development activities. The Company classifies government grants received under these arrangements as a reduction to research and development expense incurred. For the years ended December 31, 2024 and 2023, the Company recognized $9.7 million and $5.2 million, respectively, as a reduction of research and development expense.

We expect to continue to incur research and development expenses in connection with our new and existing products. We continually evaluate new product opportunities and engage in significant research and product development efforts, which provides for new product development, enhancement of existing products and product cost reductions. We may incur significant research and development expenses prior to the receipt of revenue from a major new product group.

Asset Impairments

In connection with the planned integration of information technology following the Business Combination, we determined that certain projects no longer fit our needs. As a result, the Company recognized impairment charges of $17.4 million during the year ended December 31, 2022, primarily attributable to capitalized implementation costs for a cloud computing arrangement. There were no asset impairments recognized during the years ended December 31, 2024 and 2023. *See Note 9 of the Notes to the Consolidated Financial Statements included in Part II, Item 8 of this report for additional information.*

Goodwill Impairment

During the first quarter of 2024, qualitative factors such as a decrease in the Company's market capitalization, cautious service provider spending due to economic uncertainty and continued customer focus on inventory adjustments, triggered a quantitative impairment assessment for our reporting units for goodwill and long-lived assets. The Company determined upon its quantitative impairment assessment to recognize a $292.6 million non-cash goodwill impairment charge for the Network Solutions reporting unit.

During the third quarter of 2023, qualitative factors, such as a decrease in the Company's market capitalization and long-term projections, triggered a quantitative impairment assessment for our reporting units. The Company determined upon its quantitative impairment assessment to recognize a $37.9 million non-cash goodwill impairment charge for the Services & Support reporting unit. There were no goodwill impairments recognized during the year ended December 31, 2022. *See Note 8 of the Notes to the Consolidated Financial Statements included in Part II, Item 8 of this report for additional information.*

Interest and Dividend Income

Interest and dividend income increased by 30.7% from $2.3 million for the year ended December 31, 2023 to $3.1 million for the year ended December 31, 2024. The increase in interest and dividend income is primarily attributable to fluctuations in investment balances and an increase in the rate of return on those investments due to interest rate movements.

Interest Expense

Interest expense increased from $16.3 million for the year ended December 31, 2023 to $22.1 million for the year ended December 31, 2024. The increase in interest expense was primarily driven by higher amortization of debt issuance costs, as well as higher interest rates associated with the amendments of the Credit Agreement and higher average borrowings outstanding versus the twelve months ending December 31, 2023. *See Note 11 of the Notes to Consolidated Financial Statements, included in Part II, Item 8 of this report and "Financing Activities" in "Liquidity and Capital Resources" below.*

Net Investment Gain (Loss)

We recognized a net investment gain of $2.8 million and a gain of $3.6 million for the years ended December 31, 2023 and 2024, respectively. The fluctuations in our net investments were primarily attributable to market driven changes in the fair value of our securities recognized during the period. We expect that any future market volatility could result in continued fluctuations in our investment portfolio. *See "Investing Activities" in "Liquidity and Capital Resources" of this report and Note 1 and Note 4 of Notes to Consolidated Financial Statements included in Part II, Item 8 of this report for additional information.*

Other Income, net

Other income, net, which primarily consisted of gains and losses on foreign currency transactions and income from excess material sales, decreased from income of $1.3 million for the year ended December 31, 2023 to income of $0.2 million for the year ended December 31, 2024. *See Note 10 of Notes to Consolidated Financial Statements included in Part II, Item 8 of the report for additional information on foreign exchange contracts.*

Income Tax (Expense) Benefit

Our effective tax rate changed from an expense of 12.2%, for the year ended December 31, 2023 to an expense of 2.0% for the year ended December 31, 2024. The change in the effective tax rate for the year ended December 31, 2024, was driven primarily by non-deductible impairment charges and changes in our valuation allowance. *See Note 12 of the Notes to Consolidated Financial Statements included in Part II, Item 8 of this report for additional information.*

Net Loss Attributable to ADTRAN Holdings, Inc.

As a result of the above factors, our net loss attributable to ADTRAN Holdings, Inc. increased from $266.3 million for the year ended December 31, 2023 to a net loss of $450.9 million for the year ended December 31, 2024. As a percentage of revenue, net loss was 23.2% for the year ended December 31, 2023 and net loss was 48.9% for the year ended December 31, 2024.

Liquidity and Capital Resources

Liquidity

We have historically financed our ongoing business with existing cash, investments and cash flow from operations; however, we have increasingly relied upon our credit arrangements to manage our working capital needs. We had a positive cash flow from operating activities of $103.1 million in the twelve months ended December 31, 2024. We have used, and expect to continue to use, existing cash, credit arrangements and cash generated from operations for working capital and other general corporate purposes, including product development activities to enhance our existing products and develop new products, expand our sales and marketing activities and fund capital expenditures.

As of December 31, 2024, our cash on hand was $77.6 million of which $54.2 million was held by our foreign subsidiaries. The Company had access to $180.8 million on its Credit Facility for future borrowings; however, as of December 31, 2024, the Company was limited to additional borrowings of $56.1 million based on debt covenant compliance metrics. Generally, we intend to permanently reinvest funds held outside the U.S., except to the extent that any of these funds can be repatriated without withholding tax. As of December 31, 2023, our cash on hand was $87.2 million, of which $73.0 million was held by our foreign subsidiaries.

Under the DPLTA, subject to certain limitations pursuant to applicable law and the specific terms of the DPLTA, (i) the Company is entitled to issue binding instructions to the management board of Adtran Networks, (ii) Adtran Networks will transfer its annual profit to the Company, subject to, among other things, the creation or dissolution of certain reserves, and (iii) the Company will generally absorb the annual net loss incurred by Adtran Networks. The Company's payment obligation in satisfaction of the requirement that it absorb Adtran Networks' annual net loss applied for the first time to the net loss generated in 2023.

Pursuant to the terms of the DPLTA, each Adtran Networks shareholder (other than the Company) has received an offer to elect either (1) to remain an Adtran Networks shareholder and receive from us an Annual Recurring Compensation payment, or (2) to receive Exit Compensation plus guaranteed interest. The guaranteed interest under the Exit Compensation is calculated from the effective date of the DPLTA to the date the shares are tendered, less any Annual Recurring Compensation paid. The guaranteed interest rate is 5.0% plus a variable component (according to the German Civil Code) that was 3.37% as of December 31, 2024. Assuming all the minority holders of currently outstanding Adtran Networks shares were to elect the second option, we would be obligated to make aggregate Exit Compensation payments, including guaranteed interest, of approximately €333.2 million or approximately $344.9 million, based on an exchange rate as of December 31, 2024 and reflecting interest accrued through December 31, 2024 during the pendency of the appraisal proceedings discussed below. Shareholders electing the first option of Annual Recurring Compensation may later elect the second option. The opportunity for outside Adtran Networks shareholders to tender Adtran Networks shares in exchange for Exit Compensation had been scheduled to expire on March 16, 2023. However, due to the appraisal proceedings that have been initiated in accordance with applicable German law, this time period for tendering shares has been extended pursuant to the German Stock Corporation Act (*Aktiengesetz*) and will end two months after the date on which a final decision in such appraisal proceedings has been published in the Federal Gazette (*Bundesanzeiger*). The Company expects to receive a procedural decision during 2025 that will likely be appealed. The date of a decision by the court on the merits of the case is uncertain, but it is unlikely that such decision will be rendered in 2025. Thereafter an expected appeal process will take a further 12-24 months to resolve.

Additionally, our obligation to pay Annual Recurring Compensation under the DPLTA is a continuing payment obligation, which will amount to approximately €8.9 million or $9.3 million (based on the current exchange rate) per year assuming none of the minority Adtran Networks shareholders were to elect Exit Compensation. The foregoing amounts do not reflect any potential increase in payment obligations that we may have depending on the outcome of ongoing appraisal proceedings in Germany. The Annual Recurring Compensation is due on the third banking day following the ordinary general shareholders' meeting of Adtran Networks for the respective preceding fiscal year (but in any event within eight months following expiration of the fiscal year). With respect to the 2023 fiscal year, Adtran Networks' ordinary general shareholders' meeting occurred on June 28, 2024; therefore, the Annual Recurring Compensation was paid on July 3, 2024. With respect to the 2024 fiscal year, Adtran Networks' ordinary general shareholder meeting is scheduled for June 27, 2025, and therefore, the Annual Recurring Compensation will be due on July 2, 2025. During the twelve months ended December 31, 2024 and 2023, we accrued $9.8 million and $10.1 million, respectively, in Annual Recurring Compensation which is reflected as an increase to retained deficit.

On July 18, 2022, ADTRAN, Inc., as the borrower, and ADTRAN Holdings, Inc. entered into a credit agreement with a syndicate of banks, including Wells Fargo Bank, National Association, as administrative agent (“Administrative Agent”), and the other lenders named therein (the “Credit Agreement”), which has since been amended four times. The Company had access to $180.8 million on its Credit Facility for future borrowings; however, as of December 31, 2024, the Company was limited to additional borrowings of $56.1 million based on debt covenant compliance metrics. The financial covenants under the Credit Agreement, as amended, require the Company to maintain a Consolidated Total Net Leverage Ratio of 5.00x, a Consolidated Senior Secured Net Leverage Ratio of 3.25x(or 4.0x to 3.5x during a Springing Covenant Period), and a Consolidated Fixed Charge Coverage Ratio of 1.25x.

As of December 31, 2024, and as of the date of issuance of these financial statements, the Company does not have sufficient liquidity to meet the substantial majority of its payment obligations under the DPLTA pertaining to Exit Compensation. For the year ended December 31, 2024, approximately 831 thousand shares of Adtran Networks stock were tendered to the Company. This resulted in total Exit Compensation payments of approximately €15.7 million, or approximately $17.4 million, based on exchange rates at the time of the transactions, being paid to Adtran Networks shareholders. For the year ended December 31, 2023, a total of 67 thousand shares of Adtran Networks stock was tendered to the Company and Exit Compensation payments of approximately €1.2 million or approximately $1.3 million based on an exchange rate as of December 31, 2023, were paid to Adtran Networks shareholders. We believe the probability that more than a small minority of Adtran Networks shareholders elect to receive Exit Compensation in the next twelve months is remote based on the following factors: (i) the shareholders can exercise their right to receive the Exit Compensation until two months after publication of the final decision in the appraisal proceedings and we do not expect the publication of the final decision for at least another 12 months; (ii) the diverse base of shareholders that must make this election on an individual shareholder basis; (iii) the fact that the Company expects to receive a procedural decision during 2025 that will likely be appealed and, while the date of a decision by the court on the merits of the case is uncertain, it is unlikely that such decision will be rendered in 2025 and an expected appeal process will take a further 12-24 months to resolve; (iv) the current guaranteed Annual Recurring Compensation payment; and (v) the current trading value of Adtran Networks shares.

The Company experienced revenue declines in 2024. However, customers have started to replenish their inventories to meet increasing demand and we expect orders and billings to steadily increase in 2025. The Company is implementing plans to preserve cash liquidity to maintain compliance with the Company’s covenants in case of further we are impacted by customer inventory reduction initiatives and uncertain macroeconomic conditions. Additionally, the Company suspended dividend payments and effectuated a Business Efficiency Program. The Business Efficiency Program was substantially completed as of December 31, 2024, other than the Company's aim of selling its headquarters. The Company has determined that it is probable that the sale of our headquarters in Huntsville will occur within the next twelve months after December 31, 2024. We expect to use the proceeds of the sale to repay indebtedness. We may need to further reduce capital expenditure and/or take other steps to preserve working capital in order to ensure that we can meet our needs and obligations and maintain compliance with our debt covenants.

In summary, the Company believes that its cash and cash equivalents, investments, working capital management initiatives and availability to access cash under the Wells Fargo Credit Facility (described below), will be adequate to meet our business operating requirements, our capital expenditures and our expected obligations under the DPLTA, including anticipated levels of Exit Compensation and ability to continue to comply with our debt covenants under the Credit Facility for at least the next twelve months, from the issuance of these Consolidated Financial Statements included in Part II, Item 8 of this Form 10-K. *See Note 11 of Notes to Consolidated Financial Statements included in Part I, Item 8 of this report for additional information regarding the terms of the Wells Fargo Credit Agreement as amended.*

Wells Fargo Credit Facility

On July 18, 2022, ADTRAN, Inc., as the borrower ("US Borrower"), and the Company entered into a credit agreement with a syndicate of banks, including Wells Fargo Bank, National Association, as administrative agent (“Administrative Agent”), and the other lenders named therein (as amended from time to time, the “Credit Agreement”). Initially, the Credit Agreement allowed for revolving credit borrowings of up to $400.0 million in aggregate principal amount ($100.0 million of which is, subject to the restrictive covenants described below, available to Adtran Networks as borrower pursuant to the Subline (as defined and further described below), as well as the $50.0 million delayed draw term loan facility described below. As of December 31, 2024, the aggregate principal amount was reduced to $374.0 million ($74.0 million of which is available to Adtran Networks as borrower pursuant to the Subline) due to a $26.0 million reduction on the Subline. The term of the delayed draw term loan facility expired on August 9, 2024.

On August 9, 2023, ("First Amendment Effective Date") the Company and ADTRAN, Inc. entered into a First Amendment to Credit Agreement (“First Amendment”).

The First Amendment, among other things, increased the available funding from $100.0 million to $400.0 million. In addition, a new $50.0 million delayed draw term loan facility (“DDTL”) was introduced, which (subject to certain conditions) was available for borrowing in the event that at least sixty percent (60.0%) of the outstanding shares of Adtran Networks that were not owned by the Company and its subsidiaries as of the First Amendment Effective Date was tendered (such event, a “Springing Covenant Event”). The First Amendment provided that, upon the occurrence of a Springing Covenant Event, the Company will enter a “Springing Covenant Period”, defined as the fiscal quarter in which a Springing Covenant Event occurs and the three (3) consecutive fiscal quarters thereafter. During the Springing Covenant Period, the Company’s leverage ratios are increased. Although the ability to borrow under the DDTL expired on August 9, 2024, the Springing Covenant Event and Springing Covenant Period remain in effect.

The First Amendment further added additional financial flexibility by permitting, subject to certain requirements, the incurrence of convertible indebtedness by the Company in an aggregate principal amount of up to $172.5 million. Any such convertible indebtedness must, among other things, be incurred in pro forma compliance with the financial covenants in the Credit Agreement, be unsecured, and otherwise rank junior to borrowings under the Credit Agreement, and have a stated maturity date of at least 91 days after the latest scheduled maturity date of loans and commitments under the Credit Agreement. Net cash proceeds from any incurrence of convertible indebtedness must be used to repurchase minority shares of Adtran Networks or repay revolver borrowings under the Credit Agreement.

On January 16, 2024 ("Second Amendment Effective Date"), the Company and ADTRAN, Inc. entered into a Second Amendment to Credit Agreement and First Amendment to Collateral Agreement ("Second Amendment"). The Second Amendment, among other things, introduced the Covenant Relief Period, which provided the Company with additional covenant headroom while imposing a minimum liquidity financial covenant from the end of the fourth quarter of 2023 to the end of the third quarter of 2024. The Covenant Relief Period ended on November 7, 2024.

On March 12, 2024, the Company and ADTRAN, Inc. entered into a Third Amendment to Credit Agreement ("Third Amendment"). The Third Amendment, among other things, amended the definition of “Consolidated Funded Indebtedness” (which is used in the calculation of the Consolidated Total Net Leverage Ratio and the Consolidated Senior Secured Net Leverage Ratio) to exclude obligations of the Company and its subsidiaries under certain factoring arrangements when calculated for the fiscal quarters ending March 31, 2024, and June 30, 2024.

On June 4, 2024, the Company, ADTRAN, Inc., and Adtran Networks entered into a Fourth Amendment to Credit Agreement ("Fourth Amendment"). The Fourth Amendment, among other things, created a new sublimit under the existing $400.0 million revolving commitments, in an aggregate amount of $100.0 million (“Subline”), which Subline is available for borrowings by Adtran Networks. Prepayments of outstanding loans under the Subline that result in the remaining outstanding loans under the Subline being less than the German Commitment Reduction Threshold will result in a permanent partial reduction of the commitments in respect of the Subline. The German Commitment Reduction Threshold is initially $75.0 million and may be lowered from time to time pursuant to the terms of the Fourth Amendment. The existing swing line sublimit and letter of credit sublimit under the Credit Agreement remained available to the US Borrower (and not to Adtran Networks) after giving effect to the Fourth Amendment. Otherwise, the loans under the Subline are subject to substantially the same terms and conditions under the Credit Agreement (including with respect to the interest rate and maturity date) as the other existing revolving commitments.

As of December 31, 2024, Adtran’s borrowings under the revolving line of credit were $189.6 million, of which approximately $141.0 million were borrowed by ADTRAN, Inc. and $48.6 million were borrowed under the Subline by Adtran Networks. The credit facilities provided under the Credit Agreement mature in July 2027, but the US Borrower may request extensions subject to customary conditions. In addition, the US Borrower may utilize up to $50.0 million of the $374.0 million total revolving facility for the issuance of letters of credit. As of December 31, 2024, we had a total of $3.6 million in letters of credit under ADTRAN, Inc. outstanding under the Credit Agreement, leaving a net amount (after giving effect to the $189.6 million of outstanding borrowings described above) of $180.8 million available for future borrowings; however, as of December 31, 2024, the Company was limited to additional borrowings of $56.1 million based on debt covenant compliance metrics. Any future credit extensions under the Credit Agreement are subject to customary conditions precedent. The proceeds of any loans are expected to be used for general corporate purposes and to pay a portion of the Exchange Offer consideration. As of December 31, 2024, the Company was in compliance with all covenants.

Revolving Line of Credit Interest Rate

All U.S. dollar borrowings under the revolving line of credit other than swingline loans, which bear interest at the Base Rate (as defined below plus the applicable margin), at the Company’s option, at a rate per annum equal to either (a) the Base Rate plus an applicable margin ranging from 0.65% to 1.65% per annum based on the Company’s Consolidated Total Net Leverage Ratio (or, during the Applicable Margin Increase Period (as defined below), an applicable margin of 2.15% per annum), or (b) Adjusted Term SOFR (as defined below) plus an applicable margin ranging from 1.65% to 2.65% per annum based on the Company’s Consolidated Total Net Leverage Ratio (or, during the Applicable Margin Increase Period, an applicable margin of 3.15% per annum).

"Base Rate" means the highest of (a) the federal funds rate (i.e., for any day, the rate per annum equal to the weighted average of the rates on overnight federal funds transactions with members of the Federal Reserve System, as published by the Federal Reserve Bank of New York on the business day next succeeding such day) plus ½ of 1.0%, (b) the prime commercial lending rate of the Administrative Agent, as established from time to time at its principal U.S. office (which such rate is an index or base rate and will not necessarily be its lowest or best rate charged to its customers or other banks), and (c) the daily Adjusted Term SOFR (as defined in the Credit Agreement) for a one-month tenor plus 1.0%. The Base Rate is subject to a floor of 1.00% per annum.

"Adjusted Term SOFR" means Term SOFR for the applicable interest period *plus* 0.10% per annum. Adjusted Term SOFR is subject to a floor of 0.00% per annum.

All euro borrowings under the revolving line of credit bear interest at a rate per annum equal to EURIBOR (as defined in the Credit Agreement and subject to a 0.00% per annum floor) plus an applicable margin ranging from 1.75% to 2.75% per annum based on the Company's Consolidated Total Net Leverage Ratio (or, during the Covenant Relief Period, an applicable margin of 3.25% per annum).

In addition, (x) if on or prior to December 31, 2024 we have not reduced the aggregate revolving credit commitment to $340.0 million or less, the applicable margin for all loans shall be increased by 1.00% per annum, and (y) if on or prior to June 30, 2025 we have not reduced the aggregate revolving credit commitment to $300.0 million or less, the applicable margin for all loans shall be increased by 1.00% per annum.

In addition to paying interest on outstanding principal under the Credit Agreement, the Company is required to pay a quarterly commitment fee to the lenders under the Credit Agreement in respect of unutilized revolving loan commitments on the average daily unused portion of the revolving credit commitment of each lender, which commitment fee ranges from 0.20% to 0.25% per annum based on the Company's Consolidated Total Net Leverage Ratio (or, during the Applicable Margin Increase Period, is equal to 0.25%per annum). The Company is also required to pay a participation fee to the Administrative Agent for the account of each lender with respect to the Company's participation in letters of credit at the then applicable rate for Adjusted Term SOFR Loans or EURIBOR Loans, and other customary fronting, issuance and administration fees with respect to letters of credit.

The "Applicable Margin Interest Period" means the period commencing on the Second Amendment Effective Date and ending on the first date when each of the following conditions have been met: (a) the Covenant Relief Period has ended (b) since the Second Amendment Effective Date, the borrowers have repaid the revolving credit outstanding borrowings by a principal amount of at least $75.0 million (c) the borrowers have reduced the aggregate revolving credit commitment to an amount no greater than $300.0 million, and (d) the borrowers are in compliance with all financial covenants based on the financial statements for the most recently completed reference period.

Default interest is 2.0% per annum in excess of the rate otherwise applicable.

Covenants Under the Credit Agreement

The financial covenants under the Credit Agreement, as amended, include the following (capitalized terms used in this subsection and not otherwise defined herein have the meanings assigned to them in the Credit Agreement or its amendments, as applicable):

- As of the last day of any fiscal quarter, commencing with the fiscal quarter ended December 31, 2023, the Consolidated Total Net Leverage Ratio may not exceed 5.00x.
- As of the last day of any fiscal quarter, commencing with the fiscal quarter ended December 31, 2023, the Consolidated Senior Secured Net Leverage Ratio may not exceed:
    - In the fiscal quarter in which a Springing Covenant Event occurs and the three consecutive quarterly test periods thereafter, ("Springing Covenant Period"), the following covenant levels:
        - First fiscal quarter ending after a Springing Covenant Event: 4.00x
        - Second fiscal quarter ending after a Springing Covenant Event: 3.75x
        - Third and fourth fiscal quarters ending after a Springing Covenant Event: 3.50x
- If the Company or any of its subsidiaries incurs certain unsecured indebtedness in excess of $50.0 million in connection with a transaction that is a Springing Covenant Event or during a Springing Covenant Period, the Consolidated Senor Secured Net Leverage Ratio covenant will step down to 3.50x at the time of such incurrence.
- If a Springing Covenant Period is not in effect, the Consolidated Senior Secured Net Leverage Ratio may not exceed 3.25x.
- As of the last day of any fiscal quarter, commencing with the fiscal quarter ended December 31, 2023, the Consolidated Fixed Charge Coverage Ratio may not exceed 1.25x.

- During a Springing Covenant Period, as of the last day of any fiscal quarter (i) cash and cash equivalents of the Credit Parties must be at least $50.0 million and (ii) cash and cash equivalents of the Company and its subsidiaries must be at least $70.0 million.

All obligations under the Credit Agreement (including under the Subline) are guaranteed by ADTRAN, Inc., and certain subsidiaries of ADTRAN, Inc. (“Full Facility Guarantors”). To secure such guarantees, ADTRAN, Inc. and the Full Facility Guarantors have granted security interests in favor of the Administrative Agent over substantially all of their tangible and intangible assets, and ADTRAN, Inc. has granted mortgages in favor of the Administrative Agent over certain owned real estate assets. Certain of Adtran Networks' subsidiaries ("Subline Guarantors") have provided a guarantee solely of the obligations in respect of the Subline. Furthermore, to secure such guarantees, the Subline Guarantors have granted security interests in favor of the Administrative Agent over substantially all of their tangible and intangible assets. Adtran Networks has also granted security interests in favor of the Administrative Agent over substantially all of its tangible and intangible assets, to secure solely its obligations under the Subline. Upon repayment in full and termination of the Subline, the guarantees by the Subline Guarantors and the liens granted by Adtran Networks and the Subline Guarantors to secure obligations under the Subline will be released.

The Credit Agreement, as amended, contains customary affirmative and negative covenants, including incurrence covenants and certain other limitations on the ability of the Company and the Company’s subsidiaries to incur additional debt, guarantee other obligations, grant liens on assets, make investments, dispose of assets, make restricted payments, engage in mergers or consolidations, engage in transactions with affiliates, modify its organizational documents, and enter into certain restrictive agreements. The negative covenants are subject to various exceptions and carveouts. It also contains customary events of default, such as misrepresentation and a default in the performance or observance of any covenant (subject to customary cure periods and materiality thresholds). Upon the occurrence and during the continuance of an event of default, the Administrative Agent is entitled to take various actions, including the acceleration of all amounts due under the Credit Agreement.

Operating Activities

Net cash provided by operating activities of $103.1 million during the year ended December 31, 2024 increased by $148.7 million compared to $45.6 million of net cash used in during the year ended December 31, 2023. The increase was primarily due to the declining net loss for the twelve months ended December 31, 2024 and 2023, excluding the goodwill impairment charge of $292.6 million, as adjusted primarily for decreased depreciation and amortization, decreased deferred taxes and increased net cash inflows from working capital. Additional details related to our working capital and its drivers are discussed below.

Net accounts receivable decreased 17.8% from $216.4 million as of December 31, 2023 to $178.0 million as of December 31, 2024. There was an allowance for credit losses of $1.3 million and $0.4 million as of December 31, 2024 and December 31, 2023, respectively. The decrease in net accounts receivable was due primarily to a reduction in DSO. Quarterly accounts receivable DSO decreased from 88 days as of December 31, 2023 to 67 days as of December 31, 2024. The decrease in DSO was primarily driven by customer and geographical mix of commercial terms.

Other receivables decreased 44.0% from $17.5 million as of December 31, 2023 to $9.8 million as of December 31, 2024. The decrease in other receivables was primarily attributable to a decrease in sales of raw materials.

Annual inventory turnover decreased from 2.07 turns as of December 31, 2023 to 1.88 turns as of December 31, 2024. Inventory decreased 25.7% from $362.3 million as of December 31, 2023 to $269.3 million as of December 31, 2024. The decrease in inventory was primarily due to steps taken in with our Business Efficiency Program to improve working capital, a reduction in component purchases due to improved lead time, utilization of buffer stock and a $4.1 million write down of inventory due to a restructuring discontinuation of certain product lines within our Network Solutions segment. We expect inventory levels to fluctuate as we attempt to maintain sufficient inventory for customer demand and improve working capital.

Accounts payable increased 4.6% from $162.9 million as of December 31, 2023 to $170.5 million as of December 31, 2024. The increase in accounts payable was primarily due to the timing of the receipt of inventory, supplies and services. Accounts payable will fluctuate due to variations in the timing of the receipt of inventory, supplies and services and our subsequent payments for these purchases.

Investing Activities

Capital expenditures, including intangibles totaled approximately $63.1 million and $43.1 million for the years ended December 31, 2024 and 2023, respectively. These expenditures were primarily used to purchase software, computer hardware, manufacturing and test equipment, building improvements and developed technologies. The increase in capital expenditures is primarily attributable to an increase in expenditures related to developed technology.

Our long-term investments increased 15.6% from $27.7 million as of December 31, 2023 to $32.1 million as of December 31, 2024. Our investments include various marketable equity securities classified as long-term investments with a fair market value of $1.1 million and $0.9 million, as of December 31, 2024 and 2023, respectively. Long-term investments as of December 31, 2024 and 2023 also included $31.0 million and $26.8 million, respectively, related to our deferred compensation plan. *See Note 4 of Notes to Consolidated Financial Statements included in Part II, Item 8 of this report for additional information.*

Financing Activities

Dividends

During 2023 we paid stockholder dividends totaling $21.2 million. On November 6, 2023, the Board of Directors suspended the Company's quarterly cash dividend in order to reduce debt and interest expense and support the Company's capital efficiency program. We consequently did not pay any dividends during the twelve months ended December 31, 2024. The payment of any future dividends will be at the discretion of the Board of Directors and will depend on the Company's financial condition, results of operations, capital requirements, and any other factors deemed relevant by the Board of Directors; however, the Wells Fargo Credit Agreement currently does not allow for the payment of dividends to stockholders. *For addition information, see Note 18 of Notes to Consolidated Financial Statements included in Part II, Item 8 of this report and Liquidity & Capital Resources above*. The following table shows dividends per common share paid to our stockholders in each quarter of 2024 and 2023:

Dividends per Common Share

	2024	2023
First Quarter	$ -	$ 0.09
Second Quarter	$ -	$ 0.09
Third Quarter	$ -	$ 0.09
Fourth Quarter	$ -	$ -

Stock Repurchase Program

The Company did not repurchase any stock during the years ended December 31, 2024 and 2023, and there currently is no authorized stock repurchase plan.

Stock Option Exercises

To accommodate employee stock option exercises, the Company issued 0.1 million and 23 thousand shares of common stock which resulted in proceeds of $0.8 million and $0.2 million during the years ended December 31, 2024 and 2023, respectively. Additionally, to accommodate Adtran Networks stock option exercises, Adtran Networks issued 0.1 million of Adtran Networks common stock which resulted in proceeds of $0.4 million, during the year ended December 31, 2023. No Adtran Networks stock options were exercised during the year ended December 31, 2024.

Employee Pension Plan

We maintain defined benefit pension plans covering employees in certain foreign countries. Pension benefit plan obligations are based on various assumptions used by our actuaries in calculating these amounts. These assumptions include discount rates, compensation rate increases, expected return on plan assets, retirement rates and mortality rates. Actual results that differ from the assumptions and changes in assumptions could affect future expenses and obligations. Details regarding the pension plans are set forth below.

- In Germany, there are two defined benefit pension plans and two defined contribution plans. These plans provide benefits in the event of retirement, death or disability. The plan's benefits are based on age, years of service and salary. The defined benefit plans are financed by contributions paid by the Company and the defined contribution plans are financed by contributions paid by the participants.
- In Switzerland, there are two defined benefit pension plans. Both plans provide benefits in the event of retirement, death or disability. The plan's benefits are based on age, years of service, salary and on a participant's old age account. The plans are financed by contributions paid by the participants and by the Company.
- In Italy, the post-employment benefit plan is required due to statutory provisions. The plan is financed directly by the Company on a pay-as-you-go basis. Employees receive their pension payments as a function of salary, inflation and a notional account.
- In Israel, there is a defined benefit plan that provides benefits in the event of a participant being dismissed involuntarily, retirement or death. The plan's benefits are based on the higher of the severance benefit required by law or the cash surrender value of the severance benefit component of any qualifying insurance policy or long-term employee benefit fund that is registered in the participant's name. The plan is financed by contributions paid by the Company.
- In India, the post-employment benefit plan is required due to statutory provisions. The plan is financed directly by the Company on a pay-as-you-go basis.

Our defined benefit plan assets consist of a balanced portfolio of equity funds, bond funds, emerging market funds, real estate funds and balanced funds. Our investment policy includes various guidelines and procedures designed to ensure assets are invested in a manner

necessary to meet expected future benefits earned by participants and consider a broad range of economic conditions. The objectives of our investment policy are to maintain investment portfolios that diversify risk through prudent asset allocation parameters, achieve asset returns that meet or exceed the plans' actuarial assumptions and achieve asset returns that are competitive with like institutions employing similar investment strategies. The investment policy is periodically reviewed by us and a designated third-party fiduciary for investment matters. At December 31, 2024, the estimated fair market value of our defined benefit pension plans' assets decreased to $54.5 million from $55.2 million at December 31, 2023.

The defined benefit pension plan is accounted for on an actuarial basis, which requires the use of various assumptions, including an expected rate of return on plan assets and a discount rate. The expected return on our German plan assets that is utilized in determining the benefit obligation and net periodic benefit cost is derived from periodic studies, which include a review of asset allocation strategies, anticipated future long-term performance of individual asset classes, risks using standard deviations and correlations of returns among the asset classes that comprise the plans' asset mix. While the studies give appropriate consideration to recent plan performance and historical returns, the assumptions are primarily long-term, prospective rates of return. The discount rate has been derived from the returns of high-quality, corporate bonds denominated in euro currency with durations close to the duration of our pension obligations. The projected benefit obligation for our defined benefit pension plans was $63.3 million and $67.9 million as of December 31, 2024 and 2023, respectively.

The components of net periodic pension cost, other than the service cost component, are included in other income, net in the Consolidated Statements of Loss. The components of net periodic pension cost and amounts recognized in other comprehensive income (loss) for the years ended December 31, 2024 and 2023 were $0.3 million and ($3.9) million, respectively.

Actuarial gains and losses are recorded in accumulated other comprehensive loss. To the extent unamortized gains and losses exceed 10% of the higher of the market-related value of assets or the projected benefit obligation, the excess is amortized as a component of net periodic pension cost over the remaining service period of active participants. We estimate that less than $0.1 million will be amortized from accumulated other comprehensive income into net periodic pension cost in 2025 for the net actuarial loss. The net actuarial loss recognized in accumulated other comprehensive loss as of December 31, 2024 and 2023 was $1.0 million and $2.5 million, respectively. *See Note 14 of Notes to Consolidated Financial Statements included in Part II, Item 8 of this report for additional information.*

Off-Balance Sheet Arrangements

We have exposure to credit losses from off-balance sheet exposures used to provide various guarantees of performance such as bid bonds, performance bonds and customs bonds, where we believe the risk of loss is immaterial to our financial statements as of December 31, 2024. Otherwise, we do not have off-balance sheet financing arrangements and have not engaged in any related party transactions or arrangements with unconsolidated entities or other persons that are reasonably likely to materially affect liquidity or the availability of or requirements for capital resources. *See Note 18 of the Notes to Consolidated Financial Statements, included in Part II, Item 8 of this report for additional information.*

Cash Requirements

The following table summarizes the Company's material short- and long-term cash requirements from known obligations pursuant to certain contracts and commitments as of December 31, 2024, as well as an estimate of the timing in which such obligations and payments are expected to be satisfied (but excluding payments that may be made pursuant to the DPLTA and currency hedging arrangements, which are discussed below). Other than operating lease obligations, the cash requirements table excludes interest payments.

(In thousands)	Total	2025	2026	2027	2028	2029	Thereafter
Wells Fargo credit agreement[1]	$ 189,576	$ —	$ —	$ 189,576	$ —	$ —	$ —
Purchase obligations[2]	202,478	197,408	4,746	199	125	—	—
Operating lease obligations[3]	41,063	8,829	7,550	6,498	4,980	2,925	10,281
Totals	**$ 433,117**	**$ 206,237**	**$ 12,296**	**$ 196,273**	**$ 5,105**	**$ 2,925**	**$ 10,281**

(1) See description below.
(2) We have purchase obligations related to open purchase orders to our contract manufacturers, ODMs, component suppliers, service partners and other vendors. The settlement of our purchase obligations will occur at various dates beginning in 2025 and going through 2028. See Note 18 of the Notes to Consolidated Financial Statements, included in Part II, Item 8 of this report for more information.
(3) We have operating leases for office space, automobiles and various other equipment in the U.S. and in certain international locations. Our operating leases had remaining lease terms ranging from 1 month to 167 months as of December 31, 2024.

Stock Repurchase Program

There were no stock repurchases during the years ended December 31, 2024 and 2023, and there currently is no authorized stock repurchase plan.

Wells Fargo Credit Agreement

On July 18, 2022, ADTRAN Holdings, Inc. and ADTRAN, Inc., as the borrower, entered into the Credit Agreement with the Administrative Agent and the other lenders named therein. The Credit Agreement was subsequently amended on August 9, 2023, January 16, 2024, March 12, 2024, and June 4, 2024. As of December 31, 2024, ADTRAN, Inc.'s borrowings under the revolving line of credit were $189.6 million. The Credit Facility matures in July 2027; however, the Company has an option to request extensions subject to customary conditions. *See Note 11 of the Notes to Consolidated Financial Statements, included in Part II, Item 8 of this report and "Liquidity and Capital Resources" in Part I, Item 2 of this report for additional information.*

Nord/LB Revolving Line of Credit

On March 29, 2023, Adtran Networks entered into a $16.1 million unsecured revolving line of credit with Norddeutsche Landesbark - Girozentrale (Nord/LB) that bore interest of Euro Short Term Rate plus 1.94%. The line of credit had a perpetual term that could be terminated by the Company or Nord/LB at any time. As of December 31, 2023, Adtran Networks repaid the outstanding borrowings and terminated the Nord/LB Revolving Line of Credit.

Prior Nord/LB Revolving Line of Credit

On August 8, 2022, Adtran Networks entered into a $16.1 million revolving line of credit with Norddeutsche Landesbark - Girozentrale (Nord/LB) that bore interest of Euro Short Term Rate plus 1.4% and matured in August 2023. On January 31, 2023, the Company repaid the outstanding borrowings and terminated the Nord/LB revolving line of credit.

Syndicated Credit Agreement Working Capital Line of Credit

In September 2018, Adtran Networks entered into a syndicated credit agreement with Bayerische Landesbank and Deutsche Bank AG Branch German Business to borrow up to $10.7 million as part of a working capital line of credit. On January 31, 2023, the Company repaid the outstanding borrowings and terminated the syndicated credit agreement working capital line of credit.

DZ Bank Revolving Line of Credit

In the fourth quarter of 2022, Adtran Networks entered into a revolving line of credit with DZ Bank to borrow up to $9.1 million. Interest on the line of credit reset monthly based on renewal of the loan and was 2.8% at the time the loan was repaid. On March 12, 2023, the Company repaid the outstanding borrowings and terminated the DZ Bank revolving line of credit.

Syndicated Credit Agreement Note Payable

In September 2018, Adtran Networks entered into a syndicated credit agreement with Bayerische Landesbank and Deutsche Bank AG Branch German Business to borrow $63.7 million. On January 31, 2023, the Company repaid the outstanding borrowings and terminated the syndicated credit agreement note payable.

Currency Hedging Arrangements

On November 3, 2022, the Company entered into a euro/U.S. dollar forward contract arrangement (the "Initial Forward") with Wells Fargo Bank, N.A. (the "Hedge Counterparty"). The Initial Forward, which was governed by the provisions of an ISDA Master Agreement (including schedules thereto and transaction confirmations that supplement such agreement) entered into between the Company and the Hedge Counterparty, enabling the Company to convert a portion of its euro denominated payment obligations under the proposed DPLTA into U.S. Dollars. Under the Initial Forward, the Company agreed to exchange an aggregate notional amount of €160.0 million for U.S. dollars at a daily fixed forward rate ranging from EUR/USD 0.98286 to 1.03290. The aggregate amount of €160.0 million was divided into eight quarterly tranches of €20.0 million, which commenced in the fourth quarter of 2022. During the twelve months ended December 31, 2024, the Company settled four €20.0 million forward contract tranches.

On March 21, 2023, the Company entered into a euro/U.S. dollar forward contract arrangement (the "Forward") with the Hedge Counterparty. Under the Forward, which was governed by the provisions of an ISDA Master Agreement (including schedules thereto and transaction confirmations that supplement such agreement) entered into between the Company and the Hedge Counterparty, the Company exchanged an aggregate notional amount of €160.0 million for U.S. dollars at an average rate of EUR/USD 1.085. During the twelve months ended December 31, 2024, the Company settled four $20.0 million forward contract tranches. As of December 31, 2024, both the Initial Forward and Forward have fully matured and are no longer outstanding.

Receivables Purchase Arrangements

On July 1, 2024, the Company entered into receivables purchase agreement (the "Factoring Agreement") with a third-party financial institution (the "Factor"), which accelerates receivable collection and helps to better manage cash flow. Total accounts receivables factored as of the end of December 31, 2024, totaled $18.3 million of which $3.7 million was retained pursuant to the Factoring Agreement in the reserve account. The Factoring Agreement provides for up to $40.0 million in factoring capacity, subject to eligible receivables and reserve requirements, secured by the receivables. The balance in the reserve account is included in other assets on the Consolidated Balance Sheets. The cost of the Factoring Agreement is included in interest expense in the Consolidated Statements of Loss and totaled $0.6 million for the year ended December 31, 2024. Costs of a previous receivables purchase agreement, which are included in interest expense in the Consolidated Statements of Loss totaled $0.9 million for the year ended December 31, 2023.

Domination and Profit and Loss Transfer Agreement

The DPLTA between the Company, as the controlling company, and Adtran Networks SE, as the controlled company, as executed on December 1, 2022, became effective on January 16, 2023, as a result of its registration with the commercial register (*Handelsregister*) of the local court (*Amtsgericht*) at the registered seat of Adtran Networks (Jena).

Under the DPLTA, subject to certain limitations pursuant to applicable law and the specific terms of the DPLTA, (i) the Company is entitled to issue binding instructions to the management board of Adtran Networks, (ii) Adtran Networks will transfer its annual profit to the Company, subject to, among other things, the creation or dissolution of certain reserves, and (iii) the Company will generally absorb the annual net loss incurred by Adtran Networks. The Company's payment obligation in satisfaction of the requirement that it absorb Adtran Networks' annual net loss applied for the first time to the net loss generated in 2023.

Pursuant to the terms of the DPLTA, each Adtran Networks shareholder (other than the Company) has received an offer to elect either (1) to remain an Adtran Networks shareholder and receive from us an Annual Recurring Compensation payment, or (2) to receive Exit Compensation plus guaranteed interest. The guaranteed interest under the Exit Compensation is calculated from the effective date of the DPLTA to the date the shares are tendered, less any Annual Recurring Compensation paid. The guaranteed interest rate is 5.0% plus a variable component (according to the German Civil Code) that was 3.37% as of December 31, 2024. Assuming all the minority holders of currently outstanding Adtran Networks shares were to elect the second option, we would be obligated to make aggregate Exit Compensation payments, including guaranteed interest, of approximately €333.2 million or approximately $344.9 million, based on an exchange rate as of December 31, 2024 and reflecting interest accrued through December 31, 2024 during the pendency of the appraisal proceedings discussed below. Shareholders electing the first option of Annual Recurring Compensation may later elect the second option. The opportunity for outside Adtran Networks shareholders to tender Adtran Networks shares in exchange for Exit Compensation had been scheduled to expire on March 16, 2023. However, due to the appraisal proceedings that have been initiated in accordance with applicable German law, this time period for tendering shares has been extended pursuant to the German Stock Corporation Act (*Aktiengesetz*) and will end two months after the date on which a final decision in such appraisal proceedings has been published in the Federal Gazette (*Bundesanzeiger*). The Company expects to receive a procedural decision during 2025 that will likely be appealed. The date of a decision by the court on the merits of the case is uncertain, but it is unlikely that such decision will be rendered in 2025. Thereafter an expected appeal process will take a further 12-24 months to resolve.

Additionally, our obligation to pay Annual Recurring Compensation under the DPLTA is a continuing payment obligation, which will amount to approximately €8.9 million or $9.3 million (based on the current exchange rate) per year assuming none of the minority Adtran Networks shareholders were to elect Exit Compensation. The foregoing amounts do not reflect any potential increase in payment obligations that we may have depending on the outcome of ongoing appraisal proceedings in Germany. The Annual Recurring Compensation is due on the third banking day following the ordinary general shareholders' meeting of Adtran Networks for the respective preceding fiscal year (but in any event within eight months following expiration of the fiscal year). With respect to the 2023 fiscal year, Adtran Networks' ordinary general shareholders' meeting occurred on June 28, 2024 and, therefore, the Annual Recurring Compensation was paid on July 3, 2024. With respect to the 2024 fiscal year, Adtran Networks' ordinary general shareholder meeting is scheduled for June 27, 2025, and therefore, the Annual Recurring Compensation will be due on July 2, 2025. During the year ended December 31, 2024 and 2023, we accrued $9.8 million and $10.1 million, respectively, in Annual Recurring Compensation. The Annual Recurring Compensation is reflected as an increase to retained deficit in the Consolidated Balance Sheets.

On October 18, 2022, the Company's Board of Directors authorized the Company to purchase additional shares of Adtran Networks through open market purchases not to exceed 15,346,544 shares. For the year ended December 31, 2024, approximately 831 thousand shares of Adtran Networks stock were tendered to the Company. This resulted in total Exit Compensation payments of approximately €15.7 million, or approximately $17.4 million, based on exchange rates at the time of the transactions, being paid to Adtran Networks shareholders. For the year ended December 31, 2023, a total of 67 thousand shares of Adtran Networks stock was tendered to the Company and Exit Compensation payments of approximately €1.2 million or approximately $1.3 million based on an exchange rate as of December 31, 2023, were paid to Adtran Networks shareholders.

We currently hold 34,856,559 no-par value bearer shares of Adtran Networks, representing 67.0% of Adtran Networks outstanding shares as of February 27, 2025.

The foregoing description of the DPLTA does not purport to be complete and is qualified in its entirety by reference to the DPLTA, a non-binding English translation of which incorporated by reference to Exhibit 10.5 of this Annual Report on Form 10-K.

Business Efficiency Program

During the fourth quarter of 2023, the Company initiated a Business Efficiency Program designed to optimize the assets, business processes, and information technology systems of the Company in relation to the Business Combination with Adtran Networks. The Business Efficiency Program included expenses specifically associated with achieving run-rate synergies as well as Business Efficiency Program expenses described below. Other than the Company's stated air of selling its headquarters, the Business Efficiency Program was substantially complete as of December 31, 2024. *See Note 20 of the Notes to Consolidated Financial Statements, included in Part II, Item 8 of this report for additional information.*

During the years ended December 31, 2024 and 2023, we recognized $44.7 million and $25.1 million of costs relating to the Business Efficiency Program, respectively. Future cash payments include severance costs, outplacement fees and site consolidation that are anticipated to be approximately $10.3 million.

Business Combination Integration Costs

During the years ended December 31, 2024 and 2023, we recognized $1.9 million and $4.9 million of integration costs related to the Business Combination, respectively, that are included in selling, general and administrative expenses, research & development expenses and cost of revenue in the Condensed Consolidated Statement of Loss.

Other Cash Requirements

During the year ended December 31, 2024, other than the Exit Compensation payments, Annual Recurring Compensation under the DPLTA, restructuring costs and increased debt service costs, there have been no other material changes in cash requirements from those discussed in the 2023 Form 10-K and our cash requirements table shown in Liquidity and Capital Resources above.

Performance Bonds

Certain contracts, customers and jurisdictions in which we do business require us to provide various guarantees of performance such as bid bonds, performance bonds and customs bonds. As of December 31, 2024 and 2023, we had commitments related to these bonds totaling $15.7 million and $10.8 million, respectively, which expire at various dates through April 2029. In general, we would only be liable for the amount of these guarantees in the event of default under each contract; the probability of which we believe is remote.

Critical Accounting Policies and Estimates

An accounting policy is deemed to be critical if it requires an accounting estimate to be made based on assumptions about matters that are highly uncertain at the time the estimate is made if different estimates reasonably could have been used or if changes in the accounting estimate that are reasonably likely to occur could materially impact the results of financial operations. Several accounting policies, as described in Note 1 of the Notes to Consolidated Financial Statements included in Part II, Item 8 of this report, require material subjective or complex judgment and have a significant impact on our financial condition and results of operations, as applicable. We believe the following critical accounting policies affect our more significant judgments and estimates used in the preparation of our Consolidated Financial Statements:

Revenue

Revenue is measured based on the consideration expected to be received in exchange for transferring goods or providing services to a customer and as performance obligations under the terms of the contract are satisfied. Generally, this occurs with the transfer of control of a product to the customer. For transactions where there are multiple performance obligations, individual products and services are accounted for separately if they are distinct (if a product or service is separately identifiable from other items and if a customer can benefit from it on its own or with other resources that are readily available to the customer). The consideration, including any discounts, is allocated between separate products and services based on their stand-alone selling prices. Stand-alone selling prices are determined based on the prices at which the separate products and services are sold and are allocated based on each item's relative value to the total value of the products and services in the arrangement. For items that are not sold separately, we estimate stand-alone selling prices primarily using the "expected cost plus a margin" approach. Payment terms are generally 30 days in the U.S. and typically longer in many geographic markets outside the U.S. Shipping fees collected are recorded as revenue and the related cost is included in cost of revenue. Revenue, value-added and other taxes collected concurrently with revenue-producing activities are excluded from revenue. Incremental costs of obtaining a contract, that are recoverable, are capitalized and amortized over the period that the related revenue is recognized if greater than one year. We have elected to account for shipping fees paid as a cost of fulfilling the related contract. We have also elected to apply the practical expedient related to the incremental costs of obtaining contracts and recognize those costs as an expense when incurred if the amortization period of the assets is one year or less. These costs are included in selling, general and administrative expenses. Capitalized costs with an amortization period greater than one year were immaterial.

Revenue is generated by two reportable segments: Network Solutions and Services & Support.

Network Solutions Segment - Includes hardware products and software defined next-generation virtualized solutions used in Service Provider or business networks, as well as prior generation products. The majority of the revenue from this segment is from hardware revenue.

Hardware and Software Revenue

Revenue from hardware sales is recognized when control is transferred to the customer, which is generally when the products are shipped. Shipping terms are generally FOB shipping point. Revenue from software license sales is recognized at delivery and transfer of control to the customer. Revenue is recorded net of estimated discounts and rebates using historical trends. Customers are typically invoiced when control is transferred and revenue is recognized. Our products generally include assurance-based warranties of 90 days to five years for product defects, which are accrued at the time products are delivered.

Services & Support Segment - Includes a complete portfolio of maintenance, network implementation and solutions integration and managed services, which include hosted cloud services and subscription services to complement our Network Solutions segment.

Maintenance Revenue

Our maintenance service periods range from one month to five years. Customers are typically invoiced and pay for maintenance services at the beginning of the maintenance period. We recognize revenue for maintenance services on a straight-line basis over the maintenance period as our customers benefit evenly throughout the contract term and deferred revenue, when applicable, is recorded in unearned revenue and non-current unearned revenue. The total balance of our unearned revenue was $74.8 million and $71.8 million as of December 31, 2024 and 2023, respectively.

Network Implementation Revenue

We recognize revenue for network implementation, which primarily consists of engineering, execution and enablement services at a point in time when each performance obligation is complete. If we have recognized revenue but have not billed the customer, the right to consideration is recognized as a contract asset that is included in other receivables on the Consolidated Balance Sheets. The contract asset is transferred to accounts receivable when the completed performance obligation is invoiced to the customer.

Receivables Purchase Agreement

On July 1, 2024, the Company entered into a receivables purchase agreement (the "Factoring Agreement") with a third-party financial institution (the "Factor"), which accelerates receivable collection and helps to better manage cash flow. These transactions are accounted for in accordance with ASC Topic 860 and result in a reduction in accounts receivable because the Factoring Agreement transfers effective control over, and risk related to the receivables to the buyers. Trade accounts receivables balances sold are removed from the Consolidated Balance Sheets and cash received is reflected as cash flows provided by (used in) operating activities in the Consolidated Statements of Cash Flow. Factoring related interest expense is recorded to interest expense on the Consolidated Statements of Loss. On each sale date, the Factor retains from the sale price a default reserve, up to a required balance, which is held by the Factor in a reserve account and pledged to the Company. The Factor is entitled to withdraw from the reserve account the sale price of a defaulted receivable. The balance in the reserve account is included in other assets on the Consolidated Balance Sheets.

Previous Receivables Purchase Agreement

On December 19, 2023, the Company entered into a factoring agreement with a third-party financial institution to sell, on a revolving basis, undivided interests in the Company's accounts receivable. The factoring agreement qualified for treatment as a secured borrowing with a pledge of collateral under Accounting Standards Codification ("ASC") Topic 810, *Consolidations,* as the Company was considered the primary beneficiary in a variable interest entity created to hold the factored receivables and the Company retained a residual claim on reserves related to the factored receivables. The receivables factored were carried in accounts receivable, less allowance for credit losses on the Consolidated Balance Sheets, the secured borrowings were carried on the Company's Consolidated Balance Sheets as a current liability, in accounts payable, proceeds and repayments of the secured borrowings are reflected as cash flows (used in) provided by financing activities in the Consolidated Statements of Cash Flows and program fees are recorded in interest expense in the Company's Consolidated Statements of Loss. The short-term liability classification of the secured borrowings was based on the estimated timing of the collection of the accounts receivable which were expected to be received within 12 months. The receivables purchase agreement was terminated on July 1, 2024 and there were no secured borrowings under this agreement as of December 31, 2024. *See Note 2 of Notes to Consolidated Financial Statements included in Part II, Item 8 of this report for additional information.*

Inventory

We carry our inventory at the lower of cost and net realizable value, with cost being determined using the first-in, first-out method. Standard costs for material, labor, and manufacturing overhead are used to value inventory and are updated at least quarterly. Most variances are expensed in the current period; therefore, our inventory costs approximate actual costs at the end of each reporting period. We establish reserves for estimated excess and obsolete inventory equal to the difference between the cost of the inventory and the estimated net realizable value of the inventory based on estimated reserve percentages, which consider historical usage, known trends, inventory age and market conditions. If actual trends and market conditions are less favorable than those projected by management, we may be required to make additional inventory write-downs.

Stock-Based Compensation

For purposes of determining the estimated fair value of market-based PSU awards on the date of grant, the Monte Carlo Simulation valuation method is used. These PSUs are subject to a market condition based on the relative total stockholder return of Adtran against all of the companies in the NASDAQ Telecommunications Index and vest at the end of a three-year performance period. The fair value of performance-based PSUs, RSUs and restricted stock is equal to the closing price of our stock on the business day immediately preceding the grant date. Compensation expense related to unvested performance-based PSUs is recognized over the requisite service period of two to three years as the achievement of the performance obligation becomes probable. For purposes of determining the estimated fair value of our stock option awards on the date of grant, we use the Black-Scholes Model. This model requires the input of certain assumptions that require subjective judgment. These assumptions include, but are not limited to, expected stock price volatility over the term of the awards and actual and projected employee stock option exercise behaviors. Because our stock option awards have characteristics significantly different from those of traded options, and because changes in the input assumptions can materially affect the fair value estimate, the existing model may not provide a reliable, single measure of the fair value of our stock option awards. Management will continue to assess the assumptions and methodologies used to calculate the estimated fair value of stock-based compensation. Circumstances may change and additional data may become available over time, which could result in changes to these assumptions and methodologies and thereby materially impact our fair value determination. If factors change in future periods, the compensation expense that we record may differ significantly from what we have recorded in the current period. As of December 31, 2024, total unrecognized compensation expense related to the non-vested portion of market-based PSUs, RSUs and restricted stock was approximately $10.7 million.

Pursuant to the Business Combination, which closed on July 15, 2022, Adtran Networks stock option holders were entitled to have their Adtran Networks stock options assumed by ADTRAN Holdings (applying the exchange ratio in the Business Combination Agreement), thereafter representing options to acquire stock of ADTRAN Holdings. The maximum number of shares of ADTRAN Holdings stock potentially issuable upon such assumption was 2.3 million shares. The period in which such options could be assumed ended July 22, 2022. A total of 2.1 million shares of ADTRAN Holdings stock were subject to assumed Adtran Networks options. The determination of the fair value of stock options assumed by ADTRAN Holdings was estimated using the Monte Carlo method and is affected by its stock price, as well as assumptions regarding a number of complex and subjective variables that may have a significant impact on the fair value estimate. The stock option pricing model requires the use of several assumptions that impact the fair value estimate. These variables include, but are not limited to, the volatility of the Company's stock price and employee exercise behaviors. As of December 31, 2024, total unrecognized compensation expense related to the non-vested portion of stock options was approximately $3.2 million.

Assets Held for Sale

An asset is considered to be held for sale when all the following criteria are met: (i) management commits to a plan to sell the asset; (ii) the asset is available for immediate sale in its present condition; (iii) actions required to complete the sale of the asset have been initiated; (iv) sale of the asset is probable and the completed sale is expected to occur within one year; (v) it is unlikely that the disposal plan will be significantly modified; and (vi) the asset is actively being marketed for sale at a price that is reasonable given its current market value.

The Company records assets held for sale at the lower of their carrying value or fair value. The total carrying value of assets held for sale was $11.9 million as of December 31, 2024 and is separately recorded on the balance sheet.

Goodwill

Goodwill represents the excess purchase price over the fair value of net assets acquired. The Company’s annual impairment assessment is done at the reporting unit level, which we determined are generally the same as our operating segments, which are identified in Note 16 to the Consolidated Financial Statements. We review goodwill for impairment annually during the fourth quarter and also test for impairment between annual tests if an event occurs or circumstances change that would more likely than not reduce the fair value of our reporting units below their carrying amount. Such events and circumstances may include among others: a significant adverse change in legal factors or in the general business climate; significant decline in our stock price and market capitalization; unanticipated competition; the testing for recoverability of a significant asset within the reporting unit; and an adverse action or assessment by a regulator. Any adverse change in these factors could have a significant impact on the recoverability of goodwill and could have a material impact on our consolidated financial statements.

During the first quarter of 2024, qualitative factors such as a decrease in the Company’s market capitalization, lower service provider spending and delayed holding patterns of inventory with respect to customers caused us to reduce our forecasts, triggering a quantitative impairment assessment for our reporting units. The Company determined the fair value of each reporting unit using a combination of an income approach and a market approach. The significant inputs and assumptions used in the determination of the fair value of our reporting units based on future cash flows for the reporting units, requires significant judgment and the use of estimates and assumptions related to cash flow projections, discount rate, peer group determination and market multiple selection. The Company determined upon its quantitative impairment assessment to recognize a $292.6 million non-cash goodwill impairment charge for the Network Solutions reporting unit. The quantitative impairment analysis indicated there was no impairment of the Services & Support goodwill during the first quarter of 2024.

The Company’s annual impairment test date is October 1, 2024. Based on our analysis, management concluded that there was no impairment of goodwill as of that date. Between the annual impairment date of October 1, 2024 and year-end December 31, 2024, there were no additional triggering events.

During 2023, the Company experienced decreased market capitalization and long-term projections. Therefore, an interim impairment test over goodwill was performed as of September 30, 2023. The Company determined the fair value of each reporting unit using a combination of an income approach and a market approach. Management’s determination of the fair value of our reporting units, based on future cash flows for the reporting units, requires significant judgment and the use of estimates and assumptions related to cash flow projections, discount rate, peer group determination and market multiple selection. It was determined that the decreases in projected future cash flows, discount rates, overall macroeconomic conditions, as well as the decrease in our market capitalization applied in the valuation, were required to align with market-based assumptions and company-specific risk, which resulted in lower fair values of the Services & Support reporting unit. As a result of the interim assessment, the Company recorded a goodwill impairment charge of $37.9 million as its estimated fair value was less than its book value on that date. No other goodwill impairment charges were recorded during 2023.

No goodwill impairment charge was recorded in 2022 as a result of the Company’s internal assessment.

The balance of our goodwill was $52.9 million and $353.4 million as of December 31, 2024 and 2023, respectively.

Intangible Assets

Purchased intangible assets with finite lives are carried at cost less accumulated amortization. Amortization is recorded over the estimated useful lives of the respective assets.

The balance of our intangible assets was $306.1 million and $337.4 million as of December 31, 2024 and 2023, respectively.

Impairment of Long-Lived Assets and Intangibles

Long-lived assets, such as property, plant and equipment, right of use lease assets and purchased intangibles subject to amortization, are reviewed for impairment whenever events or changes in circumstances indicate that the carrying amount of an asset may not be recoverable. Recoverability of assets to be held and used is measured by a comparison of the carrying amount of an asset to estimated undiscounted future cash flows expected to be generated by the asset or asset group. If the carrying amount of an asset exceeds its estimated future cash flows, an impairment charge is recognized by the amount by which the carrying amount of the asset exceeds the fair value of the asset or asset group.

During the first quarter of 2024, factors triggered a quantitative impairment assessment for the Network Solutions asset group. The long-lived assets associated with the Network Solutions asset group was $358.6 million as of December 31, 2024

There were no impairment losses for long-lived assets and intangible assets during the years ended December 31, 2024, 2023 and 2022.

Income Taxes

We estimate our income tax provision or benefit in each of the jurisdictions in which we operate, including estimating exposures related to examinations by taxing authorities. We also make judgments regarding the realization of deferred tax assets and establish valuation allowances where we believe it is more likely than not that future taxable income in certain jurisdictions will be insufficient to realize these deferred tax assets. Our estimates regarding future taxable income and income tax provision or benefit may vary due to changes in market conditions, changes in tax laws, or other factors. If our assumptions, and consequently our estimates, change in the future, the valuation allowances we have established may be increased or decreased, impacting future income tax expense. We continually review the adequacy of our valuation allowance and recognize the benefits of deferred tax assets only as the reassessment indicates that it is more likely than not that the deferred tax assets will be realized in accordance with ASC 740, Income Taxes. During the fourth quarter of 2023, after considering all quantitative and qualitative evidence, including our cumulative loss position, we have determined that the negative evidence outweighs the positive evidence and have concluded that it is not more likely than not that our U.S. federal and certain other state deferred tax assets were realizable for one of the consolidated filing groups. As a result, we recorded a valuation allowance against those assets and continue to maintain the valuation allowance through 2024. Additional valuation allowance was recorded against certain deferred tax assets on our foreign entities as not more likely than not realizable. However, the amount of deferred tax assets considered realizable could be adjusted and valuation allowance released in future periods in the event that sufficient positive evidence is present to support a conclusion that it is more likely than not that all or a portion of our domestic and foreign deferred tax assets will be realized.

In determining whether an uncertain tax position exists, the Company determines, based solely on its technical merits, whether the tax position is more likely than not to be sustained upon examination, and if so, a tax benefit is measured on a cumulative probability basis that is more likely than not to be realized upon the ultimate settlement. The Company recognizes interest and penalties related to unrecognized tax benefits through interest expense and income tax expense, respectively.

Pension Benefit Plan Obligations

Pension benefit plan obligations are based on various assumptions used by our actuaries in calculating these amounts. These assumptions include discount rates, compensation rate increases, expected return on plan assets, retirement rates and mortality rates. Actual results that differ from the assumptions and changes in assumptions could affect future expenses and obligations. Our net pension liability totaled $8.8 million and $12.7 million at December 31, 2024 and December 31, 2023, respectively. This liability is included in non-current pension liability, accrued wages and benefits and other non-current assets in the accompanying Consolidated Balance Sheets.

Lease Obligations

We have operating leases for office space, automobiles and various other equipment in the U.S. and in certain international locations. Other contracts, such as manufacturing agreements and service agreements, are reviewed to determine if they contain potential embedded leases. These other contracts are specifically reviewed to determine whether we have the right to substantially all of the economic benefit from the use of any specified assets or the right to direct the use of any specified assets, either of which would indicate the existence of a lease. Some of our leases include options to renew. For those leases that are reasonably assured to be renewed, we have included the option to extend as part of our right of use asset and lease liability. The exercise of lease renewal options is at our sole discretion. The depreciable life of leased assets and leasehold improvements are limited by the expected lease term. 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. For lease agreements entered into or reassessed after the adoption of Topic 842, we elected to not separate lease and non-lease components. Our lease agreements do not contain any material residual value guarantees or material restrictive covenants.

Business Combinations

The Company records assets acquired, liabilities assumed, contractual contingencies, when applicable, and intangible assets recognized as part of business combinations based on their fair values on the date of acquisition subject to purchase accounting adjustments. The excess of the purchase price over the estimated fair values of the net tangible and intangible assets and liabilities assumed or acquired is recorded as goodwill. If the estimated fair values of net tangible and intangible assets acquired and liabilities assumed exceed the purchase price, a bargain purchase gain is recorded. The Company's estimates of fair value are based on historical experience, industry knowledge, certain information obtained from the management of the acquired company and, in some cases, valuations performed by independent third-party firms. The results of operations of acquired companies are included in the accompanying Consolidated Statements of Loss since their dates of acquisition. Costs incurred to complete the Business Combination, such as legal, accounting or other professional fees, are charged to selling, general and administrative expenses as incurred.

Recently Issued Accounting Pronouncements

For a discussion of recently issued accounting pronouncements, *see Note 1 of Notes to Consolidated Financial Statements included in Part II, Item 8 of this report for additional information.*

ITEM 7A. QUANTITATIVE AND QUALITATIVE DISCLOSURES ABOUT MARKET RISK

We are exposed to financial market risks, including changes in foreign currency rates, prices of marketable equity and fixed-income securities. In addition, the ongoing global pandemic raises the possibility of an extended economic downturn and has caused volatility in financial markets. The primary objective of the large majority of our investment activities is to preserve principal while at the same time achieve appropriate yields without significantly increasing risk. To achieve this objective, a majority of our marketable securities are investment grade, fixed-rate bonds and municipal money market instruments denominated in U.S. dollars. Our investment policy provides limitations for issuer concentration, by restricting, at the time of purchase, the concentration in any one issuer to 5% of the market value of our total investment portfolio.

We maintain depository investments with certain financial institutions. As of December 31, 2024, $74.0 million of our cash and cash equivalents, primarily foreign depository accounts, were in excess of government provided insured depository limits. Although these depository investments exceed government insured depository limits, we have evaluated the credit worthiness of these financial institutions and determined the risk of material financial loss due to exposure of such credit risk to be minimal.

Interest Rate Risk

As of December 31, 2024, approximately $5.9 million of our cash and investments may be directly affected by changes in interest rates. As of December 31, 2024, we held $5.9 million of cash and variable-rate investments where a change in interest rates would impact our interest income. A hypothetical 50 basis point decline in interest rates as of December 31, 2024, assuming all other variables remain constant, would reduce annualized interest income on our cash and investments by less than $0.1 million. As of December 31, 2024, the carrying amounts of our revolving credit agreements totaled $189.6 million where a change in interest rates would impact our interest expense. A hypothetical 50 basis point increase in interest rates as of December 31, 2024, assuming all other variables remain constant, would increase our interest expense by $1.0 million. The analyses cover our debt and investments. The analyses use actual or approximate maturities for the debt and investments. The discount rates used were based on the market interest rates in effect at December 31, 2024. As of December 31, 2024 we have not entered into any derivative instruments to hedge the impact of the changes in variable interest rates under our revolving credit agreements.

Foreign Currency Exchange Rate Risk

We are exposed to changes in foreign currency exchange rates to the extent that such changes affect our revenue and gross margin on revenue derived from some international customers, operating expenses, and assets and liabilities held in non-functional currencies related to our foreign subsidiaries. Our primary exposures to foreign currency exchange rate movements are with the euro and the British pound. Our revenue is primarily denominated in the respective functional currency of the subsidiary and paid in that subsidiary's functional currency or certain other local currency. The majority of our global supply chain predominately makes payments in U.S. dollars and some of our operating expenses are paid in certain local currencies (approximately 45.2% of total operating expense for the year ended December 31, 2024, respectively). Therefore, our revenue, gross margins, operating expenses and operating loss are all subject to foreign currency fluctuations. As a result, changes in currency exchange rates could cause variations in our operating loss. A hypothetical 10% movement in foreign exchange rates would result in a before-tax positive or negative impact of approximately $7.1 million for the year ended December 31, 2024. Actual future gains and losses associated with our foreign currency exposures and positions may differ materially from the sensitivity analyses performed as of December 31, 2024 due to the inherent limitations associated with predicting the foreign currency exchange rates, and our actual exposures and positions.

We have certain customers and suppliers who are invoiced or pay in a non-functional currency. Changes in the monetary exchange rates used to invoice such customers versus the functional currency of the entity billing such customers may adversely affect our results of operations and financial condition. To manage the volatility relating to these typical business exposures, we may enter into various derivative transactions, when appropriate. We do not hold or issue derivative instruments for trading or other speculative purposes. All non-functional currencies billed would result in a combined hypothetical gain or loss of $7.4 million if the U.S. dollar weakened or strengthened 10% against the billing currencies. All non-functional currencies invoiced by suppliers would result in a combined hypothetical gain or loss of $7.1 million if the U.S. dollar weakened or strengthened 10% against the billing currencies. This change represents an increase in the amount of hypothetical gain or loss compared to prior periods and is mainly due to an increase in U.S. dollar denominated billings in a non-U.S. dollar denominated subsidiary.

As of December 31, 2024, we had certain material contracts subject to currency revaluation, including accounts receivable, accounts payable and lease liabilities denominated in foreign currencies. As of December 31, 2024, we had 39 forward contracts outstanding with a fair value of $0.6 million. The objective of these foreign currency forward contracts is to reduce the impact of currency exchange rate movements on our operating results by offsetting gains and losses on the forward contracts with increases or decreases in foreign currency transactions. We do not use foreign currency contracts for speculative or trading purposes. Hedging of our currency exposures may not always be effective to protect us against currency exchange rate fluctuations. *See Note 10 of the Notes to Consolidated Financial Statements included in Part II, Item 8 of this report.*

On November 3, 2022, the Company entered into a euro/U.S. dollar forward contract arrangement (the "Initial Forward") with Wells Fargo Bank, N.A. (the “Hedge Counterparty”). The Initial Forward, which was governed by the provisions of an ISDA Master Agreement (including schedules thereto and transaction confirmations that supplement such agreement) entered into between the Company and the Hedge Counterparty, enabling the Company to convert a portion of its euro denominated payment obligations under the proposed DPLTA into U.S. Dollars. Under the Initial Forward, the Company agreed to exchange an aggregate notional amount of €160.0 million for U.S. dollars at a daily fixed forward rate ranging from EUR/USD 0.98286 to 1.03290. The aggregate amount of €160.0 million was divided into eight quarterly tranches of €20.0 million, which commenced in the fourth quarter of 2022. During the twelve months ended December 31, 2024, the Company settled four €20.0 million forward contract tranches.

On March 21, 2023, the Company entered into a euro/U.S. dollar forward contract arrangement (the “Forward”) with the Hedge Counterparty. Under the Forward, which was governed by the provisions of an ISDA Master Agreement (including schedules thereto and transaction confirmations that supplement such agreement) entered into between the Company and the Hedge Counterparty, the Company exchanged an aggregate notional amount of €160.0 million for U.S. dollars at an average rate of EUR/USD 1.085. During the twelve months ended December 31, 2024, the Company settled four $20.0 million forward contract tranches. As of December 31, 2024, both the Initial Forward and Forward have fully matured and are no longer outstanding.

For further information about the fair value of our investments as of December 31, 2024, *see Note 10 of the Notes to Consolidated Financial Statements included in Part II, Item 8 of this report.*

ITEM 8. FINANCIAL STATEMENTS AND SUPPLEMENTARY DATA

The following consolidated financial statements are contained in this report.

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PricewaterhouseCoopers LLP; PCAOB Firm ID: 238; Birmingham, Alabama

Report of Independent Registered Public Accounting Firm

To the Board of Directors and Stockholders of ADTRAN Holdings, Inc.

Opinions on the Financial Statements and Internal Control over Financial Reporting

We have audited the accompanying consolidated balance sheets of ADTRAN Holdings, Inc. and its subsidiaries (the "Company") as of December 31, 2024 and 2023, and the related consolidated statements of loss, of comprehensive (loss) income, of changes in equity and of cash flows for each of the three years in the period ended December 31, 2024, including the related notes and financial statement schedule listed in the accompanying index (collectively referred to as the "consolidated financial statements"). We also have audited the Company's internal control over financial reporting as of December 31, 2024, based on criteria established in *Internal Control - Integrated Framework* (2013) issued by the Committee of Sponsoring Organizations of the Treadway Commission (COSO).

In our opinion, the consolidated financial statements referred to above present fairly, in all material respects, the financial position of the Company as of December 31, 2024 and 2023, and the results of its operations and its cash flows for each of the three years in the period ended December 31, 2024 in conformity with accounting principles generally accepted in the United States of America. Also in our opinion, the Company did not maintain, in all material respects, effective internal control over financial reporting as of December 31, 2024, based on criteria established in *Internal Control - Integrated Framework* (2013) issued by the COSO because material weaknesses in internal control over financial reporting existed as of that date related to the Company not (i) designing and maintaining effective controls in response to the risks of material misstatement; (ii) designing and maintaining effective controls over financial statement preparation, presentation and disclosure commensurate with its financial reporting requirements; and (iii) designing and maintaining effective controls to address the initial application of complex accounting standards and accounting of non-routine, unusual or complex events and transactions.

A material weakness is a deficiency, or a combination of deficiencies, in internal control over financial reporting, such that there is a reasonable possibility that a material misstatement of the annual or interim financial statements will not be prevented or detected on a timely basis. The material weaknesses referred to above are described in Management’s Report on Internal Control over Financial Reporting appearing under Item 9A. We considered these material weaknesses in determining the nature, timing, and extent of audit tests applied in our audit of the 2024 consolidated financial statements, and our opinion regarding the effectiveness of the Company’s internal control over financial reporting does not affect our opinion on those consolidated financial statements.

Basis for Opinions

The Company's management is responsible for these consolidated financial statements, for maintaining effective internal control over financial reporting, and for its assessment of the effectiveness of internal control over financial reporting, included in management's report referred to above. Our responsibility is to express opinions on the Company’s consolidated financial statements and on the Company's internal control over financial reporting based on our audits. We are a public accounting firm registered with the Public Company Accounting Oversight Board (United States) (PCAOB) and are required to be independent with respect to the Company in accordance with the U.S. federal securities laws and the applicable rules and regulations of the Securities and Exchange Commission and the PCAOB.

We conducted our audits in accordance with the standards of the PCAOB. Those standards require that we plan and perform the audits to obtain reasonable assurance about whether the consolidated financial statements are free of material misstatement, whether due to error or fraud, and whether effective internal control over financial reporting was maintained in all material respects.

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

Definition and Limitations of Internal Control over Financial Reporting

A company’s internal control over financial reporting is a process designed to provide reasonable assurance regarding the reliability of financial reporting and the preparation of financial statements for external purposes in accordance with generally accepted accounting principles. A company’s internal control over financial reporting includes those policies and procedures that (i) pertain to the maintenance of records that, in reasonable detail, accurately and fairly reflect the transactions and dispositions of the assets of the company; (ii) provide reasonable assurance that transactions are recorded as necessary to permit preparation of financial statements in accordance with generally accepted accounting principles, and that receipts and expenditures of the company are being made only in

accordance with authorizations of management and directors of the company; and (iii) provide reasonable assurance regarding prevention or timely detection of unauthorized acquisition, use, or disposition of the company's assets that could have a material effect on the financial statements.

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

Critical Audit Matters

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

Valuation of Inventory – Estimate of Certain Excess and Obsolete Reserves

As described in Notes 1 and 5 to the consolidated financial statements, the Company's consolidated net inventory as of December 31, 2024 was $269.3 million, of which certain inventory is subject to certain excess and obsolete reserves. Management establishes reserves for estimated excess and obsolete inventory equal to the difference between the cost of the inventory and the estimated net realizable value of the inventory based on estimated reserve percentages, which consider historical usage, known trends, inventory age, and market conditions.

The principal considerations for our determination that performing procedures relating to the valuation of inventory – estimate of certain excess and obsolete reserves is a critical audit matter are (i) the significant judgment by management when developing the estimate of certain excess and obsolete inventory reserves and (ii) a high degree of auditor judgment, subjectivity, and effort in performing procedures and evaluating management's significant assumption related to the estimated reserve percentages.

Addressing the matter involved performing procedures and evaluating audit evidence in connection with forming our overall opinion on the consolidated financial statements. These procedures included testing the effectiveness of controls relating to certain excess and obsolete inventory reserves, including controls over the significant assumption related to estimated reserve percentages. These procedures also included, among others (i) testing management's process for developing the estimate of certain excess and obsolete inventory reserves; (ii) evaluating the appropriateness of management's estimation methodology; (iii) testing the completeness and accuracy of the underlying data used in developing the estimate of certain excess and obsolete inventory reserves, including historical usage, known trends, and inventory age; and (iv) evaluating the reasonableness of the significant assumption used by management related to the estimated reserve percentages. Evaluating management's assumption related to the estimated reserve percentages involved considering (i) the current and past results of the Company; (ii) a comparison of the prior year estimate to actual activity in the current year; and (iii) whether the assumption was consistent with evidence obtained in other areas of the audit.

Accounts Receivable Factoring

As described in Notes 1 and 2 to the consolidated financial statements, on July 1, 2024, the Company entered into a receivables purchase agreement (the "Factoring Agreement") with a third-party financial institution (the "Factor"), which accelerates receivable collection. Total accounts receivables factored as of December 31, 2024 totaled $18.3 million, of which $3.7 million was retained pursuant to the Factoring Agreement in the reserve account. These transactions result in a reduction in accounts receivable because the Factoring Agreement transfers effective control and risk related to the receivables to the buyers. On each sale date, the Factor retains from the sale price a default reserve, up to a required balance, which is held by the Factor in a reserve account and pledged to the Company. The Factor is entitled to withdraw from the reserve account the sale price of a defaulted receivable.

The principal considerations for our determination that performing procedures relating to the accounts receivable factoring is a critical audit matter are a high degree of auditor effort in performing procedures and evaluating audit evidence related to evaluating the Factoring Agreement. As described in the "Opinions on the Financial Statements and Internal Control over Financial Reporting" section, a material weakness was identified related to this matter.

Addressing the matter involved performing procedures and evaluating audit evidence in connection with forming our overall opinion on the consolidated financial statements. These procedures included, among others (i) reading the Factoring Agreement; (ii) evaluating management's assessment that the transactions under the Factoring Agreement were appropriately accounted for; (iii) confirming the accounts receivables factored as of December 31, 2024 with the Factor; (iv) testing the classification of accounts receivable factored, including whether balances have been properly excluded from the accounts receivable balance as of December 31, 2024; and (v) evaluating the sufficiency of the disclosures in the consolidated financial statements.

Interim Goodwill and Asset Group Impairment Assessments – Network Solutions Reporting Unit and Asset Group

As described in Notes 1, 8, and 9 to the consolidated financial statements, the Company's goodwill balance was $52.9 million as of December 31, 2024, and the goodwill associated with the Network Solutions reporting unit was $0 million. The Company's long-lived assets, such as property, plant and equipment, right of use lease assets, and purchased intangibles subject to amortization were $418.2 million as of December 31, 2024, and the long-lived assets associated with the Network Solutions asset group were $358.6 million. Goodwill is tested by management for impairment annually during the fourth quarter and reviewed for impairment if an event occurs or circumstances change that would more likely than not reduce the fair value of the reporting units below their carrying amount. Long lived assets are reviewed by management for impairment whenever events or changes in circumstances indicate that the carrying amount of an asset may not be recoverable. During the first quarter of 2024, management identified factors triggering a quantitative impairment assessment for the Company's reporting units and Network Solutions asset group, resulting in a $292.6 million goodwill impairment charge for the Network Solutions reporting unit. Management determined the fair value of the Network Solutions reporting unit using a combination of an income approach and a market approach. Recoverability of assets to be held and used is measured by a comparison of the carrying amount of an asset to estimated undiscounted future cash flows expected to be generated by the asset group. The significant inputs and assumptions used in the determination of the fair value of the reporting unit requires significant judgment and the use of estimates and assumptions related to revenue growth rates, earnings before interest, taxes, depreciation and amortization ("EBITDA") margins, discount rate, peer group determination, and revenue and EBITDA market multiples. The significant inputs and assumptions used in the determination of the cash flows expected to be generated by the asset group requires significant judgment and the use of estimates and assumptions related to revenue growth rates, EBITDA margins, peer group determination, and disposition exit multiple.

The principal considerations for our determination that performing procedures relating to the interim goodwill and asset group impairment assessments of the Network Solution reporting unit and asset group is a critical audit matter are (i) the significant judgment by management when developing the fair value estimate of the Network Solutions reporting unit and when developing the cash flows expected to be generated by the Network Solutions asset group; (ii) a high degree of auditor judgment, subjectivity, and effort in performing procedures and evaluating management's significant assumptions related to (a) revenue growth rates and EBITDA margins for the Network Solutions reporting unit and asset group, (b) revenue and EBITDA market multiples for the Network Solutions reporting unit, and (c) disposition exit multiple for the Network Solutions asset group (collectively, the "aforementioned assumptions"); and (iii) the audit effort involved the use of professionals with specialized skill and knowledge.

Addressing the matter involved performing procedures and evaluating audit evidence in connection with forming our overall opinion on the consolidated financial statements. These procedures included testing the effectiveness of controls relating to management's goodwill and asset group impairment assessments, including controls over the valuation of the Network Solutions reporting unit and asset group. These procedures also included, among others (i) testing management's process for developing the fair value estimate of the Network Solutions reporting unit and for developing the cash flows expected to be generated by the Network Solutions asset group; (ii) evaluating the appropriateness of the income approach, market approach, and undiscounted future cash flows approach used by management; (iii) testing the completeness and accuracy of underlying data used by management in the income approach, market approach, and undiscounted future cash flows approach; and (iv) evaluating the reasonableness of the significant assumptions used by management related to the aforementioned assumptions. Evaluating management's assumptions related to revenue growth rates and EBITDA margins for the Network Solutions reporting unit and asset group involved evaluating whether the assumptions used by management were reasonable considering (i) the current and past performance of the Network Solutions reporting unit and asset group; (ii) the consistency with external market and industry data; and (iii) whether the assumptions were consistent with evidence obtained in other areas of the audit. Professionals with specialized skill and knowledge were used to assist in evaluating (i) the appropriateness of the income approach, market approach, and undiscounted future cash flows approach and (ii) the reasonableness of the revenue and EBITDA market multiples assumptions for the Network Solutions reporting unit and disposition exit multiple assumption for the Network Solutions asset group.

/s/ PricewaterhouseCoopers LLP
Birmingham, Alabama
March 3, 2025

We have served as the Company's auditor since 1986.

Financial Statements

ADTRAN Holdings, Inc.
Consolidated Balance Sheets
(In thousands, except per share amount)
December 31, 2024 and 2023

ASSETS	***2024***	***2023***
Current Assets		
Cash and cash equivalents	$ 77,567	$ 87,167
Accounts receivable, less allowance for credit losses of $1,300 and $400 as of December 31, 2024 and 2023, respectively	178,030	216,445
Other receivables	9,775	17,450
Income tax receivable	5,461	7,933
Inventory, net	269,337	362,295
Assets held for sale	11,901	—
Prepaid expenses and other current assets	58,534	45,566
Total Current Assets	**610,605**	**736,856**
Property, plant and equipment, net	102,942	113,582
Deferred tax assets, net	17,826	25,787
Goodwill	52,918	353,415
Intangibles, net	284,893	337,423
Other non-current assets	78,128	87,706
Long-term investments	32,060	27,743
Total Assets	**$ 1,179,372**	**$ 1,682,512**
LIABILITIES AND EQUITY		
Current Liabilities		
Accounts payable	$ 170,451	$ 162,922
Unearned revenue	52,701	46,731
Accrued expenses and other liabilities	35,704	36,204
Accrued wages and benefits	32,853	27,030
Income tax payable	1,936	5,221
Total Current Liabilities	**293,645**	**278,108**
Non-current revolving credit agreement outstanding	189,576	195,000
Deferred tax liabilities	30,690	35,655
Non-current unearned revenue	22,065	25,109
Non-current pension liability	8,983	12,543
Deferred compensation liability	33,203	29,039
Non-current lease obligations	25,925	31,420
Other non-current liabilities	17,928	28,657
Total Liabilities	**622,015**	**635,531**
Commitments and contingencies (see Note 18)		
Redeemable Non-Controlling Interest	422,943	442,152
Equity		
Common stock, par value $0.01 per share; 200,000 shares authorized; 79,483 shares issued and 79,218 outstanding as of December 31, 2024 and 78,970 shares issued and 78,674 shares outstanding as of December 31, 2023	795	790
Additional paid-in capital	808,913	795,304
Accumulated other comprehensive income	10,897	47,465
Retained deficit	(680,993)	(232,905)
Less treasury stock at cost: 266 and 297 shares as of December 31, 2024 and 2023, respectively	(5,198)	(5,825)
Total Equity	**134,414**	**604,829**
Total Liabilities and Equity	**$ 1,179,372**	**$ 1,682,512**

See accompanying notes to consolidated financial statements.

ADTRAN Holdings, Inc.
Consolidated Statements of Loss
(In thousands, except per share amounts)
Years ended December 31, 2024, 2023 and 2022

	2024	*2023*	*2022*
Revenue			
Network Solutions	$ 738,964	$ 974,389	$ 916,793
Services & Support	183,756	174,711	108,743
Total Revenue	**922,720**	**1,149,100**	**1,025,536**
Cost of Revenue			
Network Solutions	511,070	722,582	647,105
Network Solutions - charges and inventory write-down	8,597	24,313	—
Services & Support	72,739	69,142	51,179
Total Cost of Revenue	**592,406**	**816,037**	**698,284**
Gross Profit	**330,314**	**333,063**	**327,252**
Selling, general and administrative expenses	233,369	258,149	208,889
Research and development expenses	221,463	258,311	173,757
Asset impairment	—	—	17,433
Goodwill impairment	292,583	37,874	—
Operating Loss	**(417,101)**	**(221,271)**	**(72,827)**
Interest and dividend income	3,058	2,340	2,123
Interest expense	(22,053)	(16,299)	(3,437)
Net investment gain (loss)	3,587	2,754	(11,339)
Other income, net	246	1,266	14,517
Loss Before Income Taxes	**(432,263)**	**(231,210)**	**(70,963)**
Income tax (expense) benefit	(8,785)	(28,133)	62,075
Net Loss	**$ (441,048)**	**$ (259,343)**	**$ (8,888)**
Net Income (Loss) attributable to non-controlling interest [1]	**9,824**	**6,946**	**(6,851)**
Net Loss attributable to ADTRAN Holdings, Inc.	**$ (450,872)**	**$ (266,289)**	**$ (2,037)**
Weighted average shares outstanding – basic	78,928	78,416	62,346
Weighted average shares outstanding – diluted	78,928	78,416	62,346
Loss per common share attributable to ADTRAN Holdings, Inc. – basic	$ (5.67) [2]	$ (3.39)	$ (0.03)
Loss per common share attributable to ADTRAN Holdings, Inc. – diluted	$ (5.67) [2]	$ (3.39)	$ (0.03)

(1) For the year ended December 31, 2024 we accrued $9.8 million of net income attributable to non-controlling interest, representing the recurring cash compensation earned by non-controlling interest shareholders post-DPLTA. For the year ended December 31, 2023, we accrued $10.1 million, representing the recurring cash compensation earned by non-controlling interest shareholders post-DPLTA, partially offset by a $3.2 million net loss attributable to non-controlling interests pre-DPLTA.12-24

(2) Loss per common share attributable to ADTRAN Holdings, Inc. - basic and diluted - reflects a $3.0 million effect of redemption of RNCI for the year ended December 31, 2024. See Note 19 for additional information.

See accompanying notes to consolidated financial statements.

ADTRAN Holdings, Inc.
Consolidated Statements of Comprehensive (Loss) Income
(In thousands)
Years ended December 31, 2024, 2023 and 2022

	2024	*2023*	*2022*
Net Loss	$ (441,048)	$ (259,343)	$ (8,888)
Other Comprehensive (Loss) Income, net of tax			
Net unrealized gain (loss) on available-for-sale securities	—	454	(284)
Defined benefit plan adjustments	1,479	(1,490)	4,597
Foreign currency translation (loss) gain	(38,047)	22,757	53,396
Other Comprehensive (Loss) Income, net of tax	**(36,568)**	**21,721**	**57,709**
Comprehensive (Loss) Income, net of tax	**(477,616)**	**(237,622)**	**48,821**
Less: Comprehensive Income attributable to non-controlling interest	**9,824**	**7,328**	**12,818**
Comprehensive (Loss) Income attributable to ADTRAN Holdings, Inc., net of tax	**$ (487,440)**	**$ (244,950)**	**$ 36,003**

See accompanying notes to consolidated financial statements.

ADTRAN Holdings, Inc.
Consolidated Statements of Changes in Equity
(In thousands, except per share amounts)
Years ended December 31, 2024, 2023 and 2022

	Common Shares	Common Stock	Additional Paid-In Capital	Retained Earnings (Deficit)	Treasury Stock	Accumulated Other Comprehensive Income (Loss)	Non-controlling interest	Total Equity
Balance as of December 31, 2021	**79,652**	**$ 797**	**$ 288,946**	**$ 740,820**	**$ (661,547)**	**$ (11,914)**	**$ —**	**$ 357,102**
Net loss	—	—	—	(2,037)	—	—	(6,851)	(8,888)
Acquisition of Adtran Networks	27,995	280	577,980	—	—	—	316,415	894,675
Retirement of treasury stock	(30,330)	(303)	—	(655,761)	656,064	—	—	—
Other comprehensive income, net of tax	—	—	—	—	—	38,040	19,669	57,709
Dividend payments ($0.09 per share)	—	—	—	(22,885)	—	—	—	(22,885)
Dividends accrued on unvested restricted stock units	—	—	—	353	—	—	—	353
Deferred compensation adjustments, net of tax	—	—	—	—	(71)	—	—	(71)
ADTRAN RSUs and restricted stock vested	372	4	—	(10,482)	631	—	—	(9,847)
ADTRAN stock options exercised	399	3	—	5,330	798	—	—	6,131
Reclassification of Adtran Networks stock options	—	—	187	—	—	—	99	286
Adtran Networks stock options exercised	—	—	472	—	—	—	254	726
ADTRAN stock-based compensation expense	—	—	26,141	—	—	—	—	26,141
Adtran Networks stock-based compensation expense	—	—	2,108	—	—	—	73	2,181
Balance as of December 31, 2022	**78,088**	**781**	**895,834**	**55,338**	**(4,125)**	**26,126**	**329,659**	**1,303,613**
Net loss	—	—	—	(256,164)	—	—	(3,179)	(259,343)
Annual recurring compensation earned	—	—	—	(10,125)	—	—	—	(10,125)
Reclassification and remeasurement from equity to mezzanine equity for non-controlling interests in Adtran Networks	—	—	(116,895)	—	—	—	(326,862)	(443,757)
Other comprehensive income, net of tax	—	—	—	—	—	21,339	382	21,721
Dividend payments ($0.09 per share)	—	—	—	(21,237)	—	—	—	(21,237)
Dividends accrued on unvested restricted stock units	—	—	—	8	—	—	—	8
Deferred compensation adjustments, net of tax	—	—	—	(145)	(1,700)	—	—	(1,845)
ADTRAN RSUs and restricted stock vested	859	9	—	(1,115)	—	—	—	(1,106)
ADTRAN stock options exercised	23	—	—	164	—	—	—	164
Redemption of redeemable non-controlling interest	—	—	—	371	—	—	—	371
Adtran Networks stock options exercised	—	—	323	—	—	—	—	323
ADTRAN stock-based compensation expense	—	—	16,016	—	—	—	—	16,016
Adtran Networks stock-based compensation expense	—	—	26	—	—	—	—	26
Balance as of December 31, 2023	**78,970**	**790**	**795,304**	**(232,905)**	**(5,825)**	**47,465**	**—**	**604,829**
Net loss	—	—	—	(441,048)	—	—	—	(441,048)
Annual recurring compensation earned	—	—	—	(9,824)	—	—	—	(9,824)
Remeasurement of redeemable non-controlling interest	—	—	(1,175)	—	—	—	—	(1,175)
Other comprehensive loss, net of tax	—	—	—	—	—	(36,568)	—	(36,568)
Deferred compensation adjustments, net of tax	—	—	(368)	—	627	—	—	259
ADTRAN RSUs and restricted stock vested	374	4	—	(1,026)	—	—	—	(1,022)
ADTRAN stock options exercised	139	1	—	824	—	—	—	825
Modification of Stock Options	—	—	(190)	—	—	—	—	(190)
Redemption of redeemable non-controlling interest	—	—	—	2,986	—	—	—	2,986
ADTRAN stock-based compensation expense	—	—	14,825	—	—	—	—	14,825
Adtran Networks stock-based compensation expense	—	—	517	—	—	—	—	517
Balance as of December 31, 2024	**79,483**	**$ 795**	**$ 808,913**	**$ (680,993)**	**$ (5,198)**	**$ 10,897**	**$ —**	**$ 134,414**

See accompanying notes to consolidated financial statements.

ADTRAN Holdings, Inc.
Consolidated Statements of Cash Flows
(In thousands)
Years ended December 31, 2024, 2023 and 2022

	2024	2023	2022
Cash flows from operating activities:			
Net Loss	$ (441,048)	$ (259,343)	$ (8,888)
Adjustments to reconcile net loss to net cash provided by (used in) operating activities:			
Depreciation and amortization	90,985	112,949	67,553
Asset impairment	—	—	17,433
Goodwill impairment	292,583	37,874	—
Amortization of debt issuance cost	3,950	862	288
(Accretion) amortization on available-for-sale investments, net	—	(22)	19
(Gain) loss on investments	(5,030)	(2,900)	9,826
Net loss on disposal of property, plant and equipment	1,371	458	152
Stock-based compensation expense	15,342	16,016	28,322
Deferred income taxes	2,247	15,558	(62,388)
Inventory write down - business efficiency program	4,135	24,313	—
Inventory reserves	3,980	25,546	(2,363)
Other, net	—	(2,942)	—
Change in operating assets and liabilities:			
Accounts receivable, net	46,108	65,612	788
Other receivables	10,713	10,315	(20,088)
Income taxes receivable	648	(2,637)	—
Inventory	75,171	20,537	(73,237)
Prepaid expenses, other current assets and other assets	(10,718)	(29,883)	(7,116)
Accounts payable	11,784	(91,907)	28,105
Accrued expenses and other liabilities	5,519	17,929	(20,483)
Income taxes payable	(4,670)	(3,939)	(2,151)
Net cash provided by (used in) operating activities	**103,070**	**(45,604)**	**(44,228)**
Cash flows from investing activities:			
Purchases of property, plant and equipment	(32,454)	(33,683)	(17,072)
Purchases of intangibles - developed technology	(30,671)	(9,438)	—
Proceeds from sales and maturities of available-for-sale investments	1,240	10,567	51,661
Purchases of available-for-sale investments	(268)	(868)	(23,899)
(Payments) for and proceeds from beneficial interests in securitized accounts receivable	(55)	1,218	1,126
Proceeds from disposals of property, plant and equipment	—	—	12
Acquisition of business, net of cash acquired	—	—	44,003
Net cash (used in) provided by investing activities	**(62,208)**	**(32,204)**	**55,831**
Cash flows from financing activities:			
Tax withholdings related to stock-based compensation settlements	(1,143)	(6,458)	(4,253)
Proceeds from stock option exercises	824	540	6,904
Dividend payments	—	(21,237)	(22,885)
Proceeds from receivables purchase agreement	68,556	14,099	—
Repayments on receivables purchase agreement	(83,772)	—	—
Proceeds from draw on revolving credit agreements	26,000	163,733	141,887
Repayment of revolving credit agreements	(31,000)	(64,987)	(48,000)
Redemption of redeemable non-controlling interest	(17,398)	(1,224)	—
Payment of annual recurring compensation to non-controlling interest	(10,084)	—	—
Payment of debt issuance cost	(1,994)	(708)	(3,015)
Repayment of notes payable	—	(24,891)	(17,702)
Net cash (used in) provided by financing activities	**(50,011)**	**58,867**	**52,936**
Net (decrease) increase in cash and cash equivalents	(9,149)	(18,941)	64,539
Effect of exchange rate changes	(451)	(2,536)	(12,713)
Cash, cash equivalents and restricted cash, beginning of year	87,167	108,644	56,818
Cash, cash equivalents and restricted cash, end of year	**$ 77,567**	**$ 87,167**	**$ 108,644**
Supplemental disclosure of cash flow information:			
Cash paid for interest	$ 20,884	$ 12,596	$ 1,728
Cash paid for income taxes, net of refunds	$ 6,691	$ 18,552	$ 3,832
Cash used in operating activities related to operating leases	$ 9,274	$ 9,682	$ 5,229
Supplemental disclosure of non-cash investing activities:			
Right-of-use assets obtained in exchange for lease obligations	$ 5,317	$ 17,865	$ 3,410
Purchases of property, plant and equipment included in accounts payable	$ 2,635	$ 1,298	$ 1,165
Redemption of redeemable non-controlling interest	$ 2,986	$ 371	$ —
Adtran Networks common shares exchanged in acquisition	$ —	$ —	$ 565,491
Adtran Networks options assumed in acquisition	$ —	$ —	$ 12,769
Non-controlling interest related to Adtran Networks	$ —	$ —	$ 316,415

See accompanying notes to consolidated financial statements.

GENERAL

ADTRAN Holdings, Inc. ("Adtran" or the "Company") is a leading global provider of networking and communications platforms, software, systems and services focused on the broadband access market, serving a diverse domestic and international customer base in multiple countries that includes large, medium and small Service Providers, alternative Service Providers, such as utilities, municipalities and fiber overbuilders, cable/MSOs, SMBs and distributed enterprises, including Fortune 500 companies with sophisticated business continuity applications; and federal, state and local government agencies. Our innovative solutions and services enable voice, data, video and internet-communications across a variety of network infrastructures and are currently in use by millions worldwide. We support our customers through our direct global sales organization and our distribution networks. Our success depends upon our ability to increase unit volume and market share through the introduction of new products and succeeding generations of products having optimal selling prices and increased functionality as compared to both the prior generation of a product and to the products of competitors in order to gain market share. To service our customers and grow revenue, we are continually conducting research and developing new products addressing customer needs and testing those products for the specific requirements of the particular customers. We offer a broad portfolio of flexible software and hardware network solutions and services that enable Service Providers to meet today's service demands, while enabling them to transition to the fully converged, scalable, highly-automated, cloud-controlled voice, data, internet and video network of the future. In addition to our global headquarters in Huntsville, Alabama, and our European headquarters in Munich, Germany, we have sales and research and development facilities in strategic global locations.

The Company solely owns ADTRAN, Inc. and is the majority shareholder of Adtran Networks SE ("Adtran Networks"). ADTRAN, Inc. is a leading global provider of open, disaggregated networking and communications solutions. Adtran Networks is a global provider of network solutions for data, storage, voice and video services. We believe that the combined technology portfolio can best address current and future customer needs for high-speed connectivity from the network core to the end consumer, especially upon the convergence of solutions at the network edge.

Liquidity, Domination and Profit and Loss Transfer Agreement and Credit Facility

The DPLTA between the Company, as the controlling company, and Adtran Networks SE ("Adtran Networks"), as the controlled company, as executed on December 1, 2022, became effective on January 16, 2023, as a result of its registration with the commercial register (*Handelsregister*) of the local court (*Amtsgericht*) at the registered seat of Adtran Networks (Jena).

Under the DPLTA, subject to certain limitations pursuant to applicable law and the specific terms of the DPLTA, (i) the Company is entitled to issue binding instructions to the management board of Adtran Networks, (ii) Adtran Networks will transfer its annual profit to the Company, subject to, among other things, the creation or dissolution of certain reserves, and (iii) the Company will generally absorb the annual net loss incurred by Adtran Networks. The Company's payment obligation in satisfaction of the requirement that it absorb Adtran Networks' annual net loss applied for the first time to the net loss generated in 2023.

Pursuant to the terms of the DPLTA, each Adtran Networks shareholder (other than the Company) has received an offer to elect either (1) to remain an Adtran Networks shareholder and receive from us an Annual Recurring Compensation payment, or (2) to receive Exit Compensation plus guaranteed interest. The guaranteed interest under the Exit Compensation is calculated from the effective date of the DPLTA to the date the shares are tendered, less any Annual Recurring Compensation paid. The guaranteed interest rate is 5.0% plus a variable component (according to the German Civil Code) that was 3.37% as of December 31, 2024. Assuming all the minority holders of currently outstanding Adtran Networks shares were to elect the second option, we would be obligated to make aggregate Exit Compensation payments, including guaranteed interest, of approximately €333.2 million or approximately $344.9 million, based on an exchange rate as of December 31, 2024 and reflecting interest accrued through December 31, 2024 during the pendency of the appraisal proceedings discussed below. Shareholders electing the first option of Annual Recurring Compensation may later elect the second option. The opportunity for outside Adtran Networks shareholders to tender Adtran Networks shares in exchange for Exit Compensation had been scheduled to expire on March 16, 2023. However, due to the appraisal proceedings that have been initiated in accordance with applicable German law, this time period for tendering shares has been extended pursuant to the German Stock Corporation Act (*Aktiengesetz*) and will end two months after the date on which a final decision in such appraisal proceedings has been published in the Federal Gazette (*Bundesanzeiger*). The Company expects to receive a procedural decision during 2025 that will likely be appealed. The date of a decision by the court on the merits of the case is uncertain, but it is unlikely that such decision will be rendered in 2025. Thereafter an expected appeal process will take a further 12-24 months to resolve.

Additionally, our obligation to pay Annual Recurring Compensation under the DPLTA is a continuing payment obligation, which will amount to approximately €8.9 million (or $9.3 million based on the current exchange rate) per year assuming none of the minority Adtran Networks shareholders as of December 31, 2024 were to elect Exit Compensation. The foregoing amounts do not reflect any potential increase in payment obligations that we may have depending on the outcome of ongoing appraisal proceedings in Germany. The Annual Recurring Compensation is due on the third banking day following the ordinary general shareholders' meeting of Adtran

Networks for the respective preceding fiscal year (but in any event within eight months following expiration of the fiscal year). With respect to the 2023 fiscal year, Adtran Networks' ordinary general shareholders' meeting occurred on June 28, 2024 and, therefore, the Annual Recurring Compensation was paid on July 3, 2024. With respect to the 2024 fiscal year, Adtran Networks' ordinary general shareholder meeting is scheduled for June 27, 2025 and, therefore, the Annual Recurring Compensation will be due on July 2, 2025. During the year ended December 31, 2024 and 2023, we accrued $9.8 million and $10.1 million, respectively, in Annual Recurring Compensation. The Annual Recurring Compensation is reflected as an increase to retained deficit in the Consolidated Balance Sheets.

On October 18, 2022, the Company's Board of Directors authorized the Company to purchase additional shares of Adtran Networks through open market purchases not to exceed 15,346,544 shares. For the year ended December 31, 2024, approximately 831 thousand shares of Adtran Networks stock were tendered to the Company. This resulted in total Exit Compensation payments of approximately €15.7 million, or approximately $17.4 million, based on exchange rates at the time of the transactions, being paid to Adtran Networks shareholders. For the year ended December 31, 2023, a total of 67 thousand shares of Adtran Networks stock was tendered to the Company and Exit Compensation payments of approximately €1.2 million or approximately $1.3 million based on an exchange rate as of December 31, 2023, were paid to Adtran Networks shareholders.

On July 18, 2022, ADTRAN, Inc., as the borrower, and ADTRAN Holdings, Inc. entered into a credit agreement with a syndicate of banks, including Wells Fargo Bank, National Association, as administrative agent ("Administrative Agent"), and the other lenders named therein ("Credit Agreement"), which has since been amended four times. The Company had access to $180.8 million on its Credit Facility for future borrowings; however, as of December 31 2024, the Company was limited to additional borrowings of $56.1 million based on debt covenant compliance metrics. The financial covenants under the Credit Agreement, as amended, require the Company to maintain a Consolidated Total Net Leverage Ratio of 5.00x, a Consolidated Senior Secured Net Leverage Ratio of 3.25x (4.0x to 3.5x during a Springing Covenant Period) and a Consolidated Fixed Charge Coverage Ratio of 1.25x. *See Note 11, Credit Agreements for additional information regarding the terms of the Wells Fargo Credit Agreement and its amendments.*

As of December 31, 2024, and as of the date of issuance of these financial statements, the Company does not have sufficient liquidity to meet payment obligations under the DPLTA pertaining to Exit Compensation. While the Company did experience $17.4 million of redemptions during 2024, we believe the probability that more than a small minority of Adtran Networks shareholders elect to receive Exit Compensation in the next twelve months is remote based on the following factors: (i) the shareholders can exercise their right to receive the Exit Compensation until two months after publication of the final decision in the appraisal proceedings and we do not expect the publication of the final decision for at least another 12 months; (ii) the diverse base of shareholders that must make this election on an individual shareholder basis; (iii) the fact that the Company expects to receive a procedural decision during 2025 that will likely be appealed and, while the date of a decision by the court on the merits of the case is uncertain, it is unlikely that such decision will be rendered in 2025 and an expected appeal process will take a further 12-24 months to resolve; (iv) the current guaranteed Annual Recurring Compensation payment; and (v) the current trading value of Adtran Networks shares.

The Company experienced revenue declines in 2024. The Company is implementing plans to preserve cash liquidity to maintain compliance with the Company's covenants in case of further impacts related to customer inventory reduction initiatives and uncertain macroeconomic conditions. Additionally, the Company suspended dividend payments and effectuated a Business Efficiency Program. The Business Efficiency Program was substantially completed as of December 31, 2024, other than the Company's aim of selling its headquarters. The Company has determined that it is probable that the sale of our headquarters in Huntsville will occur within the next twelve months after December 31, 2024. We may need to further reduce capital expenditure and/or take other steps to preserve working capital in order to ensure that we can meet our needs and obligations and maintain compliance with our debt covenants.

In summary, the Company believes that its cash and cash equivalents, investments, working capital management initiatives and availability to access cash under the Wells Fargo credit facility will be adequate to meet our business operating requirements, our capital expenditures and our expected obligations under the DPLTA, including anticipated levels of Exit Compensation and to support our ability to continue to comply with our debt covenants under the Credit Facility, for at least the next twelve months, from the issuance of these financial statements. *See Note 11, Credit Agreements, for additional information regarding the terms of the Amendments of the Wells Fargo Credit agreement.*

Note 1 - Summary Of Significant Accounting Policies

Basis of Presentation

The accompanying Consolidated Financial Statements have been prepared in accordance with accounting principles generally accepted in the U.S. ("U.S. GAAP") and include the financial position, results of operations, comprehensive (loss) income, changes in equity and cash flows of Adtran and its wholly-owned subsidiaries. All intercompany accounts and transactions have been eliminated in consolidation.

Revision of Previously Issued Consolidated Financial Statements

Following the third quarter of 2024, the Company identified errors primarily impacting the carrying values of the redeemable non-controlling interest, retained deficit, the net income attributable to the non-controlling interest and the net loss attributable to the Company and, as a consequence, of the loss per common share attributable to the Company. The Company has evaluated the errors and determined that the related impacts were not material to the previously issued consolidated financial statements for any prior period. A summary of the corrections to the Company's Consolidated Financial Statements for the periods ended March 31, 2023, June 30, 2023, September 30, 2023, December 31, 2023, March 31, 2024 and June 30, 2024, are as follows:

(a) Pursuant to the terms of the DPLTA, each Adtran Networks shareholder (other than the Company) is entitled to receive from us an Annual Recurring Compensation payment of €0.52 per share. The Company erroneously accrued this liability every quarter at €0.59 per share, overstating the associated accrual, the net income attributable to non-controlling interest and the net loss attributable to ADTRAN Holdings, Inc. for fiscal periods beginning with the quarter ended March 31, 2023 through the quarter ended June 30, 2024.

(b) For the periods beginning with the quarter ended March 31, 2023 through the quarter ended June 30, 2024 the Company remeasured the redeemable non-controlling interest each quarter-end at the current exchange rate of euros to U.S. Dollar. The Company treated the redeemable non-controlling interest as a monetary mezzanine equity instrument but should have treated it as a non-monetary mezzanine equity instrument not subject to remeasurement.

The following tables reflect the impact of the revisions to the specific line items presented in the Company's previously reported Consolidated Balance Sheet as of December 31, 2023, the Consolidated Statement of Loss and the Consolidated Statement of Comprehensive Loss for the year ended December 31, 2023.

	December 31, 2023			
(In thousands)	As Previously Reported	Revision		As Revised
Accrued Expenses and Other Liabilities	$ 37,607	$ (1,403)	(a)	$ 36,204
Total Current Liabilities	**$ 279,511**	**$ (1,403)**		**$ 278,108**
Total Liabilities	**$ 636,934**	**$ (1,403)**		**$ 635,531**
Redeemable Non-Controlling Interest	$ 451,756	$ (9,604)	(b)	$ 442,152
Accumulated Other Comprehensive Income	$ 47,461	$ 4	(a)	$ 47,465
Retained Deficit	$ (243,908)	$ 11,003	(a) (b)	$ (232,905)
Total Equity	**$ 593,822**	**$ 11,007**		**$ 604,829**
Total Liabilities, Redeemable Non-Controlling Interest and Equity	**$ 1,682,512**	**$ —**		**$ 1,682,512**

	For the Year Ended December 31, 2023			
(In thousands)	As Previously Reported	Revision		As Revised
Less: Net Income attributable to non-controlling interest	$ 8,345	$ (1,399)	(a)	$ 6,946
Net Loss attributable to ADTRAN Holdings, Inc.	**$ (267,688)**	**$ 1,399**	**(a)**	**$ (266,289)**
Loss per common share attributable to ADTRAN Holdings, Inc. – basic	$ (3.41)	$ 0.02	(a)	$ (3.39)
Loss per common share attributable to ADTRAN Holdings, Inc. – diluted	$ (3.41)	$ 0.02	(a)	$ (3.39)
Foreign currency translation gain	$ 22,753	$ 4	(a)	$ 22,757
Other Comprehensive Income, net of tax	**$ 21,717**	**$ 4**		**$ 21,721**
Comprehensive Loss, net of tax	**$ (237,626)**	**$ 4**		**$ (237,622)**
Less: Comprehensive Income attributable to non-controlling interest, net of tax	$ 8,727	$ (1,399)	(a)	$ 7,328
Comprehensive Loss attributable to ADTRAN Holdings, Inc., net of tax	**$ (246,353)**	**$ 1,403**	**(a)**	**$ (244,950)**

Use of Estimates

The preparation of financial statements in conformity with U.S. GAAP requires management to make estimates and assumptions that affect the reported amounts of assets and liabilities, the disclosure of contingent assets and liabilities at the date of the financial statements, and the reported amounts of revenue and expense during the reporting period. Significant estimates include allowance for credit losses on accounts receivable and contract assets, excess and obsolete inventory reserves, warranty reserves, customer rebates,

determination and accrual of the deferred revenue related to performance obligations under contracts with customers, estimated costs to complete obligations associated with deferred and accrued revenue and network installations, estimated income tax provision and income tax contingencies, fair value of stock-based compensation, assessment of goodwill and other intangibles for impairment, estimated lives of intangible assets, estimates of intangible assets upon measurement, estimated pension liability and fair value of investments and estimated contingent liabilities. Actual amounts could differ significantly from these estimates.

We assessed certain accounting matters that generally require consideration of forecasted financial information in context with the information reasonably available to us and the unknown future impacts of ongoing inflationary pressures, continued elevated interest rates, instability in the financial services industry, currency fluctuations and political tensions as of December 31, 2024, and through the date of this report. These conditions could result in further impacts to the Company's consolidated financial statements in future reporting periods. The accounting matters assessed included, but were not limited to, the allowance for credit losses, stock-based compensation, carrying value of goodwill, intangibles and other long-lived assets, financial assets, valuation allowances for tax assets, revenue recognition and costs of revenue.

Summary of Significant Accounting Policies

Cash and Cash Equivalents

Cash and cash equivalents represent demand deposits, money market funds and short-term investments classified as available-for-sale with original maturities of three months or less. We maintain depository investments with certain financial institutions. As of December 31, 2024 $74.0 million of our cash and cash equivalents, primarily certain domestic money market funds and foreign depository accounts, were in excess of government provided insured depository limits. Although these depository investments may exceed government insured depository limits, we have evaluated the credit worthiness of these applicable financial institutions and determined the risk of material financial loss due to the exposure of such credit risk to be minimal.

Fair Value of Financial Instruments

Fair value is defined as the price that would be received to sell an asset or paid to transfer a liability in an orderly transaction between market participants at the measurement date. Where available, fair value is based on observable market prices or parameters or derived from such prices or parameters. Where observable prices or inputs are not available, valuation models may be applied. Assets and liabilities recorded at fair value in our consolidated balance sheets are categorized based upon the level of judgment associated with the inputs used to measure their fair values.

The carrying amounts reported in the Consolidated Balance Sheets for cash and cash equivalents, accounts receivable and accounts payable approximate fair value due to the immediate or short-term maturity of these financial instruments.

The fair value measurements of our derivative instruments are determined using models that maximize the use of the observable market inputs including interest rate curves and both forward and spot prices for currencies, and are classified as Level II under the fair value hierarchy. The fair values of our derivatives are included in Note 10.

Investments with contractual maturities beyond one year may be classified as short-term based on their highly liquid nature and because such marketable securities represent the investment of cash that is available for current operations. Despite the long-term nature of their stated contractual maturities, we routinely buy and sell these securities and we believe we have the ability to quickly sell them to the remarketing agent, tender agent or issuer at par value plus accrued interest in the event we decide to liquidate our investment in a particular variable rate demand note. All income generated from these investments is recorded as interest income. We have not recorded any losses relating to variable rate demand notes.

Long-term investments is comprised of our deferred compensation plan assets, marketable equity securities and other equity investments. Marketable equity securities are reported at fair value as determined by the most recently traded price of the securities at the balance sheet date, although the securities may not be readily marketable due to the size of the available market. Any changes in fair value are recognized in net investment gain (loss). Realized gains and losses on sales of debt securities are computed under the specific identification method and are included in other income, net. *See Note 4 for additional information.*

Accounts Receivable

The Company records accounts receivable at amortized cost. Prior to establishing payment terms for a new customer, we evaluate the credit risk of the customer. Credit limits and payment terms established for new customers are re-evaluated periodically based on customer collection experience and other financial factors. As of December 31, 2024, no customer comprised more than 10% of our total accounts receivable balance. As of December 31, 2023, a single customer comprised more than 10% of our total accounts receivable balance, which accounted for 11.9% of our total accounts receivable.

The Company regularly reviews the need for an allowance for credit losses related to our outstanding accounts receivable balances using the historical loss-rate method, as well as assessing asset-specific risks. The assessment of asset-specific risks included the evaluation of relevant available information, from internal and external sources, relating to current conditions that may affect a customer’s ability to pay, such as the customer’s current financial condition or credit rating by geographic location, as provided by a third party and/or by

customer, if needed, and overall macro-economic conditions in which the customer operates. Based on this assessment, an allowance for credit losses would be recorded if the Company determined that, based on our historical write-offs, which have been immaterial, and such asset specific risks, there was risk in collectability of the full amount of any accounts receivable.

Accounts Receivable Factoring

Receivables Purchase Agreement

On July 1, 2024, the Company entered into a receivables purchase agreement (the "Factoring Agreement") with a third-party financial institution (the "Factor"), which accelerates receivable collection and helps to better manage cash flow. These transactions are accounted for in accordance with ASC Topic 860 and result in a reduction in accounts receivable because the Factoring Agreement transfers effective control over, and risk related to the receivables to the buyers. Trade accounts receivables balances sold are removed from the Consolidated Balance Sheets and cash received is reflected as cash flows provided by (used in) operating activities in the Consolidated Statements of Cash Flow. Factoring related interest expense is recorded to interest expense on the Consolidated Statements of Loss. On each sale date, the Factor retains from the sale price a default reserve, up to a required balance, which is held by the Factor in a reserve account and pledged to the Company. The Factor is entitled to withdraw from the reserve account the sale price of a defaulted receivable. The balance in the reserve account is included in other assets on the Consolidated Balance Sheets.

Previous Receivables Purchase Agreement

On December 19, 2023, the Company entered into a factoring agreement with a third-party financial institution to sell, on a revolving basis, undivided interests in the Company's accounts receivable. The factoring agreement qualified for treatment as a secured borrowing with a pledge of collateral under Accounting Standards Codification ("ASC") Topic 810, Consolidations, as the Company was considered the primary beneficiary in a variable interest entity created to hold the factored receivables and the Company retained a residual claim on reserves related to the factored receivables. The receivables factored were carried in accounts receivable, less allowance for credit losses on the Consolidated Balance Sheets, the secured borrowings were carried on the Company's Consolidated Balance Sheets as a current liability, in accounts payable, proceeds and repayments of the secured borrowings are reflected as cash flows (used in) provided by financing activities in the Consolidated Statements of Cash Flows and program fees are recorded in interest expense in the Company's Consolidated Statements of Loss. The short-term liability classification of the secured borrowings was based on the estimated timing of the collection of the accounts receivable which were expected to be received within 12 months. The receivables purchase agreement was terminated on July 1, 2024 and there were no secured borrowings under this agreement as of December 31, 2024. *See Note 2 for additional information.*

Inventory

Inventory is carried at the lower of cost and estimated net realizable value, with cost being determined using the first-in, first-out method. Standard costs for material, labor and manufacturing overhead are used to value inventory and are updated at least quarterly. We establish reserves for estimated excess and obsolete inventory equal to the difference between the cost of the inventory and the estimated net realizable value of the inventory based on estimated reserve percentages, which consider historical usage, known trends, inventory age and market conditions. When we dispose of excess and obsolete inventories, the related disposals are charged against the inventory reserve. *See Note 5 for additional information.*

Property, Plant and Equipment

Property, plant and equipment, which is stated at cost, is depreciated using the straight-line method over the estimated useful lives of the assets. We depreciate building and land improvements from 5 to 39 years, office machinery and equipment from three to seven years, engineering machinery and equipment from three to seven years, and computer software from three to five years. Expenditures for repairs and maintenance are charged to expense as incurred. Major improvements that materially prolong the lives of the assets are capitalized. Gains and losses on the disposal of property, plant and equipment are recorded in operating loss. *See Note 6 for additional information.*

Assets Held for Sale

An asset is considered to be held for sale when all the following criteria are met: (i) management commits to a plan to sell the asset; (ii) the asset is available for immediate sale in its present condition; (iii) actions required to complete the sale of the asset have been initiated; (iv) sale of the asset is probable and the completed sale is expected to occur within one year; (v) it is unlikely that the disposal plan will be significantly modified; and (vi) the asset is actively being marketed for sale at a price that is reasonable given its current market value.

The Company records assets held for sale at the lower of their carrying value or fair value. The total carrying value of assets held for sale was $11.9 million as of December 31, 2024 and is separately recorded on the balance sheet.

Intangible Assets

Purchased intangible assets with finite lives are carried at cost less accumulated amortization. Amortization is recorded over the estimated useful lives of the respective assets. *See Note 9 for additional information*.

Impairment of Long-Lived Assets and Intangibles

Long-lived assets, such as property, plant and equipment, right of use lease assets and purchased intangibles subject to amortization, are reviewed for impairment whenever events or changes in circumstances indicate that the carrying amount of an asset may not be recoverable. Recoverability of assets to be held and used is measured by a comparison of the carrying amount of an asset to estimated undiscounted future cash flows expected to be generated by the asset or asset group. If the carrying amount of an asset exceeds its estimated future cash flows, an impairment charge is recognized by the amount by which the carrying amount of the asset exceeds the fair value of the asset or asset group.

During the first quarter of 2024, factors triggered a quantitative impairment assessment for the Network Solutions asset group. The long-lived assets associated with the Network Solutions asset group was approximately $358.6 million as of December 31, 2024

There were no impairment losses for long-lived assets and intangible assets during the years ended December 31, 2024, 2023 and 2022. *See Note 9 for additional information.*

Goodwill

Goodwill represents the excess purchase price over the fair value of net assets acquired. The Company's annual impairment assessment is done at the reporting unit level, which we determined are generally the same as our operating segments, which are identified in Note 16 to the Consolidated Financial Statements. We review goodwill for impairment annually during the fourth quarter and also test for impairment between annual tests if an event occurs or circumstances change that would more likely than not reduce the fair value of our reporting units below their carrying amount. Such events and circumstances may include among others: a significant adverse change in legal factors or in the general business climate; significant decline in our stock price and market capitalization; unanticipated competition; the testing for recoverability of a significant asset within the reporting unit; and an adverse action or assessment by a regulator. Any adverse change in these factors could have a significant impact on the recoverability of goodwill and could have a material impact on our consolidated financial statements.

The Company's annual impairment test date is October 1, 2024. Based on our analysis, management concluded that there was no impairment of goodwill as of that date. Between the annual impairment date of October 1, 2024 and year-end December 31, 2024, there were no additional triggering events.

The Company recognized impairments of $292.6 million and $37.9 million during the years ended December 31, 2024 and 2023, respectively. No goodwill impairment charge was recorded during the year ended December 31, 2022. *See Note 8 for additional information.*

Other Non-Current Assets

Implementation costs incurred for hosting arrangements that are related to service contracts are capitalized and amortized over the term of the arrangement. Capitalized implementation costs totaled $0.1 million and $0.3 million as of December 31, 2024 and 2023, respectively, and are included in other non-current assets on the Consolidated Balance Sheets. In connection with the planned integration of information technology following the Business Combination, we determined that certain projects no longer fit our needs. The Company recognized impairment charges of $16.9 million during the year ended December 31, 2022 primarily related to capitalized implementation costs for a cloud computing arrangement. The impairment charges were determined based on actual costs incurred. During the year ended December 31, 2024 and 2023, no impairment charges were recognized. We depreciate capitalized implementation costs over various lives. Amortization expense was $0.1 million, $5.9 million and $3.9 million for the years ended December 31, 2024, 2023 and 2022, respectively, which is recorded almost entirely in selling, general and administrative expenses in the Consolidated Statements of Loss.

Pension Benefit Plan Obligations

The Company maintains a defined benefit pension plans covering employees in certain foreign countries. Pension benefit plan obligations are based on various assumptions used by our actuaries in calculating these amounts. These assumptions include discount rates, compensation rate increases, expected return on plan assets, retirement rates and mortality rates. Actual results that differ from the assumptions and changes in assumptions could affect future expenses and obligations. *See Note 13 for additional information.*

Lease Obligations

The Company has operating leases for office space, automobiles and various other equipment in the U.S. and in certain international locations. Other contracts, such as manufacturing agreements and service agreements, are reviewed to determine if they contain potential embedded leases. These other contracts are specifically reviewed to determine whether we have the right to substantially all of the

economic benefit from the use of any specified assets or the right to direct the use of any specified assets, either of which would indicate the existence of a lease. Some of our leases include options to renew. For those leases that are reasonably assured to be renewed, we have included the option to extend as part of our right of use asset and lease liability. The exercise of lease renewal options is at our sole discretion. The depreciable life of leased assets and leasehold improvements are limited by the expected lease term. 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. For lease agreements entered into or reassessed after the adoption of Topic 842, we elected to not separate lease and non-lease components. Our lease agreements do not contain any material residual value guarantees or material restrictive covenants.

Stock-Based Compensation

The Company has two stock incentive plans from which stock options, performance stock units ("PSUs"), restricted stock units ("RSUs") and restricted stock are available for grant to employees and directors. Costs related to these awards are recognized over their vesting periods.

Stock-based compensation expense recognized for the years ended December 31, 2024, 2023 and 2022 was approximately $15.3 million, $16.0 million and $28.3 million, respectively. *See Note 3 for additional information.*

Research and Development Costs

Research and development costs include compensation for engineers and support personnel, contracted services, depreciation and material costs associated with new product development, enhancement of current products and product cost reductions. We continually evaluate new product opportunities and engage in intensive research for product and software development efforts. Research and development costs totaled $221.5 million, $258.3 million and $173.8 million for the years ended December 31, 2024, 2023 and 2022, respectively.

Adtran Networks has arrangements with governmental entities for the purposes of obtaining funding for research and development activities. The Company classifies government grants received under these arrangements as a reduction to research and development expense incurred. For the years ended December 31, 2024, 2023 and 2022, the Company recognized $9.2 million, $5.2 million and $1.1 million, respectively, as a reduction of research and development expense.

Income Taxes

The provision for income taxes has been determined using the asset and liability approach of accounting for income taxes. Under this approach, deferred taxes represent the future tax consequences expected to occur when the reported amounts of assets and liabilities are recovered or paid. The provision for income taxes represents income taxes paid or payable for the current year plus the change in deferred taxes during the year. Deferred taxes result from the difference between financial and tax basis of our assets and liabilities and are adjusted for changes in tax rates and tax laws when such changes are enacted. Valuation allowances are recorded to reduce deferred tax assets when it is more likely than not that a tax benefit will not be realized.

In determining whether an uncertain tax position exists, the Company determines, based solely on its technical merits, whether the tax position is more likely than not to be sustained upon examination, and if so, a tax benefit is measured on a cumulative probability basis that is more likely than not to be realized upon the ultimate settlement. The Company recognizes interest and penalties related to unrecognized tax benefits through interest expense and income tax expense, respectively.

Foreign Currency

Transactions with customers that are denominated in foreign currencies are recorded using the appropriate exchange rates from throughout the year. Assets and liabilities denominated in foreign currencies are remeasured at the balance sheet dates using the closing rates of exchange between those foreign currencies and the functional currency with any transaction gains or losses reported in other income, net. Our primary exposures to foreign currency exchange rate movements are with our German and United Kingdom subsidiaries, whose functional currencies are the euro and the British pound sterling. Adjustments resulting from translating financial statements of international subsidiaries are recorded as a component of accumulated other comprehensive income.

Revenue

Revenue is measured based on the consideration expected to be received in exchange for transferring goods or providing services to a customer and as performance obligations under the terms of the contract are satisfied. Generally, this occurs with the transfer of control of a product to the customer. For transactions where there are multiple performance obligations, individual products and services are accounted for separately if they are distinct (if a product or service is separately identifiable from other items and if a customer can benefit from it on its own or with other resources that are readily available to the customer). The consideration, including any discounts, is allocated between separate products and services based on their stand-alone selling prices. Stand-alone selling prices are determined based on the prices at which the separate products and services are sold and are allocated based on each item's relative value to the total value of the products and services in the arrangement. For items that are not sold separately, we estimate stand-alone selling prices

primarily using the “expected cost plus a margin” approach. Payment terms are generally 30 days in the U.S. and typically longer in many geographic markets outside the U.S. Shipping fees collected are recorded as revenue and the related cost is included in cost of revenue. Revenue, value-added and other taxes collected concurrently with revenue-producing activities are excluded from revenue. Incremental costs of obtaining a contract, that are recoverable, are capitalized and amortized over the period that the related revenue is recognized if greater than one year. We have elected to account for shipping fees paid as a cost of fulfilling the related contract. We have also elected to apply the practical expedient related to the incremental costs of obtaining contracts and recognize those costs as an expense when incurred if the amortization period of the assets is one year or less. These costs are included in selling, general and administrative expenses. Capitalized costs with an amortization period greater than one year were immaterial.

Revenue is generated by two reportable segments: Network Solutions and Services & Support.

Network Solutions Segment - Includes hardware products and software defined next-generation virtualized solutions used in Service Provider or business networks, as well as prior generation products. The majority of the revenue from this segment is from hardware revenue.

Hardware and Software Revenue

Revenue from hardware sales is recognized when control is transferred to the customer, which is generally when the products are shipped. Shipping terms are generally FOB shipping point. Revenue from software license sales is recognized at delivery and transfer of control to the customer. Revenue is recognized net of estimated discounts and rebates using historical trends. Customers are typically invoiced when control is transferred and revenue is recognized. Our products generally include assurance-based warranties of 90 days to five years for product defects, which are accrued at the time products are delivered.

Services & Support Segment - Includes a complete portfolio of maintenance, network implementation and solutions integration and managed services, which include hosted cloud services and subscription services to complement our Network Solutions segment.

Maintenance Revenue

Our maintenance service periods range from one month to five years. Customers are typically invoiced and pay for maintenance services at the beginning of the maintenance period. We recognize revenue for maintenance services on a straight-line basis over the maintenance period as our customers benefit evenly throughout the contract term and deferred revenue, when applicable, are recorded in current and non-current unearned revenue.

Network Implementation Revenue

The Company recognizes revenue for network implementation, which primarily consists of engineering, execution and enablement services at a point in time when each performance obligation is complete. If we have recognized revenue but have not billed the customer, the right to consideration is recognized as a contract asset that is included in other receivables on the Consolidated Balance Sheet. The contract asset is transferred to accounts receivable when the completed performance obligation is invoiced to the customer.

See Notes 2 and 16 for additional information on reportable segments.

Unearned Revenue

Unearned revenue primarily represents customer billings on maintenance service programs and unearned revenue related to multiple element contracts where we still have contractual obligations to our customers. We currently offer maintenance contracts ranging from one month to five years. Revenue attributable to maintenance contracts is recognized on a straight-line basis over the related contract term. In addition, we provide software maintenance and a variety of hardware maintenance services to customers under contracts with terms up to ten years. When we defer revenue related to multiple performance obligations where we still have contractual obligations, we also defer the related costs. Current deferred costs are included in prepaid expenses and other current assets on the accompanying Consolidated Balance Sheets and totaled $2.2 million and $2.1 million as of December 31, 2024 and 2023, respectively. Non-current deferred costs included in other non-current assets on the accompanying Consolidated Balance Sheets were less than $0.1 million as of December 31, 2024 and December 31, 2023.

Redeemable Non-Controlling Interest

As of December 31, 2024 and 2023, the non-controlling Adtran Networks stockholders’ equity ownership percentage in Adtran Networks was approximately 33.0% and 34.7%, respectively.

As a result of the effectiveness of the DPLTA on January 16, 2023, the Adtran Networks shares, representing the equity interest in Adtran Networks held by holders other than the Company, can be tendered at any time and are, therefore, redeemable and must be classified outside stockholders’ equity. Therefore, the permanent equity noncontrolling interest balance was reclassified to redeemable non-controlling interest (RNCI) on January 16, 2023 and was remeasured to fair value based on the trading market price of the Adtran Networks shares.

Subsequently, the carrying value of the RNCI is adjusted to its maximum redemption value at each reporting date when the maximum redemption value is greater than the initial carrying amount of the RNCI. For the period of time that the DPLTA is in effect, the RNCI will continue to be presented as RNCI outside of stockholders' equity in the Consolidated Balance Sheets. *See Note 15 for additional information on RNCI.*

Loss per Share

Loss per common share and loss per common share assuming dilution are based on the weighted average number of common shares and, when dilutive, common equivalent shares outstanding during the year. *See Note 19 for additional information.*

Loss per common share attributable to ADTRAN Holdings, Inc. - basic and diluted - reflects a $3.0 million effect of redemption of RNCI for the year ended December 31, 2024. *See Note 19 for additional information.*

Recent Accounting Pronouncements Not Yet Adopted

In November 2024, the Financial Accounting Standards Board ("FASB") issued Accounting Standards Update ("ASU") 2024-03, Income Statement—Reporting Comprehensive Income—Expense Disaggregation Disclosures (Subtopic 220-40): Disaggregation of Income Statement Expenses, as amended by ASU 2025-01, Income Statement—Reporting Comprehensive Income—Expense Disaggregation Disclosures (Subtopic 220-40): Clarifying the Effective Date, which applies to all public business entities and is intended to enhance disclosures about specific types of expenses included in the expense captions presented on the face of the income statement as well as disclosures about selling expenses. The amendments are effective prospectively in the first annual period beginning after December 15, 2026 and interim reporting periods within annual reporting periods beginning after December 15, 2027. Early adoption and retrospective application are permitted. The Company is currently evaluating the effect that adoption of ASU 2024-03 will have on our disclosures.

In December 2023, the Financial Accounting Standards Board ("FASB") issued Accounting Standards Update ("ASU") 2023-09, "Income Taxes (Topic 740): Improvements to Income Tax Disclosures", which is intended to enhance the transparency, decision usefulness and effectiveness of income tax disclosures. The amendments in this ASU require a public entity to disclose a tabular tax rate reconciliation, using both percentages and currency, with specific categories. A public entity is also required to provide a qualitative description of the states and local jurisdictions that make up the majority of the effect of the state and local income tax category and the net amount of income taxes paid, disaggregated by federal, state and foreign taxes and also disaggregated by individual jurisdictions. The amendments also remove certain disclosures that are no longer considered cost beneficial. The amendments are effective prospectively for annual periods beginning after December 15, 2024, and early adoption and retrospective application are permitted. The Company is currently evaluating the effect that adoption of ASU 2023-09 will have on our disclosures.

Recently Adopted Accounting Pronouncements

In November 2023, the FASB issued ASU 2023-7, "Segment Reporting (Topic 280): Improvements to Reportable Segment Disclosures", which is intended to improve reportable segment disclosure requirements, primarily through enhanced disclosures about significant segment expenses, allowing financial statement users to better understand the components of a segment's profit or loss to assess potential future cash flows for each reportable segment and the entity as a whole. The amendments expand a public entity's segment disclosures by requiring disclosure of significant segment expenses that are regularly provided to the chief operating decision maker ("CODM"), clarifying when an entity may report one or more additional measures to assess segment performance, requiring enhanced interim disclosures, providing new disclosure requirements for entities with a single reportable segment, and requiring other new disclosures. The amendments are effective for fiscal years beginning after December 15, 2023, and interim periods within fiscal years beginning after December 15, 2024.

The Company adopted the new standard on January 1, 2024. The adoption of this standard resulted in additional footnote disclosures. The adoption of this standard did not have a material impact on our Consolidated Balance Sheet, Consolidated Statement of Income or Consolidated Statement of Cash Flows. *See Note 16 for additional information.*

There have been no other recently adopted accounting pronouncements that are expected to have a material effect on the Consolidated Financial Statements.

Reclassification of Prior Year Presentation

Certain prior year amounts have been reclassified for consistency with current year presentation. These reclassifications had no effect on reported results of operations. An adjustment has been made to the Consolidated Balance Sheet and Consolidated Statement of Cash Flows for the fiscal year ended December 31, 2023, to reclassify between Property, Plant and Equipment and Intangible Assets.

Note 2 - Revenue

The following is a description of the principal activities from which revenue is generated by reportable segment:

Network Solutions Segment - Includes hardware and software products that enable a digital future which support the Company's Subscriber, Access and Aggregation, and Optical Networking Solutions.

Services & Support Segment - Includes network design, implementation, maintenance and cloud-hosted services supporting the Company's Subscriber, Access and Aggregation, and Optical Networking Solutions.

Revenue by Category

In addition to operating under two reportable segments, the Company also reports revenue across three categories – Subscriber Solutions, Access & Aggregation Solutions and Optical Networking Solutions.

Our Subscriber Solutions portfolio is used by Service Providers to terminate their access services infrastructure at the customer premises while providing an immersive and interactive experience for residential, business and wholesale subscribers. This revenue category includes hardware- and software-based products and services. These solutions include fiber termination solutions for residential, business and wholesale subscribers, Wi-Fi access solutions for residential and business subscribers, Ethernet switching and network edge virtualization solutions for business subscribers, and cloud software solutions covering a mix of subscriber types.

Our Access & Aggregation Solutions are solutions that are used by communications Service Providers to connect residential subscribers, business subscribers and mobile radio networks to the Service Providers' metro network, primarily through fiber-based connectivity. This revenue category includes hardware- and software-based products and services. Our solutions within this category are a mix of fiber access and aggregation platforms, precision network synchronization and timing solutions, and access orchestration solutions that ensure highly reliable and efficient network performance.

Our Optical Networking Solutions are used by communications Service Providers, internet content providers and large-scale enterprises to securely interconnect metro and regional networks over fiber. This revenue category includes hardware- and software-based products and services. Our solutions within this category include open optical terminals, open line systems, optical subsystems and modules, network infrastructure assurance systems, and automation platforms that are used to build high-scale, secure and assured optical networks.

The following table disaggregates revenue by reportable segment and revenue category for the year ended December 31, 2024:

(In thousands)	**Network Solutions**	**Services & Support**	**Total**
Subscriber Solutions	$ 295,541	$ 35,237	$ 330,778
Access & Aggregation Solutions	232,934	58,072	291,006
Optical Networking Solutions	210,489	90,447	300,936
Total	**$ 738,964**	**$ 183,756**	**$ 922,720**

The following table disaggregates revenue by reportable segment and revenue category for the year ended December 31, 2023:

(In thousands)	**Network Solutions**	**Services & Support**	**Total**
Subscriber Solutions	$ 263,192	$ 34,516	$ 297,708
Access & Aggregation Solutions	304,074	54,344	358,418
Optical Networking Solutions	407,123	85,851	492,974
Total	**$ 974,389**	**$ 174,711**	**$ 1,149,100**

The following table disaggregates revenue by reportable segment and revenue category for the year ended December 31, 2022:

(In thousands)	**Network Solutions**	**Services & Support**	**Total**
Subscriber Solutions	$ 364,238	$ 26,216	$ 390,454
Access & Aggregation Solutions	326,934	47,068	374,002
Optical Networking Solutions	225,621	35,459	261,080
Total	**$ 916,793**	**$ 108,743**	**$ 1,025,536**

The aggregate amount of transaction price allocated to remaining performance obligations that have not been satisfied as of December 31, 2024 and December 31, 2023 related to contractual maintenance agreements, contractual SaaS and subscription services, and hardware contracts that exceed one year in duration amounted to $325.7 million and 314.8 million, respectively. As of December 31, 2024, approximately 73.0% is expected to be recognized over the next 12 months, and the remainder recognized thereafter. The majority of the Company's remaining performance obligations as of December 31, 2024, are related to contracts or orders that have an original expected duration of one year or less and are excluded from the transaction price related to these future obligations. The Company will generally satisfy the remaining performance obligations as we transfer control of the products ordered or services to our customers, excluding maintenance services, which are satisfied over time.

The following table provides information about accounts receivable, contract assets and unearned revenue from contracts with customers:

(In thousands)	December 31, 2024	December 31, 2023
Accounts receivable	$ 178,030	$ 216,445
Contract assets[(1)]	$ 631	$ 691
Unearned revenue	$ 52,701	$ 46,731
Non-current unearned revenue	$ 22,065	$ 25,109

[(1)] Included in other receivables on the Consolidated Balance Sheets.

Accounts Receivable

The allowance for credit losses were $1.3 million and, $0.4 million as of December 31, 2024, and December 31, 2023, respectively, related to accounts receivable.

Receivables Purchase Agreement

On July 1, 2024, the Company entered into a receivables purchase agreement (the “Factoring Agreement”) with a third-party financial institution (the “Factor”), which accelerates receivable collection and helps to better manage cash flow. Total accounts receivables factored as of the end of December 31 2024, totaled $18.3 million of which $3.7 million was retained pursuant to the Factoring Agreement in the reserve account. The Factoring Agreement provides for up to $40.0 million in factoring capacity, subject to eligible receivables and reserve requirements, secured by the receivables. The balance in the reserve account is included in other assets on the Consolidated Balance Sheets. The cost of the Factoring Agreement is included in interest expense in the Consolidated Statements of Loss and totaled $0.6 million for the year ended December 31, 2024. Costs of a previous receivables purchase agreement which are included in interest expense in the Consolidated Statements of Loss totaled $0.9 million for the year ended December 31, 2023.

Previous Receivable Purchase Agreement

On December 19, 2023, the Company entered into a receivables purchase agreement (the “Prior Factoring Agreement”) with a third-party financial institution (the "Prior Factoring Agreement") to replace a prior accounts receivable purchase agreement and to sell, on a revolving basis, undivided interests in the Company’s accounts receivable. The prior factoring agreement provided for up to $40.0 million in borrowing capacity, subject to eligible receivables and reserve requirements, secured by the receivables. The prior factoring agreement qualified for treatment as a secured borrowing with a pledge of collateral under Accounting Standards Codification ("ASC") Topic 810, *Consolidations*. The receivables purchase agreement was terminated on July 1, 2024 and there were no secured borrowings under this agreement as of December 31, 2024. Total secured borrowings under the agreement were $14.3 million as of December 31, 2023, which left $25.4 million available for future borrowings as of December 31, 2023. Accounts receivable pledged as collateral related to the secured borrowings were $16.8 million as of December 31, 2023. For the year ended December 31, 2024, the Company incurred program fee expenses of $0.6 million.

Contract Assets

No allowance for credit losses was recorded for the years ended December 31, 2024 and 2023, respectively, related to contract assets.

Unearned Revenue

Of the outstanding unearned revenue balances as of December 31, 2023, $50.5 million were recognized as revenue during the year ended December 31, 2024. Of the outstanding unearned revenue balances as of December 31, 2022, $36.2 million were recognized as revenue during the year ended December 31, 2023.

Note 3 – Stock-Based Compensation

2024 Stock Incentive Plans

At the annual meeting of stockholders held on May 8, 2024, the Company's stockholders approved, upon recommendation of the Board of Directors, the adoption of the ADTRAN Holdings, Inc. 2024 Employee Stock Incentive Plan ("2024 Employee Plan") and the ADTRAN Holdings, Inc. 2024 Directors Stock Plan ("2024 Directors Plan"). No additional awards will be granted under the Company's previous stock incentive plans, including the 2020 Employee Stock Incentive Plan, the 2020 Directors Stock Plan, or the 2015 Employee Stock Incentive Plan. Outstanding awards granted under the Company's prior equity incentive plans will remain subject to the terms of such applicable plans, and shares under such plans that are cancelled or forfeited will be available for issuance under the 2024 Employee Plan or the 2024 Directors Plan, as applicable.

Under the 2024 Employee Plan, the Company is authorized to issue 4.5 million shares of common stock to certain employees, key service providers and advisors through incentive stock options and non-qualified stock options, stock appreciation rights, RSUs and restricted stock, any of which may be subject to performance-based conditions. RSUs and restricted stock granted under the 2024 Employee Plan will typically vest pursuant to a four-year vesting schedule beginning on the first anniversary of the grant date. Stock options granted under the 2024 Employee Plan will typically become exercisable beginning after one year of continued employment, normally pursuant to a four-year vesting schedule beginning on the first anniversary of the grant date and have a ten-year contractual term. Stock options, RSUs and restricted stock granted under the 2024 Employee Plan reduce the shares authorized for issuance under the 2024 Employee Plan by one share of common stock for each share underlying the award. Forfeitures, cancellations and expirations of awards granted under the prior employee stock incentive plans increase the shares authorized for issuance under the 2024 Employee Plan by one share of common stock for each share underlying the award.

Under the 2024 Directors Plan, the Company is authorized to issue 0.6 million shares of common stock through stock options, restricted stock and RSUs to non-employee directors. Stock awards issued under the 2024 Directors Plan typically will become vested in full on the first anniversary of the grant date. Stock options issued under the 2024 Directors Plan will have a ten-year contractual term. Stock options, restricted stock and RSUs granted under the 2024 Directors Plan reduce the shares authorized for issuance under the 2024 Directors Plan by one share of common stock for each share underlying the award. Forfeitures, cancellations and expirations of awards granted under the prior directors stock plan increase the shares authorized for issuance under the 2024 Directors Plan by one share of common stock for each share underlying the award.

As of December 31, 2024, 5.1 million shares were available for issuance pursuant to awards that may be made in the future under stockholder-approved equity plans.

For the years ended December 31, 2024, 2023 and 2022, stock-based compensation expense was $15.3 million, $16.0 million and $28.3 million respectively.

PSUs, RSUs and Restricted Stock - ADTRAN Holdings, Inc.

The following table summarizes stock-based compensation expense related to stock options, PSUs, RSUs and restricted stock for the years ended December 31, 2024, 2023 and 2022:

(In thousands)	2024	2023	2022
Stock-based compensation expense included in cost of revenue	**$ 1,142**	**$ 1,293**	**$ 2,876**
Selling, general and administrative expenses	10,412	10,701	20,844
Research and development expenses	3,788	4,022	4,602
Stock-based compensation expense included in operating expenses	**14,200**	**14,723**	**25,446**
Total stock-based compensation expense	**15,342**	**16,016**	**28,322**
Tax benefit for expense associated with non-qualified stock options, PSUs, RSUs and restricted stock	**(2,102)**	**(3,837)**	**(5,152)**
Total stock-based compensation expense, net of tax	**$ 13,240**	**$ 12,179**	**$ 23,170**

PSUs, RSUs and restricted stock - ADTRAN Holdings, Inc.

The following table is a summary of our PSUs, RSUs and restricted stock outstanding as of December 31, 2023 and 2024 and the changes that occurred during 2024:

	Number of shares (In thousands)	Weighted Average Grant Date Fair Value (Per Share)
Unvested PSUs, RSUs and restricted stock outstanding, December 31, 2023	**1,942**	**$ 17.46**
PSUs, RSUs and restricted stock granted	1,097	$ 7.85
PSUs, RSUs and restricted stock vested	(575)	$ 18.76
PSUs, RSUs and restricted stock forfeited	(129)	$ 14.20
Unvested PSUs, RSUs and restricted stock outstanding, December 31, 2024	**2,335**	**$ 13.22**

The fair value of PSUs with performance conditions, RSUs and restricted stock is equal to the closing price of the Company's stock on the date of grant. The fair value of PSUs with market conditions is calculated using a Monte Carlo simulation valuation method.

The following table details the significant assumptions that impact the fair value estimate of the market-based PSUs:

	2024	2023	2022
Estimated fair value per share	$ 8.29	$ 19.26	$ 24.01
Expected volatility	51.34%	51.52%	45.77%
Risk-free interest rate	4.12%	3.93%	4.28%
Expected dividend yield	—	2.55%	1.76%

For market-based PSUs, the number of shares of common stock earned by a recipient is subject to a market condition based on Adtran's relative total stockholder return against all companies in the NASDAQ Telecommunications Index at the end of a three-year performance period. Depending on the relative total stockholder return over the performance period, the recipient may earn from 0% to 150% of the shares underlying the PSUs, with the shares earned distributed upon the vesting. The fair value of the award is based on the market price of our common stock on the date of grant, adjusted for the expected outcome of the impact of market conditions using a Monte Carlo Simulation valuation method. A portion of the granted PSUs vests and the underlying shares become deliverable upon the death or disability of the recipient or upon a change of control of Adtran, as defined by the 2020 Employee Plan. The recipients of the PSUs receive dividend credits based on the shares of common stock underlying the PSUs. The dividend credits vest and are earned in the same manner as the PSUs and are paid in cash upon the issuance of common stock for the PSUs.

During the year ended December 31, 2024, and 2023, the Company granted 0.1 and 0.9 million performance-based PSUs to its executive officers and certain employees, respectively. The grant-date fair value of these performance-based awards was based on the closing price of the Company's stock on the date of grant. These awards vest over either a two or three-year period, subject to the grantee's continued employment, with the ability to earn shares in a range of 0% to either 100% or 150% of the awarded number of PSUs based on the achievement of defined performance targets. Equity-based compensation expense and liabilities with respect to these awards may be adjusted over the vesting period to reflect the probability of achievement of performance targets defined in the award agreements.

During each of the years ended December 2023 and 2022, the Company granted 0.9 and 0.3 million performance-based PSUs to its executive officers and certain employees. The grant-date fair value of these performance-based awards was based on the closing price of the Company's stock on the date of grant. These awards vested over one-year and two-year periods, respectively, subject to the grantee's continued employment, with the ability to earn shares in a range of 0% to 142.8% of the awarded number of PSUs based on the achievement of defined performance targets. Equity-based compensation expense with respect to these awards may be adjusted over the vesting period to reflect the probability of achievement of performance targets defined in the award agreements. Pursuant to the Business Combination, the unearned performance-based PSUs converted to time-based RSUs which were treated as an award modification during the third quarter of 2022. This resulted in incremental compensation expense totaling $17.8 million being recognized during the twelve months ended December 31, 2022. These awards were fully vested as of December 31, 2022.

Pursuant to the Business Combination, 0.3 million shares of market-based PSU awards converted to time-based RSU awards which were treated as an award modification during the third quarter of 2022. Given that the fair value of these awards after the modification was less than the fair value of the awards immediately before the modification, no incremental compensation expense was recognized. The Company continued to recognize compensation expense based on the award's original grant date fair value.

The fair value of RSUs and restricted stock is equal to the closing price of our stock on the grant date. RSUs and restricted stock vest ratably over four-year and one-year periods, respectively.

We will continue to assess the assumptions and methodologies used to calculate the estimated fair value of stock-based compensation. If circumstances change, and additional data becomes available over time, we may change our assumptions and methodologies, which may materially impact our fair value determination.

As of December 31, 2024, total unrecognized compensation expense related to the non-vested portion of market-based PSUs, RSUs and restricted stock was approximately $10.7 million, which is expected to be recognized over an average remaining recognition period of 2.1 years. There was $10.9 million of unrecognized compensation expense related to unvested 2024 performance-based PSUs, which will be recognized over the remaining requisite service period of 1 years if achievement of the performance obligation becomes probable. Unrecognized compensation expense will be adjusted for actual forfeitures as they occur.

Stock Options - ADTRAN Holdings, Inc.

The following table is a summary of stock options outstanding as of December 31, 2024 and 2023 and the changes that occurred during 2024:

	Number of Options *(In thousands)*	Weighted Average Exercise Price *(Per share)*	Weighted Average Remaining Contractual Life in Years	Aggregate Intrinsic Value *(In thousands)*
Stock options outstanding, December 31, 2023	**3,894**	**$ 10.32**	**5.25**	**$ 3,087**
Stock options exercised	(139)	$ 5.93		
Stock options forfeited	(202)	$ 6.78		
Stock options expired	(609)	$ 14.69		
Stock options outstanding, December 31, 2024	**2,944**	**$ 9.86**	**4.98**	**$ 3,762**
Stock options exercisable, December 31, 2024	**1,465**	**$ 8.73**	**4.18**	**$ 1,960**

As of December 31, 2024, there was $3.2 million of unrecognized compensation expense related to stock options which will be recognized over the remaining weighted-average period of 0.9 years. No stock options were granted during 2024.

The determination of the fair value of stock options assumed or granted by Adtran was estimated using the Monte Carlo method and is affected by its stock price, as well as assumptions regarding a number of complex and subjective variables that may have a significant impact on the fair value estimate. The stock option pricing model requires the use of several assumptions that impact the fair value estimate. These variables include, but are not limited to, the volatility of the Company's stock price and employee exercise behaviors.

All of the options were previously issued at exercise prices that approximated fair market value at the date of grant.

The aggregate intrinsic value of stock options represents the total pre-tax intrinsic value (the difference between the Company's closing stock price on the last trading day of the quarter and the exercise price, multiplied by the number of in-the-money options) that would have been received by the option holders had all option holders exercised their options on December 31, 2024. The amount of aggregate intrinsic value was $3.8 million as of December 31, 2024, which will change based on the fair market value of the Company's stock. The total pre-tax intrinsic value of options exercised during the years ended December 31, 2024 and 2023 was $0.3 million and $0.1 million, respectively.

The following table further describes our stock options outstanding as of December 31, 2024:

	Options Outstanding			Options Exercisable	
Range of Exercise Prices (Per Share)	Options Outstanding at December 31, 2024 *(In thousands)*	Weighted Average Remaining Contractual Life in Years	Weighted Average Exercise Price (Per Share)	Options Exercisable at December 31, 2024 *(In thousands)*	Weighted Average Exercise Price
$5.23 – $5.23	1,131	8.87	$ 5.23	550	$ 5.23
$5.24 – $8.58	431	1.85	$ 7.86	431	$ 7.86
$8.59 – $12.17	696	2.81	$ 11.57	155	$ 9.49
$12.18 – $15.33	378	1.23	$ 15.33	329	$ 15.33
$15.34 – $19.08	308	4.37	$ 19.08	—	$ —
	2,944			**1,465**	

The Black-Scholes option pricing model (the “Black-Scholes Model”) is used to determine the estimated fair value of stock option awards on the date of grant. The Black-Scholes Model requires the input of certain assumptions that involve judgment. Because our stock options have characteristics significantly different from those of traded options, and because changes in the input assumptions can materially affect the fair value estimate, existing models may not provide reliable measures of fair value of our stock options. The stock

option pricing model requires the use of several assumptions that impact the fair value estimate. These variables include, but are not limited to, the volatility of our stock price and employee exercise behaviors.

The stock option pricing model requires the use of several assumptions that impact the fair value estimate. These variables include, but are not limited to, the volatility of our stock price and employee exercise behaviors.

The weighted-average estimated fair value of stock options granted to employees during the years ended December 31, 2023 was $2.99 per share with the following weighted-average assumptions:

	2023
Expected volatility	$ 51.78%
Risk-free interest rate	4.13%
Expected dividend yield	—
Expected life (in years)	5.8%

Note 4 – Investments

Debt Securities and Other Investments

The Company did not have any debt securities and other investments as of December 31, 2024.

Realized gains and losses on sales of securities are computed under the specific identification method. The following table presents gross realized gains and losses related to our debt securities for the years ended December 31, 2024, 2023 and 2022:

	For the year ended December 31,		
(In thousands)	**2024**	**2023**	**2022**
Gross realized gains on debt securities	$ —	$ 9	$ 17
Gross realized losses on debt securities	—	(355)	(1,211)
Total (loss) gain recognized, net	**$ —**	**$ (346)**	**$ (1,194)**

The Company's investment policy provides limitations for issuer concentration, which limits, at the time of purchase, the concentration in any one issuer to 5% of the market value of the total investment portfolio. The Company did not purchase any available-for-sale debt with credit deterioration during the years ended December 31, 2024, 2023 and 2022.

Marketable Equity Securities

Marketable equity securities consist of publicly traded stock, funds and certain other investments measured at fair value or cost, where appropriate.

Realized and unrealized gains and losses for our marketable equity securities for the year ended December 31, 2024, 2023 and 2022 were as follows:

	For the year ended December 31,		
(In thousands)	**2024**	**2023**	**2022**
Realized gains (losses) on equity securities sold	$ 277	$ 17	$ (1,675)
Unrealized gains (losses) on equity securities held	3,310	3,083	(8,470)
Total gain (loss) recognized, net	**$ 3,587**	**$ 3,100**	**$ (10,145)**

As of December 31, 2024, gross unrealized losses related to individual investments in a continuous loss position for twelve months or longer were not material.

U.S. GAAP establishes a three-level valuation hierarchy based upon observable and unobservable inputs for fair value measurement of financial instruments:

- Level 1 – Observable outputs; values based on unadjusted quoted prices for identical assets or liabilities in an active market;
- Level 2 – Significant inputs that are observable; values based on quoted prices in markets that are not active or model inputs that are observable either directly or indirectly;
- Level 3 – Significant unobservable inputs; values based on prices or valuation techniques that require inputs that are both unobservable and significant to the overall fair value measurement; inputs could include information supplied by investees.

The Company's cash equivalents and investments held at fair value are categorized into this hierarchy as follows:

	Fair Value Measurements as of December 31, 2024 Using			
(In thousands)	Fair Value	Quoted Prices in Active Market for Identical Assets (Level 1)	Significant Other Observable Inputs (Level 2)	Significant Unobservable Inputs (Level 3)
Cash equivalents				
Money market funds	$ 5,538	$ 5,538	$ —	$ —
Marketable equity securities				
Marketable equity securities - various industries	1,068	1,068	—	—
Deferred compensation plan assets	30,991	30,991	—	—
Total	**$ 37,597**	**$ 37,597**	**$ —**	**$ —**

	Fair Value Measurements as of December 31, 2023 Using			
(In thousands)	Fair Value	Quoted Prices in Active Market for Identical Assets (Level 1)	Significant Other Observable Inputs (Level 2)	Significant Unobservable Inputs (Level 3)
Cash equivalents				
Money market funds	$ 5,302	$ 5,302	$ —	$ —
Marketable equity securities				
Marketable equity securities - various industries	905	905	—	—
Deferred compensation plan assets	26,838	26,838	—	—
Total	**$ 33,045**	**$ 33,045**	**$ —**	**$ —**

Market prices are obtained from a variety of industry standard data providers, large financial institutions and other third-party sources. These multiple market prices are used as inputs into a distribution-curve-based algorithm to determine the daily market value of each security.

Note 5 – Inventory

As of December 31, 2024 and 2023, inventory, net was comprised of the following:

(In thousands)	2024	2023
Raw materials	$ 107,369	$ 152,140
Work in process	9,724	17,239
Finished goods	152,244	192,916
Total Inventory, net	**$ 269,337**	**$ 362,295**

Inventory reserves are established for estimated excess and obsolete inventory equal to the difference between the cost of the inventory and the estimated net realizable value of the inventory based on estimated reserve percentages, which consider historical usage, known trends, inventory age and market conditions.

During the twelve months ended December 31, 2024, the Company recorded an inventory write-down of $8.6 million, as a result of a strategy shift which included discontinuance of certain product lines in connection with the Business Efficiency Program of which $4.1 million relates to inventory write-downs and $4.5 million relates to other charges all of which are included in cost of revenue in the Consolidated Statements of Loss. In connection with the Company's restructuring efforts, during the twelve months ended December 31, 2023, management determined that there would be a discontinuation of product lines in the Network solutions segment and, as a result, wrote-down related inventories of $24.3 million, which is included in cost of revenue in the Consolidated Statements of Loss.

Note 6 – Property, Plant and Equipment

As of December 31, 2024 and 2023, property, plant and equipment, net was comprised of the following:

(In thousands)	2024	2023
Engineering and other equipment	$ 184,694	$ 183,336
Building	50,871	79,215
Computer hardware and software	109,729	91,752
Building and land improvements	39,979	58,238
Furniture and fixtures	20,994	21,368
Land	2,989	5,242
Total Property, Plant and Equipment	**409,256**	**439,151**
Less: accumulated depreciation	(306,314)	(325,569)
Total Property, Plant and Equipment, net	**$ 102,942**	**$ 113,582**

Long-lived assets used in operations are reviewed for impairment whenever events or changes in circumstances indicate that the carrying amount of an asset may not be recoverable and the undiscounted cash flows estimated to be generated by the asset are less than the asset's carrying value. In connection with the planned integration of information technology following the Business Combination, we determined that certain projects no longer fit our needs or strategic plan. As a result, the Company recognized impairment charges of $0.5 million during the year ended December 31, 2022 related to software and web site development. The impairment charges were determined based on actual costs incurred. During the years ended December 31, 2024 and 2023, no impairment charges were recognized.

Depreciation expense was $27.7 million, $30.2 million and $20.9 million for the years ended December 31, 2024, 2023 and 2022, respectively, which is recorded in cost of revenue, selling, general and administrative expenses and research and development expenses in the Consolidated Statements of Loss.

Assets Held For Sale

On December 31, 2024, the Company determined it met the held for sale criteria pursuant to ASC 360, *"Impairment and Disposal of Long-Live Assets"* on the Company's property located at the North and South Towers in its Huntsville, Alabama campus and ceased recording depreciation on the assets. The Company expects to dispose of the property within the next twelve months.

The Company records assets held for sale at the lower of their carrying value or fair value. The total carrying value of assets held for sale was $11.9 million as of December 31, 2024 and is separately recorded on the balance sheet.

Note 7 – Leases

We have operating leases for office space, automobiles and various other equipment in the U.S. and in certain international locations. As of December 31, 2024, our operating leases had remaining lease terms of 1 month to 167 months, some of which included options to extend the leases for up to one year, and some of which included options to terminate the leases within three months. Supplemental balance sheet information related to operating leases is as follows:

(In thousands)	Classification	December 31, 2024	December 31, 2023
Assets			
Operating lease assets	Other non-current assets	$ 30,342	$ 37,474
Total lease asset		**$ 30,342**	**$ 37,474**
Liabilities			
Current operating lease liability	Accrued expenses and other liabilities	$ 7,154	$ 7,720
Non-current lease obligations	Non-current lease obligations	25,925	31,420
Total lease liability		**$ 33,079**	**$ 39,140**

Lease expense related to short-term leases was less than $0.2 million for the twelve months ended December 31, 2024 and $0.1 million for the twelve months ended December 31, 2023 and 2022, and is included in cost of revenue, selling, general and administrative expenses and research and development expenses in the Consolidated Statements of Loss. Lease expense related to variable lease payments that do not depend on an index or rate, such as real estate taxes and insurance reimbursements, was $0.3 million, $0.7 million and $0.6 million for the twelve months ended December 31, 2024, 2023 and 2022, respectively.

The components of lease expense included in the Consolidated Statements of Loss were as follows:

(In thousands)	For the Year Ended December 31, 2024	2023	2022
Cost of revenue	$ 150	$ 163	$ 110
Research and development expenses	412	990	942
Selling, general and administrative expenses	9,213	9,708	3,961
Total operating lease expense	**$ 9,775**	**$ 10,861**	**$ 5,013**

As of December 31, 2024, operating lease liabilities included on the Consolidated Balance Sheet by future maturity were as follows:

(In thousands)	Amount
2025	8,829
2026	7,550
2027	6,498
2028	4,980
2029	2,925
Thereafter	10,281
Total lease payments	**41,063**
Less: Interest	(7,984)
Present value of lease liabilities	**$ 33,079**

Future operating lease payments include $5.3 million related to options to extend lease terms that are reasonably certain of being exercised. There are no legally binding leases that have not yet commenced.

An incremental borrowing rate is used based on information available at the commencement date in determining the present value of lease payments. The incremental borrowing rate is determined on a portfolio basis by grouping leases with similar terms, as well as grouping leases based on a U.S. dollar or euro functional currency. The following table provides information about our weighted average lease terms and weighted average discount rates:

	As of December 31, 2024	2023
Weighted average remaining lease term (years)		
Operating leases with USD functional currency	7.3	8.1
Operating leases with EUR functional currency	5.9	5.8
Weighted average discount rate		
Operating leases with USD functional currency	3.64%	3.70%
Operating leases with EUR functional currency	4.50%	3.92%

Note 8 – Goodwill

The changes in the carrying amount of goodwill for the year ended December 31, 2024 are as follows:

(In thousands)	Network Solutions	Services & Support	Total
As of December 31, 2023	**$ 297,031**	**$ 56,384**	**$ 353,415**
Goodwill impairment	(290,528)	—	(290,528)
Foreign currency translation adjustments	(6,503)	(3,466)	(9,969)
As of December 31, 2024	**$ —**	**$ 52,918**	**$ 52,918**

The Company's annual impairment test date is October 1, 2024. Based on our analysis, management concluded that there was no impairment of goodwill as of that date. Between the annual impairment date of October 1, 2024 and year-end December 31, 2024, there were no additional triggering events.

During the first quarter of 2024, qualitative factors such as a decrease in the Company's market capitalization, lower service provider spending and delayed holding patterns of inventory with respect to customers caused us to reduce our forecasts, triggering a quantitative impairment assessment for our reporting units. The Company determined the fair value of each reporting unit using a combination of an income approach and a market approach. The significant inputs and assumptions used in the determination of the fair value of our reporting units, based on future cash flows for the reporting units, requires significant judgment and the use of estimates and assumptions related to revenue growth rates, earnings before interest, taxes, depreciation and amortization ("EBITDA") margins, discount rate, peer group determination, revenue and EBITDA market multiple. The Company determined upon its quantitative impairment assessment to recognize a $292.6 million non-cash goodwill impairment charge for the Network Solutions reporting unit. The quantitative impairment analysis indicated there was no impairment of the Services & Support goodwill during the first quarter of 2024.

During 2023, the Company experienced decreased market capitalization and long-term projections. Therefore, an interim impairment test over goodwill was performed as of September 30, 2023. The Company determined the fair value of each reporting unit using a combination of an income approach and a market approach. Management's determination of the fair value of our reporting units, based on future cash flows for the reporting units, requires significant judgment and the use of estimates and assumptions related to cash flow projections, discount rate, peer group determination and market multiple selection. It was determined that the decreases in projected future cash flows, discount rates, overall macroeconomic conditions, as well as the decrease in our market capitalization applied in the valuation, were required to align with market-based assumptions and company-specific risk, which resulted in lower fair values of the Services & Support reporting unit. As a result of the interim assessment, the Company recorded a goodwill impairment charge of $37.9 million as its estimated fair value was less than its book value on that date. No other goodwill impairment charges were recorded during 2023.

As of December 31, 2024, accumulated goodwill impairment losses in total were $330.5 million.

Note 9 – Intangible Assets

Intangible assets as of December 31, 2024 and 2023, consisted of the following:

		2024			2023		
(In thousands)	Weighted Average Useful Life (in years)	Gross Value	Accumulated Amortization	Net Value	Gross Value	Accumulated Amortization	Net Value
Customer relationships	11.0	$ 51,165	$ (18,778)	$ 32,387	$ 54,856	$ (15,943)	$ 38,913
Backlog	1.7	53,839	(52,258)	1,581	57,391	(52,022)	5,369
Developed technology	7.9	346,923	(99,588)	247,335	339,189	(61,653)	277,536
Licensed technology	9.0	5,900	(4,452)	1,448	5,900	(3,797)	2,103
Licensing agreements	8.5	560	(407)	153	560	(368)	192
Patents	7.3	—	—	—	500	(500)	—
Trade names	3.0	27,851	(25,862)	1,989	29,689	(16,379)	13,310
Total		**$ 486,238**	**$ (201,345)**	**$ 284,893**	**$ 488,085**	**$ (150,662)**	**$ 337,423**

Intangible assets are reviewed for impairment whenever events and circumstances indicate impairment may have occurred. During the first quarter of 2024, qualitative factors such as a decrease in the Company's market capitalization, cautious service provider spending due to economic uncertainty and continued customer inventory adjustments triggered a quantitative reassessment of our estimated future undiscounted cash flows for the Network Solutions asset group. The significant inputs and assumptions used in the determination of the cash flows expected to be generated by the asset group, requires significant judgment and the use of estimates and assumptions related to revenue growth rates, EBITDA margins, peer group determination, and disposition exit multiple. The Company determined that our estimated future undiscounted cash flows exceeded the carrying value of our asset groups. No impairment losses of intangible assets were recorded during the years ended December 31, 2024, 2023 and 2022.

Amortization expense was $63.0 million, $82.8 million and $47.3 million for the years ended December 31, 2024, 2023 and 2022, respectively, and was included in cost of revenue, selling, general and administrative expenses and research and development expenses in the Consolidated Statements of Loss.

As of December 31, 2024, estimated future amortization expense of intangible assets was as follows:

(In thousands)	As of December 31, 2024
2025	$ 56,268
2026	53,231
2027	47,585
2028	40,374
2029	40,028
Thereafter	47,407
Total	**$ 284,893**

Note 10 - Hedging

The Company has certain forward rate agreements to hedge foreign currency exposure of expected future cash flows in foreign currency. The Company does not hold or issue derivative instruments for trading or other speculative purposes. Derivatives are initially recognized at fair value on the date a derivative contract is entered into and are subsequently re-measured to their fair value at the end of each reporting period. All changes in the fair value of derivative instruments are recognized as other income, net in the Consolidated Statements of Loss. The derivative instruments are not subject to master netting agreements and are not offset in the Consolidated Balance Sheets. We are exposed to risk from credit-related losses resulting from nonperformance by counterparties to our financial instruments. We perform credit evaluations of our counterparties under forward exchange contracts and expect all counterparties to meet their obligations. We have not experienced credit losses from our counterparties.
As of December 31, 2024, the Company had 39 forward rate contracts outstanding.

Foreign Currency Hedging Agreement

On November 3, 2022, the Company entered into a euro/U.S. dollar forward contract arrangement (the "Initial Forward") with Wells Fargo Bank, N.A. (the "Hedge Counterparty"). The Initial Forward, which was governed by the provisions of an ISDA Master Agreement (including schedules thereto and transaction confirmations that supplement such agreement) entered into between the Company and the Hedge Counterparty, enabling the Company to convert a portion of its euro denominated payment obligations under the proposed DPLTA into U.S. Dollars. Under the Initial Forward, the Company agreed to exchange an aggregate notional amount of €160.0 million for U.S. dollars at a daily fixed forward rate ranging from EUR/USD 0.98286 to 1.03290. The aggregate amount of €160.0 million was divided into eight quarterly tranches of €20.0 million, which commenced in the fourth quarter of 2022. During the twelve months ended December 31, 2024, the Company settled four €20.0 million forward contract tranches.

On March 21, 2023, the Company entered into a euro/U.S. dollar forward contract arrangement (the "Forward") with the Hedge Counterparty. Under the Forward, which was governed by the provisions of an ISDA Master Agreement (including schedules thereto and transaction confirmations that supplement such agreement) entered into between the Company and the Hedge Counterparty, the Company exchanged an aggregate notional amount of €160.0 million for U.S. dollars at an average rate of EUR/USD 1.085. During the twelve months ended December 31, 2024, the Company settled four $20.0 million forward contract tranches. As of December 31, 2024, both the Initial Forward and Forward have fully matured and are no longer outstanding.

The fair values of the Company's derivative instruments recorded in the Consolidated Balance Sheet as of December 31, 2024 were as follows:

(In thousands)	Balance Sheet Location	December 31, 2024	December 31, 2023
Derivatives Not Designated as Hedging Instruments (Level 2):			
Foreign exchange contracts – derivative assets	Other receivables	$ 565	$ 7,125
Foreign exchange contracts – derivative liabilities	Accounts payable	$ —	$ (2,277)
Total derivatives		**$ 565**	**$ 4,848**

The change in the fair values of the Company's derivative instruments recorded in the Consolidated Statements of Loss during the years ended December 31, 2024, 2023 and 2022 were as follows:

(In thousands)	Income Statement Location	2024	2023	2022
Derivatives Not Designated as Hedging Instruments:				
Foreign exchange contracts	Other income, net	$ 2,197	$ 758	$ 10,793

Note 11 – Credit Agreements

The carrying amounts of the Company's revolving credit agreements in its Consolidated Balance Sheets were as follows:

(In thousands)	As of December 31, 2024	2023
Wells Fargo credit agreement	$ 189,576	$ 195,000
Total non-current revolving credit facility	**$ 189,576**	**$ 195,000**

As of December 31, 2024 and 2023, the estimated fair value of our revolving credit agreements, approximates the carrying value. As of December 31, 2024 and 2023, the weighted average interest rate on our revolving credit agreements was 8.64% and 7.45%, respectively.

Wells Fargo Credit Agreement

On July 18, 2022, ADTRAN, Inc., as the borrower ("U.S. Borrower"), and the Company entered into a credit agreement with a syndicate of banks, including Wells Fargo Bank, National Association, as administrative agent (“Administrative Agent”), and the other lenders named therein (as amended from time to time, the “Credit Agreement”). Initially, the Credit Agreement allowed for revolving credit borrowings of up to $400.0 million in aggregate principal amount ($100.0 million of which is, subject to the covenants described below, available to Adtran Networks as borrower pursuant to the Subline (as defined and further described below). As of December 31, 2024, the aggregate principal amount was reduced to $374.0 million ($74.0 million of which is available to Adtran Networks as borrower pursuant to the Subline) due to a $26.0 million reduction on the Subline.

On August 9, 2023, ("First Amendment Effective Date") the Company and ADTRAN, Inc. entered into a First Amendment to Credit Agreement (“First Amendment”).

The First Amendment, among other things, increased the available funding from $100.0 million to $400.0 million. In addition, a new $50.0 million delayed draw term loan facility (“DDTL”) was introduced, which (subject to certain conditions) was available for borrowing in the event that at least sixty percent (60.0%) of the outstanding shares of Adtran Networks that were not owned by the Company and its subsidiaries as of the First Amendment Effective Date was tendered (such event, a “Springing Covenant Event”). Upon the occurrence of a Springing Covenant Event, the Company will enter a “Springing Covenant Period”, defined as the fiscal quarter in which a Springing Covenant Event occurs and the three (3) consecutive fiscal quarters thereafter. During the Springing Covenant Period, the Company’s leverage ratios are increased. Although the ability to borrow under the DDTL expired on August 9, 2024, the Springing Covenant Event and Springing Covenant Period remain in effect.

The First Amendment further added additional financial flexibility by permitting, subject to certain requirements, the incurrence of convertible indebtedness by the Company in an aggregate principal amount of up to $172.5 million. Any such convertible indebtedness must, among other things, be incurred in pro forma compliance with the financial covenants in the Credit Agreement, be unsecured, and otherwise rank junior to borrowings under the Credit Agreement, and have a stated maturity date of at least 91 days after the latest scheduled maturity date of loans and commitments under the Credit Agreement. Net cash proceeds from any incurrence of convertible indebtedness must be used to repurchase minority shares of Adtran Networks or repay revolver borrowings under the Credit Agreement.

On January 16, 2024 ("Second Amendment Effective Date"), the Company and ADTRAN, Inc. entered into a Second Amendment to Credit Agreement and First Amendment to Collateral Agreement ("Second Amendment"). The Second Amendment, among other things, introduced the Covenant Relief Period, which provided the Company with additional covenant headroom while imposing a minimum liquidity financial covenant from the end of the fourth quarter of 2023 to the end of the third quarter of 2024. The Covenant Relief Period ended on November 7, 2024.

On March 12, 2024, the Company and ADTRAN, Inc. entered into a Third Amendment to Credit Agreement ("Third Amendment"). The Third Amendment, among other things, amended the definition of “Consolidated Funded Indebtedness” (which is used in the calculation of the Consolidated Total Net Leverage Ratio and the Consolidated Senior Secured Net Leverage Ratio) to exclude obligations of the Company and its subsidiaries under certain factoring arrangements when calculated for the fiscal quarters ending March 31, 2024, and June 30, 2024.

On June 4, 2024, the Company, ADTRAN, Inc., and Adtran Networks entered into a Fourth Amendment to Credit Agreement ("Fourth Amendment"). The Fourth Amendment, among other things, created a new sublimit under the existing $400.0 million revolving commitments, in an aggregate amount of $100.0 million (“Subline”), which Subline is available for borrowings by Adtran Networks. Prepayments of outstanding loans under the Subline that result in the remaining outstanding loans under the Subline being less than the German Commitment Reduction Threshold will result in a permanent partial reduction of the commitments in respect of the Subline. The German Commitment Reduction Threshold is initially $75.0 million and may be lowered from time to time pursuant to the terms of the Fourth Amendment. The existing swing line sublimit and letter of credit sublimit under the Credit Agreement remained available to the US Borrower (and not to Adtran Networks) after giving effect to the Fourth Amendment. Otherwise, the loans under the Subline are subject to substantially the same terms and conditions under the Credit Agreement (including with respect to the interest rate and maturity date) as the other existing revolving commitments.

As of December 31, 2024, Adtran's borrowings under the revolving line of credit were $189.6 million, of which approximately $141.0 million were borrowed by ADTRAN, Inc. and $48.6 million were borrowed under the Subline by Adtran Networks. The credit facilities provided under the Credit Agreement mature in July 2027, but the U.S. Borrower may request extensions subject to customary conditions. In addition, the U.S. Borrower may utilize up to $50.0 million of the $374.0 million total revolving facility for the issuance of letters of credit. As of December 31, 2024, we had a total of 3.6 million in letters of credit under ADTRAN, Inc. outstanding under the Credit Agreement, leaving a net amount (after giving effect to the $189.6 million of outstanding borrowings described above) of $180.8 million available for future borrowings; however, as of December 31, 2024, the Company was limited to additional borrowings of $56.1 million based on debt covenant compliance metrics. Any future credit extensions under the Credit Agreement are subject to customary conditions precedent. The proceeds of any loans are expected to be used for general corporate purposes and to pay a portion of the Exchange Offer consideration. As of December 31, 2024, the Company was in compliance with all covenants.

Revolving Line of Credit Interest Rate

All U.S. dollar borrowings under the revolving line of credit (other than swingline loans, which bear interest at the Base Rate (as defined below plus the applicable margin) bear interest, at the Company’s option, at a rate per annum equal to either (A) the Base Rate plus an applicable margin ranging from 0.65% to 1.65% per annum based on the Company’s Consolidated Total Net Leverage Ratio (or, during the Covenant Relief Period, an applicable margin of 2.15% per annum), or (B) Adjusted Term SOFR (as defined below) plus an applicable margin ranging from 1.65% to 2.65% per annum based on the Company’s Consolidated Total Net Leverage Ratio (or, during the Covenant Relief Period, an applicable margin of 3.15% per annum).

“Base Rate” means the highest of (a) the federal funds rate (i.e., for any day, the rate per annum equal to the weighted average of the rates on overnight federal funds transactions with members of the Federal Reserve System, as published by the Federal Reserve Bank of New York on the business day next succeeding such day) plus ½ of 1.0%, (b) the prime commercial lending rate of the Administrative Agent, as established from time to time at its principal U.S. office (which such rate is an index or base rate and will not necessarily be its lowest or best rate charged to its customers or other banks), and (c) the daily Adjusted Term SOFR (as defined in the Credit Agreement) for a one-month tenor plus 1.0%. The Base Rate is subject to a floor of 1.00% per annum.

“Adjusted Term SOFR” means Term SOFR for the applicable interest period *plus* 0.10% per annum. Adjusted Term SOFR is subject to a floor of 0.00% per annum.

All euro borrowings under the revolving line of credit bear interest at a rate per annum equal to EURIBOR (as defined in the Credit Agreement and subject to a 0.00% per annum floor) plus an applicable margin ranging from 1.75% to 2.75% per annum based on the Company’s Consolidated Total Net Leverage Ratio (or, during the Applicable Margin Increase Period, an applicable margin of 3.25% per annum).

In addition, if on or prior to December 31, 2024 we have not reduced the aggregate revolving credit commitment to $340.0 million or less, the applicable margin for all loans shall be increased by 1.00% per annum, and if on or prior to June 30, 2025 we have not reduced the aggregate revolving credit commitment to $300.0 million or less, the applicable margin for all loans shall be increased by 1.00% per annum.

In addition to paying interest on outstanding principal under the Credit Agreement, the Company is required to pay a quarterly commitment fee to the lenders under the Credit Agreement in respect of unutilized revolving loan commitments on the average daily unused portion of the revolving credit commitment of each lender, which commitment fee ranges from 0.20% to 0.25% per annum based on the Company's Consolidated Total Net Leverage Ratio (or, during the Covenant Relief Period, is equal to 0.25% per annum). The Company is also required to pay a participation fee to the Administrative Agent for the account of each lender with respect to the Company's participation in letters of credit at the then applicable rate for Adjusted Term SOFR Loans or EURIBOR Loans, and other customary fronting, issuance and administration fees with respect to letters of credit.

The "Applicable Margin Increase Period" means the period commencing on the Second Amendment Effective Date and ending on the first date when each of the following conditions have been met: (a) the Covenant Relief Period has ended, (b) since the Second Amendment Effective Date, the borrowers have repaid the revolving credit outstanding borrowings by a principal amount of at least $75.0 million, (c) the borrowers have reduced the aggregate revolving credit commitment to an amount no greater than $300.0 million, and (d) the borrowers are in compliance with all financial covenants based on the financial statements for the most recently completed reference period.

Default interest is 2.0% per annum in excess of the rate otherwise applicable.

Covenants Under the Credit Agreement

The financial covenants under the Credit Agreement, as amended, include the following (capitalized terms used in this subsection and not otherwise defined herein have the meanings assigned to them in the Credit Agreement or its amendments, as applicable):

- As of the last day of any fiscal quarter, commencing with the fiscal quarter ended December 31, 2023, the Consolidated Total Net Leverage Ratio may not exceed 5.00x.
- As of the last day of any fiscal quarter, commencing with the fiscal quarter ended December 31, 2023, the Consolidated Senior Secured Net Leverage Ratio may not exceed:
    - In the fiscal quarter in which a Springing Covenant Event occurs and the three consecutive quarterly test periods thereafter, ("Springing Covenant Period"), the following covenant levels:
        - First fiscal quarter ending after a Springing Covenant Event: 4.00x
        - Second fiscal quarter ending after a Springing Covenant Event: 3.75x
        - Third and fourth fiscal quarters ending after a Springing Covenant Event: 3.50x
- If the Company or any of its subsidiaries incurs certain unsecured indebtedness in excess of $50.0 million in connection with a transaction that is a Springing Covenant Event or during a Springing Covenant Period, the Consolidated Senor Secured Net Leverage Ratio covenant will step down to 3.50x at the time of such incurrence.
- If a Springing Covenant Period is not in effect, the Consolidated Senior Secured Net Leverage Ratio may not exceed 3.25x.
- As of the last day of any fiscal quarter, commencing with the fiscal quarter ended December 31, 2023, the Consolidated Fixed Charge Coverage Ratio may not be less than 1.25x.
- During a Springing Covenant Period, as of the last day of any fiscal quarter (i) cash and cash equivalents of the Credit Parties must be at least $50.0 million and (ii) cash and cash equivalents of the Company and its subsidiaries must be at least $70.0 million.

All obligations under the Credit Agreement (including under the Subline) are guaranteed by ADTRAN, Inc., and certain subsidiaries of ADTRAN, Inc. ("Full Facility Guarantors"). To secure such guarantees, ADTRAN, Inc. and the Full Facility Guarantors have granted security interests in favor of the Administrative Agent over substantially all of their tangible and intangible assets, and ADTRAN, Inc. has granted mortgages in favor of the Administrative Agent over certain owned real estate assets. Certain of Adtran Networks' subsidiaries ("Subline Guarantors") have provided a guarantee solely of the obligations in respect of the Subline. Furthermore, to secure such guarantees, the Subline Guarantors have granted security interests in favor of the Administrative Agent over substantially all of their tangible and intangible assets. Adtran Networks has also granted security interests in favor of the Administrative Agent over substantially all of its tangible and intangible assets, to secure solely its obligations under the Subline. Upon repayment in full and termination of the Subline, the guarantees by the Subline Guarantors and the liens granted by Adtran Networks and the Subline Guarantors to secure obligations under the Subline will be released.

The Credit Agreement, as amended, contains customary affirmative and negative covenants, including incurrence covenants and certain other limitations on the ability of the Company and the Company's subsidiaries to incur additional debt, guarantee other obligations, grant liens on assets, make investments, dispose of assets, make restricted payments, engage in mergers or consolidations, engage in transactions with affiliates, modify its organizational documents, and enter into certain restrictive agreements. The negative covenants are subject to various exceptions and carveouts. It also contains customary events of default, such as misrepresentation and a default in the performance or observance of any covenant (subject to customary cure periods and materiality thresholds). Upon the occurrence and during the continuance of an event of default, the Administrative Agent is entitled to take various actions, including the acceleration of all amounts due under the Credit Agreement.

Note 12 – Income Taxes

The components of income tax expense (benefit) for the years ended December 31, 2024, 2023 and 2022 are as follows:

(In thousands)	2024	2023	2022
Current			
Federal	$ (1,456)	$ 2,545	$ 4,572
State	575	26	88
International	7,419	10,004	(4,347)
Total Current	**6,538**	**12,575**	**313**
Deferred			
Federal	332	46,252	(47,429)
State	(405)	6,607	(6,776)
International	2,320	(37,301)	(8,183)
Total Deferred	**2,247**	**15,558**	**(62,388)**
Total Income Tax Expense (Benefit)	**$ 8,785**	**$ 28,133**	**$ (62,075)**

The effective income tax rate differs from the federal statutory rate due to the following:

	2024	2023	2022
Tax provision computed at the federal statutory rate	21.00%	21.00%	21.00%
State income tax provision, net of federal benefit	0.06	1.34	2.60
Federal research credits	0.68	3.26	6.74
Foreign taxes	0.50	3.52	6.29
Tax-exempt income	0.04	0.06	0.21
Change in valuation allowance	(5.88)	(35.19)	63.92
Non-deductible transaction costs	—	—	(2.74)
Foreign tax credits	0.86	2.45	(0.40)
Stock-based compensation	(0.40)	(0.57)	(2.09)
Withholding taxes	(0.08)	0.01	0.03
Adtran Networks tax exempt income	—	1.42	—
Return to accrual	(0.50)	0.62	0.24
Global intangible low-taxed income ("GILTI")	(3.14)	(5.87)	(8.08)
Adtran Networks Goodwill Impairment	(14.17)	(4.62)	—
Other, net	(1.00)	0.40	(0.24)
Effective Tax Rate	**(2.03)%**	**(12.17)%**	**87.48%**

Loss before expense (benefit) for income taxes for the years ended December 31, 2024, 2023 and 2022 is as follows:

(In thousands)	2024	2023	2022
U.S. entities	$ (71,684)	$ (113,951)	$ (33,720)
International entities	(360,579)	(117,259)	(37,243)
Total	**$ (432,263)**	**$ (231,210)**	**$ (70,963)**

Loss before expense (benefit) for income taxes for international entities reflects loss based on statutory transfer pricing agreements. This amount does not correlate to consolidated international revenue, which occurs from our U.S. entity.

Deferred income taxes on the Consolidated Balance Sheets result from temporary differences between the amount of assets and liabilities recognized for financial reporting and tax purposes. The significant components of current and non-current deferred taxes as of December 31, 2024 and 2023 consist of the following:

(In thousands)	2024	2023
Deferred tax assets:		
Inventory	$ 14,121	$ 19,623
Accrued expenses	845	3,533
Deferred compensation	7,093	6,284
Stock-based compensation	1,770	2,023
Uncertain tax positions related to state taxes and related interest	105	105
Pensions	5,121	8,607
Foreign losses	70,666	2,705
State losses and credit carry-forwards	4,901	4,259
Federal loss and research carry-forwards	20,874	78,450
Lease liabilities	6,153	7,701
Capitalized research and development expenditures	43,574	48,192
Interest expense limitation	6,815	—
Valuation allowance	(110,960)	(86,567)
Total Deferred Tax Assets	**71,078**	**94,915**
Deferred tax liabilities:		
Property, plant and equipment	(8,368)	(9,093)
Intellectual property	(67,923)	(86,572)
Right of use lease assets	(6,175)	(8,424)
Investments	(1,476)	(694)
Total Deferred Tax Liabilities	**(83,942)**	**(104,783)**
Net Deferred Tax Liabilities	**$ (12,864)**	**$ (9,868)**

On March 27, 2020, the Coronavirus Aid, Relief, and Economic Security Act (the "CARES Act") was signed into law. Subsequently, the Internal Revenue Service ("IRS") released its final GILTI regulations on July 9, 2020. The passage of the CARES Act and subsequent issuance of the GILTI final regulations together resulted in the Company's recognition of a tax benefit in the amount of $10.8 million during 2020, $7.9 million of which related to the utilization of deferred tax assets which had previously been offset with a valuation allowance and $2.9 million primarily related to the tax rate differential on carrying back losses from 2018 and 2019 tax years to prior years in which the U.S. Corporate tax rate was 35% versus the current 21% federal tax rate.

On December 20, 2021, the Organization for Economic Co-operation and Development ("OECD") published Pillar Two Model Rules defining the global minimum tax, which calls for the taxation of large corporations at a minimum rate of 15%. The OECD has since issued administrative guidance providing transition and safe harbor rules around the implementation of the Pillar Two global minimum tax. Many non-U.S. tax jurisdictions have either recently enacted legislation to adopt certain components of the Pillar Two Model Rules beginning in 2024 (including the European Union Member States) with the adoption of additional components in later years or announced their plans to enact legislation in future years. The Pillar Two Model Rules did not have a material impact on the Company's financial statements for the 2024 tax year. We are still closely monitoring developments and evaluating the potential impact on future periods.

On August 16, 2022, the Inflation Reduction Act of 2022 ("Inflation Reduction Act") was signed into law, with tax provisions primarily focused on implementing a 15% minimum tax on global adjusted financial statement income ("AFSI") for corporations with average AFSI exceeding $1 billion over a three-year period, a 1% excise tax on share repurchases and various climate and clean energy tax incentives. The Inflation Reduction Act did not have a material impact on the Company's financial statements for the 2024 tax year.

As of December 31, 2024 and 2023, non-current deferred taxes reflected deferred taxes on net unrealized gains and losses on available-for-sale investments and deferred taxes on unrealized losses in our pension plan. The net change in non-current deferred taxes associated with these items, which resulted in a deferred tax benefit of $0.2 million and $0.3 million in 2024 and 2023, respectively, was recorded as an adjustment to other comprehensive (loss) income, presented in the Consolidated Statements of Comprehensive (Loss) Income.

The Company continually reviews the adequacy of our valuation allowance and recognizes the benefits of deferred tax assets only as the reassessment indicates that it is more likely than not that the deferred tax assets will be realized in accordance with ASC 740, *Income Taxes*. Due to the decrease in revenue and profitability for 2023 and 2024 and all other positive and negative objective evidence considered as part of our analysis, our ability to consider other subjective evidence such as projections for future growth continues to be limited when evaluating whether our deferred tax assets will be realized. As such, the Company maintains its conclusion from 2023 that it is not more likely than not that our domestic deferred tax assets will be realized and a valuation allowance against certain domestic deferred tax assets remains through 2024. Additional valuation allowance was recorded against certain deferred tax assets on our foreign entities as not more likely than not realizable in the fourth quarter of 2024. The amount of the deferred tax assets considered realizable, however, could be adjusted in future periods in the event sufficient evidence is present to support a conclusion that it is more likely than not that all or a portion of our deferred tax assets will be realized.

As of December 31, 2024 and 2023, the Company had gross deferred tax assets totaling $98.1 million offset by a valuation allowance totaling $111.0 million and gross deferred tax assets totaling $76.7 million offset by a valuation allowance of $86.6 million, respectively. Of the current valuation allowance, $87.0 million was established against our domestic deferred tax assets and the remaining $24.0 million is related to foreign tax assets where we lacked sufficient future source of taxable income to realize those deferred tax assets. The change in our valuation allowance for the year ending December 31, 2024 was an increase of $24.4 million. The change in the valuation allowance was primarily related to the decrease in deferred tax liabilities remaining from the step up in book basis from purchase accounting and the increase in deferred tax assets associated with net operating losses and interest expense limitation during the year.

Supplemental balance sheet information related to deferred tax assets (liabilities) as of December 31, 2024 and 2023 were as follows:

	December 31, 2024		
(In thousands)	Deferred Tax Assets (Liabilities)	Valuation Allowance	Deferred Tax Assets (Liabilities), net
Domestic	$ 102,447	$ (87,030)	$ 15,417
International	(4,351)	(23,930)	(28,281)
Total	**$ 98,096**	**$ (110,960)**	**$ (12,864)**

	December 31, 2023		
(In thousands)	Deferred Tax Assets (Liabilities)	Valuation Allowance	Deferred Tax Assets (Liabilities), net
Domestic	$ 101,120	$ (84,767)	$ 16,353
International	(24,421)	(1,800)	(26,221)
Total	**$ 76,699**	**$ (86,567)**	**$ (9,868)**

As of December 31, 2024 and 2023, the deferred tax assets for foreign and domestic loss carry-forwards, research and development tax credits, unamortized research and development costs and state credit carry-forwards totaled $140.0 million and $135.1 million, respectively. As of December 31, 2024, $27.7 million of these deferred tax assets will expire at various times between 2025 and 2045. The remaining deferred tax assets will either amortize through 2040 or carryforward indefinitely.

As of December 31, 2024 and 2023, respectively, our cash and cash equivalents were $77.6 million and $87.2 million. Of these amounts, our foreign subsidiaries held cash of $54.2 million and $73.0 million, respectively, representing approximately 78% and 88% of available short-term liquidity, which is used to fund ongoing liquidity needs of these subsidiaries. As part of our restructuring plan, the Company's assertion on being indefinitely reinvested changed in a particular jurisdiction in a previous year. The Company has a withholding tax liability of $0.4 million as of December 31, 2024 and 2023. The Company maintains its assertion in all other jurisdictions that it is indefinitely reinvesting its funds held in foreign jurisdictions outside of the U.S., except to the extent any of these funds can be repatriated without withholding tax. However, if all of these funds were repatriated to the U.S., or used for U.S. operations, certain amounts could be subject to tax. Due to the timing and circumstances of repatriation of such earnings, if any, it is not practicable to determine the amount of funds subject to unrecognized deferred tax liability.

During 2024, 2023 and 2022, no income tax benefit or expense was recorded for stock options exercised as an adjustment to equity.

The change in the unrecognized income tax benefits for the years ended December 31, 2024, 2023 and 2022 were as follows:

(In thousands)	2024	2023	2022
Balance at beginning of period	**$ 989**	**$ 17,885**	**$ 17,836**
Increases for tax position related to:			
Prior years	—	—	—
Current year	—	129	123
Decreases for tax positions related to:			
Prior years	(121)	(17,025)	(13)
Expiration of applicable statute of limitations	(616)	—	(61)
Balance at end of period	**$ 252**	**$ 989**	**$ 17,885**

As of December 31, 2024, 2023 and 2022, our total liability for unrecognized tax benefits was $0.3 million, $1.0 million and $17.9 million, respectively, of which $0.3 million, $1.0 million and $17.9 million, respectively, would reduce our effective tax rate if we were successful in upholding all of the uncertain positions and recognized the amounts recorded. We classify interest and penalties recognized on the liability for unrecognized tax benefits as income tax expense. As of December 31, 2023 and 2022, the balances of accrued interest and penalties $0.1 million and $0.1 million, respectively. There was no accrued interest and penalties as of December 31, 2024.

We do not anticipate a single tax position generating a significant increase or decrease in our liability for unrecognized tax benefits within 12 months of this reporting date. We file income tax returns in the U.S. for federal and various state jurisdictions and several foreign jurisdictions. We are not currently under audit by the Internal Revenue Service. Generally, we are not subject to changes in income taxes by any taxing jurisdiction for the years prior to 2019.

Note 13 – Employee Benefit Plans

Pension Benefit Plan

We maintain a defined benefit pension plans covering employees in certain foreign countries. Pension benefit plan obligations are based on various assumptions used by our actuaries in calculating these amounts. These assumptions include discount rates, compensation rate increases, expected return on plan assets, retirement rates and mortality rates. Actual results that differ from the assumptions and changes in assumptions could affect future expenses and obligations. Details regarding the pension plans are set forth below.

- In Germany, there are two defined benefit pension plans and two defined contribution plans. These plans provide benefits in the event of retirement, death or disability. The plan's benefits are based on age, years of service and salary. The defined benefit plans are financed by contributions paid by the Company and the defined contribution plans are financed by contributions paid by the participants.
- In Switzerland, there are two defined benefit pension plans. Both plans provide benefits in the event of retirement, death or disability. The plan's benefits are based on age, years of service, salary and on a participant's old age account. The plans are financed by contributions paid by the participants and by the Company.
- In Italy, the post-employment benefit plan is required due to statutory provisions. The plan is financed directly by the Company on a pay as you go basis. Employees receive their pension payments as a function of salary, inflation and a notional account.
- In Israel, there is a defined benefit pension plan that provides benefits in the event of a participant being dismissed involuntarily, retirement or death. The plan's benefits are based on the higher of the severance benefit required by law or the cash surrender value of the severance benefit component of any qualifying insurance policy or long-term employee benefit fund that is registered in the participants name. The plan is financed by contributions paid by the Company.
- In India, the post-employment benefit plan is required due to statutory provisions. The plan is financed directly by the Company on a pay as you go basis.

The pension benefit plan obligations and funded status as of December 31, 2024 and 2023, were as follows:

(In thousands)	2024	2023
Change in projected benefit obligation:		
Projected benefit obligation at beginning of period	$ 67,897	$ 59,344
Service cost	1,664	1,579
Interest cost	1,902	1,851
Actuarial (gain) loss - experience	(238)	1,181
Actuarial loss - assumptions	860	1,791
Benefit payments	(4,108)	(1,966)
Plan amendments	(874)	966
Participant contributions	429	—
Effects of foreign currency exchange rate changes	(4,273)	3,151
Projected benefit obligation at end of period	**63,259**	**67,897**
Change in plan assets:		
Fair value of plan assets at beginning of period	55,218	48,720
Actual gain on plan assets	3,966	3,125
Contributions	1,288	1,215
Benefit payments	(2,244)	(231)
Effects of foreign currency exchange rate changes	(3,738)	2,389
Fair value of plan assets at end of period	**54,490**	**55,218**
Unfunded status at end of period	**$ (8,769)**	**$ (12,679)**

The accumulated benefit obligation was $62.8 million and $67.1 million as of December 31, 2024 and 2023, respectively. The decrease in the accumulated benefit obligation, projected benefit obligation and the actuarial loss was primarily attributable to benefit payments to retirees and the effect of exchange rates during the year.

The net amounts recognized in the Consolidated Balance Sheets for the unfunded pension liability as of December 31, 2024 and 2023 were as follows:

(In thousands)	Balance Sheet Location	2024	2023
Non-current pension asset	Other non-current assets	$ 517	$ —
Current pension liability	Accrued wages and benefits	(303)	(136)
Non-current pension liability	Non-current pension liability	(8,983)	(12,543)
Total		**$ (8,769)**	**$ (12,679)**

The components of net periodic pension cost, other than the service cost component, are included in other income, net in the Consolidated Statements of Loss. The components of net periodic pension cost and amounts recognized in other comprehensive (loss) income for the years ended December 31, 2024, 2023 and 2022 were as follows:

(In thousands)	2024	2023	2022
Net periodic benefit cost:			
Service cost	$ 1,664	$ 1,579	$ 1,426
Interest cost	1,902	1,851	1,168
Expected return on plan assets	(2,529)	(1,750)	(2,129)
Amortization of actuarial losses	28	26	355
Net periodic benefit cost	**1,065**	**1,706**	**820**
Other changes in plan assets and benefit obligations recognized in other comprehensive income (loss):			
Net actuarial (gain) loss	(1,640)	2,304	(6,549)
Amortization of actuarial gains (losses)	233	(145)	(113)
Amount recognized in other comprehensive (income) loss	**(1,407)**	**2,159**	**(6,662)**
Total recognized in net periodic benefit cost and other comprehensive (income) loss	**$ (342)**	**$ 3,865**	**$ (5,842)**

The amounts recognized in accumulated other comprehensive loss as of December 31, 2024 and 2023 were as follows:

(In thousands)	2024	2023
Net actuarial loss	$ (1,824)	$ (3,231)

The defined benefit pension plans are accounted for on an actuarial basis, which requires the use of various assumptions, including an expected rate of return on plan assets and a discount rate. The expected return on our plan's assets is utilized in determining the benefit obligation and net periodic benefit cost is derived from periodic studies, which include a review of asset allocation strategies, anticipated future long-term performance of individual asset classes, risks using standard deviations and correlations of returns among the asset classes that comprise the plans' asset mix. While the studies give appropriate consideration to recent plan performance and historical returns, the assumptions are primarily long-term, prospective rates of return. The discount rate has been derived from the returns of high-quality, corporate bonds denominated in euro currency with durations close to the duration of our pension obligations.

The weighted-average assumptions that were used to determine the net periodic benefit cost for the years ended December 31, 2024, 2023 and 2022 were as follows:

	2024	2023	2022
Discount rate	2.84%	3.17%	3.24%
Rate of compensation increase	1.54%	2.22%	2.17%
Expected long-term rates of return	4.85%	4.83%	4.65%

The weighted-average assumptions that were used to determine the benefit obligation as of December 31, 2024 and 2023:

	2024	2023
Discount rate	2.73%	2.84%
Rate of compensation increase	1.54%	2.22%

Actuarial gains and losses are recorded in accumulated other comprehensive income. To the extent unamortized gains and losses exceed 10% of the higher of the market-related value of assets or the projected benefit obligation, the excess is amortized as a component of net periodic pension cost over the remaining service period of active participants.

The Company anticipates making approximately $2.0 million in contributions to the pension plans in 2025.

The following pension benefit payments, which reflect expected future service, as appropriate, are expected to be paid to participants:

(In thousands)	
2025	$ 3,032
2026	3,214
2027	3,906
2028	3,346
2029	4,352
2030 - 2034	18,834
Total	**$ 36,684**

U.S. GAAP establishes a three-level valuation hierarchy based upon observable and unobservable inputs for fair value measurement of financial instruments:

- Level 1 – Observable outputs; values based on unadjusted quoted prices for identical assets or liabilities in an active market;
- Level 2 – Significant inputs that are observable; values based on quoted prices in markets that are not active or model inputs that are observable either directly or indirectly;
- Level 3 – Significant unobservable inputs; values based on prices or valuation techniques that require inputs that are both unobservable and significant to the overall fair value measurement. These inputs could include information supplied by investees.

We have categorized our cash equivalents and our investments held at fair value into this hierarchy as follows:

	Fair Value Measurements at December 31, 2024 Using			
(In thousands)	Fair Value	Quoted Prices in Active Markets for Identical Assets (Level 1)	Significant Other Observable Inputs (Level 2)	Significant Unobservable Inputs (Level 3)
Cash and cash equivalents	$ 753	$ 753	$ —	$ —
Available-for-sale securities				
Bond funds	18,058	16,867	1,191	—
Equity funds	21,376	21,183	193	—
Other funds	7,406	6,089	1,317	—
Real estate funds	6,897	1,737	2,106	3,054
Available-for-sale securities	**53,737**	**45,876**	**4,807**	**3,054**
Total	**$ 54,490**	**$ 46,629**	**$ 4,807**	**$ 3,054**

	Fair Value Measurements at December 31, 2023 Using			
(In thousands)	Fair Value	Quoted Prices in Active Markets for Identical Assets (Level 1)	Significant Other Observable Inputs (Level 2)	Significant Unobservable Inputs (Level 3)
Cash and cash equivalents	$ 987	$ 987	$ —	$ —
Available-for-sale securities				
Bond funds	20,155	18,840	1,315	-
Equity funds	21,525	21,288	237	—
Other funds	6,054	5,343	711	—
Insurance contracts	353	—	353	—
Real estate funds	6,144	546	2,326	3,272
Available-for-sale securities	**54,231**	**46,017**	**4,942**	**3,272**
Total	**$ 55,218**	**$ 47,004**	**$ 4,942**	**$ 3,272**

Our investment policy includes various guidelines and procedures designed to ensure assets are invested in a manner necessary to meet expected future benefits earned by participants and consider a broad range of economic conditions. The objectives of the target allocations are to maintain investment portfolios that diversify risk through prudent asset allocation parameters, achieve asset returns that meet or exceed the plans' actuarial assumptions and achieve asset returns that are competitive with like institutions employing similar investment strategies.

The investment policy is periodically reviewed by the Company and a designated third-party fiduciary for investment matters. The policy is established and administered in a manner that is compliant at all times with applicable government regulations.

401(k) Savings Plans

We maintain the ADTRAN, Inc. 401(k) Retirement Plan and the Adtran Networks SE 401(k) Retirement Plan (the "Savings Plans") for the benefit of eligible employees. The Savings Plans are intended to qualify under Sections 401(a) and 401(k) of the Internal Revenue Code of 1986, as amended (the "Code"), and is intended to be a "safe harbor" 401(k) plan under Code Section 401(k)(12). The Savings Plans allows employees to save for retirement by contributing part of their compensation to the plan on a tax-deferred basis. The Savings Plans also requires us to contribute a "safe harbor" amount each year. In our legacy ADTRAN, Inc. plan, we match up to 4% of employee contributions (100% of an employee's first 3% of contributions and 50% of their next 2% of contributions), beginning on the employee's one-year anniversary date. All matching contributions under the legacy ADTRAN, Inc. Savings Plan vest immediately. In our legacy Adtran Networks, plan, we match up to 1.5% of employee contributions (25% of an employee's first 6% of contributions). All matching contributions under the legacy Adtran Networks Savings Plan vest ratably over five years beginning on the employee's one-year anniversary date. In addition, under the legacy Adtran Networks plan, an annual matching employer contribution is made which is based on the Company's achievement against a yearly relative Pro-forma EBIT target which can range from no additional match up to an additional 50% match. In calculating our matching contributions, compensation up to the statutory maximum under the Code is used ($345,000 for 2024). Employer contribution expense and plan administration costs for both Savings Plan amounted to approximately $3.5 million, $4.2 million and $4.1 million in 2024, 2023 and 2022, respectively.

Deferred Compensation Plans

We maintain two deferred compensation programs for certain executive management employees.

The ADTRAN, Inc. Deferred Compensation Program for Employees is offered as a supplement to our tax-qualified 401(k) plan and is available to certain executive management employees who have been designated by our Board of Directors. This deferred compensation plan allows participants to defer all or a portion of certain specified bonuses and up to 25% of remaining cash compensation and permits us to make matching contributions on a discretionary basis without the limitations that apply to the 401(k) plan. To date, we have not made any matching contributions under this plan. We also maintain the ADTRAN, Inc. Equity Deferral Program for Employees. Under this plan, participants may elect to defer all or a portion of their vested PSUs and RSUs to the plan. Such deferrals shall continue to be held and deemed to be invested in shares of Adtran stock unless and until the amounts are distributed or such deferrals are moved to another deemed investment pursuant to an election made by the participant.

We have set aside the plan assets for all plans in a rabbi trust (the "Trust") and all contributions are credited to bookkeeping accounts for the participants. The Trust assets are subject to the claims of our creditors in the event of bankruptcy or insolvency. The assets of the Trust are deemed to be invested in pre-approved mutual funds as directed by each participant and the participant's bookkeeping account is credited with the earnings and losses attributable to those investments. Benefits are scheduled to be distributed six months after termination of employment in a single lump sum payment or annual installments paid over a three or ten-year term based on the participant's election. Distributions will be made on a pro-rata basis from each of the hypothetical investments of the participant's account in cash. Any whole shares of ADTRAN, Inc. common stock that are distributed will be distributed in-kind.

Assets of the Trust are deemed invested in mutual funds that cover an investment spectrum ranging from equities to money market instruments. These mutual funds are publicly quoted and reported at fair value. The fair value of the assets held by the Trust and the amounts payable to the plan participants as of December 31, 2024 and 2023 were as follows:

(In thousands)	2024	2023
Fair Value of Plan Assets		
Long-term investments	$ 30,991	$ 26,838
Total Fair Value of Plan Assets	**$ 30,991**	**$ 26,838**
Amounts Payable to Plan Participants		
Deferred compensation liability	$ 33,203	$ 29,039
Total Amounts Payable to Plan Participants	**$ 33,203**	**$ 29,039**

The Trust held $2.2 million of common stock in the Company as of December 31, 2024 and 2023. Shares of the Company held by the Trust are recorded at cost and classified as treasury stock on the Consolidated Balance Sheet.

Interest and dividend income of the Trust are included in interest and dividend income in the accompanying 2024, 2023 and 2022 Consolidated Statements of Loss. Changes in the fair value of the plan assets held by the Trust have been included in other income, net in the accompanying 2024, 2023 and 2022 Consolidated Statements of Loss. Changes in the fair value of the deferred compensation liability are included as selling, general and administrative expense in the accompanying 2024, 2023 and 2022 Consolidated Statements of Loss. Based on the changes in the total fair value of the Trust's assets, the Company recorded deferred compensation income in 2024, 2023 and 2022 of $3.4 million, $3.0 million and $6.3 million, respectively.

Note 14 – Equity

The following table presents changes in accumulated other comprehensive income (loss), net of tax, by components of accumulated other comprehensive income (loss) for the years ended December 31, 2024, 2023 and 2022:

(In thousands)	Unrealized Gains (Losses) on Available-for-Sale Securities	Defined Benefit Plan Adjustments	Foreign Currency Adjustments	ASU 2018-02 Adoption (1)	Total
Balance as of December 31, 2022	**(836)**	**(1,016)**	**27,593**	**385**	**26,126**
Other comprehensive (loss) income before reclassifications	734	(1,590)	22,757	—	21,901
Amounts reclassified from accumulated other comprehensive (loss) income	(280)	100	—	—	(180)
Net current period other comprehensive income (loss)	454	(1,490)	22,757	—	21,721
Less: Other comprehensive income attributable to non-controlling interest, net of tax	—	—	382	—	382
Balance as of December 31, 2023	**(382)**	**(2,506)**	**49,968**	**385**	**47,465**
Other comprehensive (loss) income before reclassifications	(160)	1,640	(38,047)	—	(36,567)
Amounts reclassified from accumulated other comprehensive income (loss)	160	(161)	—	—	(1)
Net current period other comprehensive income (loss)	—	1,479	(38,047)	—	(36,568)
Balance as of December 31, 2024	**$ (382)**	**$ (1,027)**	**$ 11,921**	**$ 385**	**$ 10,897**

(1) With the adoption of ASU 2018-02 on January 1, 2019, stranded tax effects related to the Tax Cuts and Jobs Act of 2017 were reclassified to retained earnings.

The following tables present the details of reclassifications out of accumulated other comprehensive income (loss) for the years ended December 31, 2024, 2023 and 2022:

(In thousands)	For the year ended December 31,			
Details about Accumulated Other Comprehensive (Loss) Income Components	**2024**	**2023**	**2022**	**Affected Line Item in the Statement Where Net Loss Is Presented**
Unrealized gains (loss) on available-for-sale securities:				
Net realized gain (loss) on sales of securities	$ 216	$ (378)	$ (328)	Net investment gain
Defined benefit plan adjustments – actuarial (loss) gain	(233)	145	113	(1)
Total reclassifications for the period, before tax	(17)	(233)	(215)	
Tax expense	16	53	50	
Total reclassifications for the period, net of tax	**$ (1)**	**$ (180)**	**$ (165)**	

(1) Included in the computation of net periodic pension cost. See Note 13 for additional information.

The following tables present the tax effects related to the change in each component of other comprehensive income (loss) for the years ended December 31, 2024, 2023 and 2022:

	2024		
(In thousands)	**Before-Tax Amount**	**Tax (Expense) Benefit**	**Net-of-Tax Amount**
Unrealized (losses) gains on available-for-sale securities	$ (216)	$ 56	$ (160)
Reclassification adjustment for amounts related to available-for-sale investments included in net income (loss)	216	(56)	160
Defined benefit plan adjustments	1,640	—	1,640
Reclassification adjustment for amounts related to defined benefit plan adjustments included in net (loss) income	(233)	72	(161)
Foreign currency translation adjustment	(38,047)	—	(38,047)
Total Other Comprehensive Loss	**$ (36,640)**	**$ 72**	**$ (36,568)**

	2023		
(In thousands)	**Before-Tax Amount**	**Tax (Expense) Benefit**	**Net-of-Tax Amount**
Unrealized gains (losses) on available-for-sale securities	$ 992	$ (258)	$ 734
Reclassification adjustment for amounts related to available-for-sale investments included in net (loss) income	(378)	98	(280)
Defined benefit plan adjustments	(2,304)	714	(1,590)
Reclassification adjustment for amounts related to defined benefit plan adjustments included in net income (loss)	145	(45)	100
Foreign currency translation adjustment	22,757	—	22,757
Total Other Comprehensive Income	**$ 21,212**	**$ 509**	**$ 21,721**

	2022		
(In thousands)	**Before-Tax Amount**	**Tax (Expense) Benefit**	**Net-of-Tax Amount**
Unrealized (losses) gains on available-for-sale securities	$ (55)	$ 14	$ (41)
Reclassification adjustment for amounts related to available-for-sale investments included in net (loss) income	(328)	85	(243)
Defined benefit plan adjustments	6,549	(2,030)	4,519
Reclassification adjustment for amounts related to defined benefit plan adjustments included in net income (loss)	113	(35)	78
Foreign currency translation adjustment	53,396	—	53,396
Total Other Comprehensive Income (Loss)	**$ 59,675**	**$ (1,966)**	**$ 57,709**

Note 15 – Redeemable Non-Controlling Interest

As of December 31, 2024 and 2023, the non-controlling Adtran Networks stockholders' equity ownership percentage in Adtran Networks was approximately 33.0% and 34.7%, respectively.

The following table summarizes the redeemable non-controlling interest activity for the year ended December 31, 2024 and 2023:

	For the year ended December 31,		
(In thousands)	2024	2023	
Balance at beginning of period	**$ 442,152**	**$ —**	
Reclassification of non-controlling interests	1,175	443,757	
Redemption of redeemable non-controlling interests	(20,384)	(1,657)	
Net income attributable to redeemable non-controlling interests	9,824	10,092	(1)
Annual recurring compensation earned	(9,824)	(10,092)	(1)
Adtran Networks stock option exercises	—	52	
Balance at end of period	**$ 422,943**	**$ 442,152**	(1)

(1) During the the third quarter of 2024, the Company identified errors primarily impacting the carrying values of the redeemable non-controlling interest, retained deficit, the net income attributable to the non-controlling interest and the net loss attributable to the Company and, as a consequence, of the loss per common share attributable to the Company. We have revised our previously issued Consolidated Financial Statements for the year ended December 31, 2023. See Note 1 for additional information.

Annual Recurring Compensation payable on untendered outstanding shares under the DPLTA must be recognized as it is accrued. For the years ended December 31, 2024 and 2023, we accrued $9.8 million and $10.1 million, respectively, representing the portion of the annual recurring cash compensation cash to the non-controlling shareholders during such periods. The 2024 Annual Recurring Compensation accrual will be paid after the ordinary general shareholders' meeting of Adtran Networks in 2025. For the year ended December 31, 2023, we paid $10.1 million representing the portion of the annual recurring cash compensation to the non-controlling shareholders during such period. *See Note 1 for additional information on RNCI and the Annual Recurring Compensation*.

Note 16 – Segment Information and Major Customers

The chief operating decision maker is the Company's Chief Executive Officer who regularly reviews the Company's financial performance based on two reportable segments: (1) Network Solutions and (2) Services & Support.

The Network Solutions segment includes hardware and software products that enable a digital future which support the Company's Subscriber, Access and Aggregation, and Optical Networking Solutions. The Company's cloud-managed Wi-Fi gateways, virtualization software, and switches provide a mix of wired and wireless connectivity at the customer premises. In addition, its Carrier Ethernet products support a variety of applications at the network edge ranging from mobile backhaul to connecting enterprise customers ("Subscriber Solutions"). The Company's portfolio includes products for multi-gigabit service delivery over fiber or alternative media to homes and businesses.

The Services & Support segment offers a comprehensive portfolio of network design, implementation, maintenance and cloud-hosted services supporting its Subscriber, Access and Aggregation, and Optical Networking Solutions. These services assist operators in the deployment of multi-vendor networks while reducing their cost to maintain these networks. The cloud-hosted services include a suite of SaaS applications under the Company's Mosaic One platform that manages end-to-end network and service optimization for both fiber access infrastructure and mesh Wi-Fi connectivity. The Company backs these services with a global support organization that offers on-site and off-site support services with varying SLAs.

The performance of these segments is evaluated based on revenue, gross profit and gross margin; therefore, selling, general and administrative expenses, research and development expenses, interest and dividend income, interest expense, net investment gain (loss), other income, net and income tax (expense) benefit are reported on a Company-wide basis only. There is no inter-segment revenue. Asset information by reportable segment is not produced and, therefore, is not reported.

Revenue and Gross Profit

The following table presents information about revenue and gross profit of our reportable segments for each of the years ended December 31, 2024, 2023 and 2022:

	2024			2023			2022		
(In thousands)	Revenue	Cost of Revenue	Gross Profit	Revenue	Cost of Revenue	Gross Profit	Revenue	Cost of Revenue	Gross Profit
Network Solutions	$ 738,964	$ 519,667	$ 219,297	$ 974,389	$ 746,895	$ 227,494	$ 916,793	$ 647,105	$ 269,688
Services & Support	183,756	72,739	111,017	174,711	69,142	105,569	108,743	51,179	57,564
Total	**$ 922,720**	**$ 592,406**	**$ 330,314**	**$ 1,149,100**	**$ 816,037**	**$ 333,063**	**$ 1,025,536**	**$ 698,284**	**$ 327,252**

For the years ended December 31, 2024, 2023 and 2022, $6.1 million, $6.5 million and $3.2 million, respectively, of depreciation expense was included in gross profit for our Network Solutions segment. For the years ended December 31, 2024, 2023 and 2022, $0.1 million, $20 thousand and $10 thousand, respectively, of depreciation expense was included in gross profit for our Services & Support segment.

Revenue by Category

In addition to operating under two reportable segments, the Company also reports revenue across three categories – Subscriber Solutions, Access & Aggregation Solutions and Optical Networking Solutions.

Prior to the Business Combination with Adtran Networks on July 15, 2022, ADTRAN, Inc. reported revenue across the following three categories: (1) Access & Aggregation, (2) Subscriber Solutions & Experience and (3) Traditional & Other Products. Following the Business Combination with Adtran Networks, the Company has recast these revenues such that ADTRAN, Inc's former Access & Aggregation revenue is combined with a portion of the applicable Adtran Networks solutions to create Access & Aggregation Solutions, Adtran's former Subscriber Solutions & Experience revenue is combined with a portion of the applicable Adtran Networks solutions to create Subscriber Solutions, and the revenue from Traditional & Other products is now included in the applicable Access & Aggregation Solutions or Subscriber Solutions category. Optical Networking Solutions was added as a new revenue category to represent a meaningful portion of Adtran Networks' portfolio.

Our Subscriber Solutions portfolio is used by Service Providers to terminate their access services infrastructure at customers' premises while providing an immersive and interactive experience for residential, business and wholesale subscribers. This revenue category includes hardware- and software-based products and services. These solutions include fiber termination solutions for residential, business and wholesale subscribers, Wi-Fi access solutions for residential and business subscribers, Ethernet switching and network edge virtualization solutions for business subscribers, and cloud software solutions covering a mix of subscriber types.

Our Access & Aggregation Solutions are solutions that are used by communications Service Providers to connect residential subscribers, business subscribers and mobile radio networks to the Service Providers' metro network, primarily through fiber-based connectivity. This revenue category includes hardware- and software-based products and services. Our solutions within this category are a mix of fiber access and aggregation platforms, precision network synchronization and timing solutions, and access orchestration solutions that ensure highly reliable and efficient network performance.

Our Optical Networking Solutions are used by communications Service Providers, internet content providers and large-scale enterprises to securely interconnect metro and regional networks over fiber. This revenue category includes hardware- and software-based products and services. Our solutions within this category include open optical terminals, open line systems, optical subsystems and modules, network infrastructure assurance systems, and automation platforms that are used to build high-scale, secure and assured optical networks.

The following tables disaggregate our revenue by category for the years ended December 31, 2024, 2023 and 2022:

	2024		
(In thousands)	Network Solutions	Services & Support	Total
Subscriber Solutions	$ 295,541	$ 35,237	$ 330,778
Access & Aggregation Solutions	232,934	58,072	291,006
Optical Networking Solutions	210,489	90,447	300,936
Total	**$ 738,964**	**$ 183,756**	**$ 922,720**

	2023		
(In thousands)	Network Solutions	Services & Support	Total
Subscriber Solutions	$ 263,192	$ 34,516	$ 297,708
Access & Aggregation Solutions	304,074	54,344	358,418
Optical Networking Solutions	407,123	85,851	492,974
Total	**$ 974,389**	**$ 174,711**	**$ 1,149,100**

	2022		
(In thousands)	Network Solutions	Services & Support	Total
Subscriber Solutions	$ 364,238	$ 26,216	$ 390,454
Access & Aggregation Solutions	326,934	47,068	374,002
Optical Networking Solutions	225,621	35,459	261,080
Total	**$ 916,793**	**$ 108,743**	**$ 1,025,536**

Additional Information

The following table presents revenue information by geographic area for the years ended December 31, 2024, 2023 and 2022:

(In thousands)	2024	2023	2022
United States	$ 398,170	$ 460,985	$ 517,433
United Kingdom	196,064	214,655	189,685
Germany	119,976	230,922	146,797
Other international	208,510	242,538	171,621
Total	**$ 922,720**	**$ 1,149,100**	**$ 1,025,536**

Customers comprising more than 10% of revenue can change from year to year. The Company had one customer comprising more than 10% of revenue in 2024 at 12.1% and was included in both our Network Solutions and Services & Support segments. This customer accounted for $111.8 million, $126.0 million and $106.3 million in revenues for the years ended December 31, 2024, 2023 and 2022, respectively. Single customers comprising more than 10% of revenue in 2023 included one customer at 10.4% and was included in both our Network Solutions and Services & Support segments. Single customers comprising more than 10% of revenue in 2022 included one customer at 18% and was included in both our Network Solutions and Services & Support segments. Other than those with more than 10% of revenue disclosed above, our next five largest customers can change, and have historically changed, from year-to-year. The next five largest customers combined represented 22%, 28% and 33% of total revenue in 2024, 2023 and 2022, respectively.

As of December 31, 2024, property, plant and equipment, net totaled $102.9 million, which included $46.3 million held in the U.S. and $56.6 million held outside the U.S. As of December 31, 2023, property, plant and equipment, net totaled $113.6 million, which included

$55.1 million held in the U.S. and $58.5 million held outside the U.S. Property, plant and equipment, net is reported on a Company-wide, functional basis only.

Note 17 – Liability for Warranty Returns

The liability for warranty obligations totaled $4.5 million and $6.4 million as of December 31, 2024 and 2023, respectively. These liabilities are included in accrued expenses and other liabilities and other non-current liabilities in the accompanying Consolidated Balance Sheets.

A summary of warranty expense and write-off activity for the years ended December 31, 2024, 2023 and 2022 is as follows:

	Year Ended December 31,		
(In thousands)	2024	2023	2022
Balance at beginning of period	**$ 6,445**	**$ 7,196**	**$ 5,403**
Plus: Adtran Networks acquisition	—	—	3,756
Plus: Amounts charged to cost and expenses	1,772	2,952	3,104
Plus: Foreign currency translation adjustments	(119)	82	334
Less: Deductions	(3,586)	(3,784)	(5,401)
Balance at end of period	**$ 4,512**	**$ 6,445**	**$ 7,196**

Note 18 – Commitments and Contingencies

Legal Matters

From time to time, the Company is subject to or otherwise involved in various lawsuits, claims, investigations and legal proceedings that arise out of or are incidental to the conduct of our business (collectively, "Legal Matters"), including those relating to employment matters, patent rights, regulatory compliance matters, stockholder claims, and contractual and other commercial disputes. Such Legal Matters, even if not meritorious, could result in the expenditure of significant financial and managerial resources. Additionally, an unfavorable outcome in a legal matter, including in a patent dispute, could require the Company to pay damages, entitle claimants to other relief, such as royalties, or could prevent the Company from selling some of its products in certain jurisdictions. The Company records an accrual for any Legal Matters that arise whenever it considers that it is probable that it is exposed to a loss contingency and the amount of the loss contingency can be reasonably estimated. Although the ultimate disposition of asserted claims cannot be predicted with certainty, it is our belief that the outcome of any such claims, either individually or on a combined basis, will not have a material adverse effect on our consolidated financial position.

DPLTA Appraisal Proceedings

In addition to such Legal Matters, the Company is a party to appraisal proceedings relating to the DPLTA. The DPLTA provides that Adtran Networks shareholders (other than the Company) be offered, at their election, (i) to put their Adtran Networks shares to the Company in exchange for compensation in cash of €17.21 per share, plus guaranteed interest or (ii) to remain Adtran Networks shareholders and receive recurring cash compensation of €0.52 per share for each full fiscal year of Adtran Networks. The appraisal proceedings, which were initiated by certain minority shareholders of Adtran Networks, challenge the adequacy of both forms of compensation. While the Company believes that the compensation offered in connection with the DPLTA is fair, it notes that German courts often adjudicate increases of the cash compensation to plaintiffs in varying amounts in connection with German appraisal proceedings. Therefore, the Company cannot rule out that the first instance court or an appellate court may increase the cash compensation owed to the minority Adtran Networks shareholders. Given the stage of the appraisal proceedings, the Company is currently unable to predict the likely outcome or estimate the potential financial impact, if any, of the appraisal proceedings. If a ruling were to occur and be upheld upon appeal that required the Company to pay significant additional cash compensation to the Adtran Networks minority shareholders, there exists the possibility of a material adverse effect on our financial position and results of operations for the period in which the ruling occurs or future periods.

DPLTA Exit and Recurring Compensation Costs and the Absorption of Adtran Network's Annual Net Loss

*P*ursuant to the terms of the DPLTA, each Adtran Networks shareholder (other than the Company) has received an offer to elect either (1) to remain an Adtran Networks shareholder and receive from us an Annual Recurring Compensation payment, or (2) to receive Exit Compensation plus guaranteed interest. The guaranteed interest under the Exit Compensation is calculated from the effective date of the DPLTA to the date the shares are tendered, less any Annual Recurring Compensation paid. The guaranteed interest rate is 5.0% plus a variable component (according to the German Civil Code) that was 3.37% as of December 31, 2024. Assuming all the minority holders of currently outstanding Adtran Networks shares were to elect the second option, we would be obligated to make aggregate Exit Compensation payments, including guaranteed interest, of approximately €333.2 million or approximately $344.9 million, based on an exchange rate as of December 31, 2024 and reflecting interest accrued through December 31, 2024 during the pendency of the appraisal proceedings discussed below. Shareholders electing the first option of Annual Recurring Compensation may later elect the second

option. The opportunity for outside Adtran Networks shareholders to tender Adtran Networks shares in exchange for Exit Compensation had been scheduled to expire on March 16, 2023. However, due to the appraisal proceedings that have been initiated in accordance with applicable German law, this time period for tendering shares has been extended pursuant to the German Stock Corporation Act (*Aktiengesetz*) and will end two months after the date on which a final decision in such appraisal proceedings has been published in the Federal Gazette (*Bundesanzeiger*).

Our obligation to pay Annual Recurring Compensation under the DPLTA is a continuing payment obligation, which will amount to approximately €8.9 million (or $9.3 million based on the current exchange rate) per year assuming none of the minority Adtran Networks shareholders were to elect Exit Compensation. The foregoing amounts do not reflect any potential increase in payment obligations that we may have depending on the outcome of ongoing appraisal proceedings in Germany. The Annual Recurring Compensation is due on the third banking day following the ordinary general shareholders' meeting of Adtran Networks for the respective preceding fiscal year (but in any event within eight months following expiration of the fiscal year). With respect to the 2023 fiscal year, Adtran Networks' ordinary general shareholders' meeting occurred on June 28, 2024 and, therefore, the Annual Recurring Compensation was paid on July 3, 2024.With respect to the 2024 fiscal year, Adtran Networks' ordinary general shareholders meeting is scheduled for June 27, 2025 and, therefore, the Annual Recurring Compensation will be due on July 2, 2025. During the year ended December 31, 2024 and 2023, we accrued $9.8 million and $10.1 million, respectively, in Annual Recurring Compensation, which was reflected as an increase to retained deficit.

For the year ended December 31, 2024, approximately 831 thousand shares, of Adtran Networks stock were tendered to the Company. This resulted in total Exit Compensation payments of approximately €15.7 million, or approximately $17.4 million, based on exchange rates at the time of the transactions, being paid to Adtran Networks shareholders. For the year ended December 31, 2023, 67 thousand shares, respectively, of Adtran Networks shares were tendered to the Company. This resulted in Exit Compensation payments of approximately €1.2 million, respectively, or approximately $1.3 million, based on an exchange rate as of December 31, 2023, being paid to Adtran Networks shareholders.

In addition, under the DPLTA, subject to certain limitations pursuant to applicable law and the specific terms of the DPLTA, (i) the Company is entitled to issue binding instructions to the management board of Adtran Networks, (ii) Adtran Networks will transfer its annual profit to the Company, subject to, among other things, the creation or dissolution of certain reserves, and (iii) the Company will generally absorb the annual net loss incurred by Adtran Networks. The Company's payment obligation in satisfaction of the requirement that it absorb Adtran Networks' annual net loss applied for the first time to the net loss generated in 2023.

Performance Bonds

Certain contracts, customers and jurisdictions in which the Company do business require us to provide various guarantees of performance such as bid bonds, performance bonds and customs bonds. As of December 31, 2024 and December 31, 2023, the Company had commitments related to these bonds totaling $15.7 million and $10.8 million, respectively, which expire at various dates through April 2029. In general the Company would only be liable for the amount of these guarantees in the event of default under each contract, the probability of which the Company believes is remote.

Purchase Obligations

The Company purchases components from a variety of suppliers and use contract manufacturers to provide manufacturing services for our products. Our inventory purchase obligations are for short-term product manufacturing requirements, as well as for obligations to suppliers to secure manufacturing capacity. Certain of our inventory purchase obligations with contract manufacturers and suppliers relate to arrangements to secure supply and pricing for certain product components for multi-year periods. As of December 31, 2024, purchase obligations totaled $202.5 million.

Note 19 – Loss per Share

The calculations of basic and diluted loss per share for the years ended December 31, 2024, 2023 and 2022 are as follows:

(In thousands, except for per share amounts)	2024	2023	2022
Numerator			
Net loss attributable to ADTRAN Holdings, Inc.	$ (450,872)	$ (266,289)	$ (2,037)
Effect of redemption of RNCI	2,981	—	—
Net loss attributable to ADTRAN Holdings, Inc. common stockholders	$ (447,891)	$ (266,289)	$ (2,037)
Denominator			
Weighted average number of shares – basic	78,928	78,416	62,346
Effect of dilutive securities:			
Stock options	—	—	—
PSUs, RSUs and restricted stock	—	—	—
Weighted average number of shares – diluted	**78,928**	**78,416**	**62,346**
Loss per share attributable to ADTRAN Holdings, Inc. – basic	$ (5.67)	$ (3.39)	$ (0.03)
Loss per share attributable to ADTRAN Holdings, Inc. – diluted	$ (5.67)	$ (3.39)	$ (0.03)

For each of the years ended December 31, 2024, 2023 and 2022, less than 0.8 million, 0.5 million and 0.1 million shares of unvested or unearned, as applicable, PSUs, RSUs and restricted stock were excluded from the calculation of diluted loss per share due to their anti-dilutive effect.

For the years ended December 31, 2024, 2023 and 2022, 3.4 million, 1.8 million and 0.2 million stock options, respectively, were outstanding but were not included in the computation of diluted loss per share due to their exercise prices being greater than the average market price of the common shares during the quarter, making them anti-dilutive under the treasury stock method.

Note 20 – Restructuring

During the fourth quarter of 2022, the Company initiated a restructuring program designed to optimize the assets, business processes, and information technology systems of the Company in relation to the Business Combination with Adtran Networks. The restructuring program included expenses specifically associated with achieving run-rate synergies as well as Business Efficiency Program expenses described below.

On November 6, 2023, due to the uncertainty around the current macroeconomic environment and its impact on customer spending levels, the Company's management decided to implement a business efficiency program ("Business Efficiency Program") targeting the reduction of ongoing operating expenses and focusing on capital efficiency inclusive of certain salary reductions, an early retirement program, a site consolidation plan to include lease impairments and the sale of owned real estate (including the sale of our headquarters), inventory write downs from product discontinuances, and the suspension of the quarterly dividend. The Business Efficiency Program expanded upon other recently implemented restructuring efforts and synergy costs following the Business Combination. For instance, on August 17, 2023, the Company's management determined to discontinue its copper-based Digital Subscriber Line broadband access technology products and its fixed wireless access products in its Network Solutions segment. Furthermore, on September 29, 2023, the Company's management decided to exit the "IoT" gateway market (indoor and outdoor), a subset of the broader IoT market (together with the other product discontinuations, the "Discontinuations"). On October 25, 2023, all employees were informed of certain personnel measures, which included the reduction of salary for select management, a reduction of approximately 5% of the workforce, an early retirement program and a hiring freeze. Additionally, on April 11, 2024, Management determined to close a facility in Greifswald, Germany which occurred in November 2024. As of December 31, 2024, the Company classified the Company's property, specifically the North and South Towers located on our Huntsville, Alabama campus, as assets held for sale, s*ee Note 1 and Note 6 of this report for additional information*. The Business Efficiency Program was substantially complete as of December 31, 2024.

During the years ended December 31, 2024 and 2023, we recognized $44.7 million and $25.1 of costs related to the Business Efficiency Program. The costs recognized during the year ended December 31, 2024, included total other renegotiated charges and inventory write-down of $8.6 million as a result of a strategy shift which included discontinuance of certain items in connection with the Business

Efficiency Program, of which, $4.1 million relates to inventory write-downs and $4.5 million relates to other charges, and are included in cost of revenue in the Consolidated Statements of Loss.

For the years ended December 31, 2023 and 2022, we recognized $21.5 million and $1.6 million of restructuring costs relating to the Business Combination under the multi-year integration program and synergy realization, respectively, that are included in cost of revenue, selling, general and administrative expenses and research and development expenses in the Consolidated Statement of Loss.

A reconciliation of the beginning and ending restructuring liability, which is included in accrued wages and benefits and accrued expenses and other liabilities in the Consolidated Balance Sheets as of December 31, 2024 and 2023, is as follows:

(In thousands)	2024	2023
Balance at beginning of period	$ 8,309	$ 159
Plus: Amounts charged to cost and expense	40,545	22,241
Less: Amounts paid	(38,518)	(14,091)
Balance at end of period	**$ 10,336**	**$ 8,309**

Restructuring expenses included in the Consolidated Statements of Loss are for the years ended December 31, 2024, 2023 and 2022:

(In thousands)	2024	2023	2022
Network solutions - cost of revenue	$ 3,693	$ 2,910	$ 8
Network solutions - inventory write-down	8,597	24,313	—
Services & support - cost of revenue	2,289	—	—
Cost of revenue	$ 14,579	$ 27,223	$ 8
Selling, general and administrative expenses	9,128	11,603	117
Research and development expenses	20,973	7,728	1,504
Total restructuring expenses	**$ 44,680**	**$ 46,554**	**$ 1,629**

The following table represents the components of restructuring expense by geographic area for the years ended December 31, 2024, 2023 and 2022:

(In thousands)	2024	2023	2022
United States	$ 18,422	$ 34,629	$ 2
International	26,258	11,925	1,627
Total restructuring expenses	**$ 44,680**	**$ 46,554**	**$ 1,629**

Note 21 – Current Expected Credit Losses

Under ASC 326 – Financial Instruments – Credit Losses, the Company estimates credit losses for the contractual life of assets that are measured at amortized cost and are within the scope of this guidance, which includes accounts receivable, net investment in sales-type leases, contract assets under the revenue recognition model and outstanding notes receivable. Where appropriate, the Company pools assets if similar risk characteristics exist. Additionally, the Company analyzes its available-for-sale debt securities for impairment and records a credit loss allowance as needed.

Assets Measured at Amortized Cost

Accounts Receivable

The Company records accounts receivable in the normal course of business as products are shipped or services are performed and invoiced, but payment has not yet been remitted by the customer. Accounts receivable balances are considered past due when payment has not been received by the date indicated on the relevant invoice or based on agreed upon terms between the customer and the Company. As of December 31, 2024 and 2023, the Company's net outstanding accounts receivable balance was $178.0 million and $216.4 million, respectively. The Company assessed the need for an allowance for credit losses related to its outstanding accounts receivable using the historical loss-rate method as well as assessing asset-specific risks. The Company's historical losses related to accounts receivable have been immaterial as evidenced by its historical allowance and write-offs due to collectability. The assessment of asset-specific risks included the evaluation of relevant available information, from internal and external sources, relating to current conditions that may affect a customer's ability to pay, such as the customer's current financial condition, credit rating by geographic location, as provided by a third party and/or by customer, if needed, and the overall macro-economic conditions in which the customer operates. The Company pooled assets by geographic location to determine if an allowance should be applied to its accounts receivable balance, assessing the specific country risk rating and overall economics of that particular country. If elevated risk existed, or customer

specific risk indicated the accounts receivable balance was at risk, the Company further analyzed the need for an allowance related to specific accounts receivable balances. Additionally, the Company determined that significant changes to customer country risk rating from period-to-period and from the end of the prior year to the end of the current quarter would require further review and analysis by the Company.

Credit losses totaling $1.3 million and $0.4 million were recorded for the years ended December 31, 2024 and 2023, respectively, related to accounts receivable.

Contract Assets

The Company records contract assets when it has recognized revenue but has not yet billed the customer. As of December 31, 2024 and 2023, the Company's outstanding contract asset balance was $0.6 million and $0.7 million, respectively, which is included in other receivables on the Consolidated Balance Sheets. The Company assessed the need for an allowance for credit losses related to its outstanding contract assets using the historical loss-rate method as well as asset-specific risks. The Company's historical losses related to contract assets receivable have been immaterial as evidenced by historical write-offs due to collectability. Asset-specific risk included the evaluation of relevant available information, from internal and external sources, relating to current conditions that may affect a customer's ability to pay once invoiced, such as the customer's financial condition, credit rating by geographic location as provided by a third party and/or by customer, if needed, and the overall macro-economic conditions in which the customer operates. The Company pooled assets by geographic location to determine if an allowance should be applied to its contract asset balance, assessing the specific country risk rating and the overall economics of that particular country. If elevated risk existed, or customer specific risk indicated the contract balance was at risk, the Company further analyzed the need for an allowance related to specific customer balances. Additionally, the Company determined that significant changes to customer country risk rating from period-to-period and from the end of the prior year to the end of the current quarter would be subject to further review and analysis by the Company.

No allowance for credit losses was recorded for the years ended December 31, 2024 and 2023 related to contract assets.

O*ff-Balance Sheet Arrangements*

We have exposure to credit losses from off-balance sheet exposures, to provide various guarantees of performance such as bid bonds, performance bonds and customs bonds, where we believe the risk of loss is immaterial to our financial statements as of December 31, 2024 and 2023, respectively. Otherwise, we do not have off-balance sheet financing arrangements and have not engaged in any related party transactions or arrangements with unconsolidated entities or other persons that are reasonably likely to materially affect liquidity or the availability of or requirements for capital resources. *See Note 18 of the Notes to Consolidated Financial Statements, included in Part II, Item 8 of this report for additional information*.

Available-for-Sale Debt Securities

As of December 31, 2024 and 2023 the Company had sold all available-for-sale debt securities.

ITEM 9. CHANGES IN AND DISAGREEMENTS WITH ACCOUNTANTS ON ACCOUNTING AND FINANCIAL DISCLOSURE

None.

ITEM 9A. CONTROLS AND PROCEDURES

Evaluation of Disclosure Controls and Procedures

We maintain disclosure controls and procedures that are designed to ensure that the information required to be disclosed by us in reports that we file or submit under the Securities Exchange Act of 1934, as amended (the "Exchange Act"), is recorded, processed, summarized and reported within the time periods specified in the rules and forms promulgated by the SEC, and that such information is accumulated and communicated to our management, including our Chief Executive Officer and our Chief Financial Officer, as appropriate, to allow timely decisions regarding required disclosure.

As of the end of the period covered by this report, an evaluation was carried out by management, including our Chief Executive Officer and Chief Financial Officer, of the effectiveness of our disclosure controls and procedures (as defined in Rules 13a-15(e) and 15d-15(e)) under the Exchange Act. Based on that evaluation, our Chief Executive Officer and Chief Financial Officer concluded that due to the material weaknesses in our internal control over financial reporting described below, our disclosure controls and procedures were not effective as of December 31, 2024.

Management's Report on Internal Control over Financial Reporting

Management of ADTRAN Holdings, Inc. ("Adtran") is responsible for establishing and maintaining adequate internal control over financial reporting as defined in Rules 13a-15(f) and 15d-15(f) under the Exchange Act. Adtran's internal control over financial reporting is a process designed to provide reasonable assurance regarding the reliability of financial reporting and the preparation of financial statements for external purposes in accordance with generally accepted accounting principles. Adtran's internal control over financial reporting includes those policies and procedures that:

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

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

Management assessed the effectiveness of Adtran's internal control over financial reporting as of December 31, 2024. In making this assessment, management used the criteria set forth by the Committee of Sponsoring Organizations of the Treadway Commission ("COSO") in *Internal Control-Integrated Framework* (2013).

A material weakness is a deficiency, or a combination of deficiencies, in internal control over financial reporting, such that there is a reasonable possibility that a material misstatement of our annual or interim financial statements will not be prevented or detected on a timely basis. In its assessment of the effectiveness of internal control over financial reporting as of December 31, 2024, management determined that there were deficiencies in Adtran's internal control over financial reporting that constituted material weaknesses that existed as of December 31, 2024. Such material weaknesses were as follows:

- Adtran did not design and maintain effective controls in response to the risks of material misstatement. Specifically, changes to existing controls or the implementation of new controls have not been sufficient to respond to changes to the risks of material misstatement to financial reporting. This material weakness contributed to the following additional material weaknesses:
- Adtran did not design and maintain effective controls over financial statement preparation, presentation and disclosure commensurate with its financial reporting requirements. Specifically, Adtran did not design and maintain effective controls over the presentation and disclosure of transactions, including non-controlling interest.
- Adtran did not design and maintain effective controls to address the initial application of complex accounting standards and accounting of non-routine, unusual or complex events and transactions. Specifically, Adtran did not design and maintain

effective controls to timely analyze and account for (i) non-controlling interest and (ii) the receivable purchase and servicing agreement.

The material weaknesses resulted in the restatements and revisions of immaterial adjustments to our consolidated financial statements for the years ended December 31, 2022, and December 31, 2023, as well as the condensed consolidated financial statements for the quarterly and year-to-date periods ended September 30, 2022, March 31, 2023, June 30, 2023, September 30, 2023, March 31, 2024, and June 30, 2024. The material weaknesses also resulted in material adjustments to our consolidated financial statements for the year ended December 31, 2023. The material weaknesses also resulted in immaterial adjustments to our consolidated financial statements for the years ended December 31, 2023 and December 31, 2024, as well as the condensed consolidated financial statements for the quarterly and year-to-date periods ended March 31, 2023, June 30, 2023, September 30, 2023, March 31, 2024, June 30, 2024, and September 30, 2024. Additionally, these material weaknesses could result in misstatements of Adtran's accounts or disclosures that would result in a material misstatement to the annual or interim consolidated financial statements that would not be prevented or detected.

Because of these material weaknesses, management has concluded that Adtran did not maintain effective internal control over financial reporting as of December 31, 2024.

The effectiveness of Adtran's internal control over financial reporting as of December 31, 2024 has been audited by PricewaterhouseCoopers LLP, an independent registered public accounting firm, as stated in their report which appears in Item 8.

Management's Remediation Efforts

To remediate the material weaknesses in Adtran's internal control over financial reporting related to the risks of material misstatement, including financial statement preparation, presentation and disclosure of transactions and the non-controlling interest, Adtran has implemented a remediation plan that involves introducing new or enhanced controls over the review of Adtran's consolidated financial statements, global identification and reassessment of all key process and controls, increased training and awareness of control activities, and increased scrutiny on control performance and documentation standards. Adtran believes that the foregoing actions will support the improvement of the Company's internal control over financial reporting, and, through our efforts to identify, design, and implement the necessary control activities, will be effective in remediating such material weaknesses.

To remediate the material weaknesses in Adtran's internal control over financial reporting relating to accounting of non-routine, unusual or complex events and transactions for non-controlling interest and the receivable purchase and servicing agreement, Adtran has prepared a remediation plan that included designing and implementing new controls over the identification and review of contracts, transactions or arrangements that may result in a financial obligation including the use of an accounting third-party consultant as needed to ensure proper presentation of these items within our financial statements. These controls have been in place since the third quarter of 2024.

We have implemented the above-referenced controls and are in the process of testing their effectiveness. We will continue to devote significant time and attention to these remediation efforts. Adtran continues to evaluate and work to improve our internal control over financial reporting, management may decide to take additional measures to address the material weaknesses or determine to modify the remediation plans described above. Until the remediation steps set forth above, including the implementation of all necessary control activities that we identify, are fully completed, and there has been time for us to conclude through testing that the control activities are operating effectively, the material weaknesses described above will not be considered remediated.

Changes in Internal Control over Financial Reporting.

There were no changes in Adtran's internal control over financial reporting that occurred during the most recent fiscal quarter covered by this report that have materially affected, or are reasonably likely to materially affect, its internal control over financial reporting.

ITEM 9B. OTHER INFORMATION

(a) None.

(b) During the fiscal quarter ended December 31, 2024, none of the Company's directors or executive officers adopted or terminated any contract, instruction or written plan for the purchase or sale of Company securities that was intended to satisfy the affirmative defense conditions of Rule 10b5-1(c) or any "non-Rule 10b5-1 trading arrangement."

ITEM 9C. DISCLOSURE REGARDING FOREIGN JURISDICTIONS THAT PREVENT INSPECTIONS

None.

PART III

ITEM 10. DIRECTORS, EXECUTIVE OFFICERS AND CORPORATE GOVERNANCE

Code of Ethics

We have adopted a Code of Business Conduct and Ethics, which applies to all employees, officers and directors of ADTRAN. The Code of Business Conduct and Ethics meets the requirements of a "code of ethics" as defined by Item 406 of Regulation S-K, and applies to our Chief Executive Officer, Chief Financial Officer (who is both our principal financial and principal accounting officer), as well as all other employees, as indicated above. The Code of Business Conduct and Ethics also meets the requirements of a code of conduct under NASDAQ listing standards. The Code of Business Conduct and Ethics is posted on our website at www.adtran.com under the links "About – Investor Relations – Corporate Governance – Charters and Documents." We intend to disclose any amendments to the Code of Business Conduct and Ethics, as well as any waivers for executive officers or directors, on our website at www.adtran.com. The information found on our website is not incorporated by reference in this report or any other report that we file or furnish to the SEC.

Certain information required by this Item regarding Adtran's executive officers is included in Part I of this report under the caption "Information about our Executive Officers" in accordance with the Instructions to Item 401 of Regulation S-K.

Other information required by this Item is incorporated by reference pursuant to General Instruction G(3) of Form 10-K from Adtran's definitive Proxy Statement for the 2025 Annual Meeting of Stockholders (the "2025 Proxy Statement") to be filed with the SEC pursuant to Regulation 14A.

Insider Trading Policy

We have adopted the ADTRAN Holdings, Inc. Insider Trading Policy (the "Insider Trading Policy"), which applies to all directors, officers, employees, independent contractors, and consultants of the Company and its subsidiaries, as well as certain other persons. The Insider Trading Policy is designed to promote compliance with U.S. federal and state securities laws, rules and regulations, as well as European Regulation No. 596/2014 and the applicable rules and regulations of The Nasdaq Stock Market, LLC, with respect to the purchase, sale and/or disposition of the Company's securities (and the securities of other companies in certain circumstances). The Insider Trading Policy addresses the implementation of certain trading blackout periods in the Company's securities for Company insiders. A copy of the Insider Trading Policy is filed as Exhibit 19 to this 2024 Form 10-K.

ITEM 11. EXECUTIVE COMPENSATION

The information required by this Item is incorporated by reference pursuant to General Instruction G(3) of Form 10-K from the 2025 Proxy Statement to be filed with the SEC pursuant to Regulation 14A.

ITEM 12. SECURITY OWNERSHIP OF CERTAIN BENEFICIAL OWNERS AND MANAGEMENT AND RELATED STOCKHOLDER MATTERS

The following table provides information about our common stock that may be issued under all of our existing equity compensation plans as of December 31, 2024, , which include the 2006 Employee Plan, the 2010 Directors Plan, the 2015 Employee Plan, the 2020 Employee Plan and the 2020 Directors Plan (collectively, the "Prior Plans"), the 2024 Employee Stock Incentive Plan ("2024 Employee Plan") and the 2024 Directors Stock Plan ("2024 Directors Plan") (collectively, the "Plans"). Each of the Plans has been approved by our stockholders.

(In thousands)	Number of securities to be issued upon exercise of outstanding options, warrants and rights (a)(1)	Weighted average exercise price of outstanding options, warrants and rights (b)(1)	Number of securities remaining available for future issuance under equity compensation plans (excluding securities reflected in column (a)) (c)(2)
Plan Category			
Equity compensation plans approved by stockholders	2,944	$ 9.86	5,051
Equity compensation plans not approved by stockholders	—	—	—
Total	**2,944**	**$ 9.86**	**5,051**

(1) Excludes 1.0 million of target PSUs and 2.2 million of time-based RSUs outstanding under our 2024 Employee Stock Incentive Plan and 0.1 million shares of time-based restricted stock outstanding under our 2024 Directors Plan. The outstanding stock options have a weighted average remaining term of 5.0 years.

(2) Represents 4.5 million shares of common stock available for future issuance pursuant to the 2024 Employee Plan and 0.6 million shares of common stock available for future issuance pursuant to the 2024 Directors Plan. Following the stockholders' approval of the 2024 Employee Plan and the 2024 Directors Plan were approved by the stockholders, we are no longer making any future grants under the Prior Plans, but certain shares underlying awards that are forfeited, cancelled or terminated under the Prior Plans will again be available for issuance under the 2024 Employee Plan and the 2024 Directors Plan, as applicable.

The other information required by this Item is incorporated by reference pursuant to General Instruction G(3) of Form 10-K from the 2025 Proxy Statement to be filed with the Securities and Exchange Commission pursuant to Regulation 14A.

ITEM 13. CERTAIN RELATIONSHIPS AND RELATED TRANSACTIONS AND DIRECTOR INDEPENDENCE

The information required by this Item is incorporated by reference pursuant to General Instruction G(3) of Form 10-K from the 2025 Proxy Statement to be filed with the SEC pursuant to Regulation 14A.

ITEM 14. PRINCIPAL ACCOUNTANT FEES AND SERVICES

The information required by this Item is incorporated by reference pursuant to General Instruction G(3) of Form 10-K from the 2025 Proxy Statement to be filed with the SEC pursuant to Regulation 14A.

PART IV

ITEM 15. EXHIBITS AND FINANCIAL STATEMENT SCHEDULES

Documents Filed as Part of This Report.

1. Consolidated Financial Statements

The consolidated financial statements of Adtran and the report of independent registered public accounting firm thereon are set forth under Part II, Item 8 of this report.

Consolidated Balance Sheets as of December 31, 2024 and 2023

Consolidated Statements of Loss for the years ended December 31, 2024, 2023 and 2022

Consolidated Statements of Comprehensive (Loss) Income for the years ended December 31, 2024, 2023 and 2022

Consolidated Statements of Changes in Equity for the years ended December 31, 2024, 2023 and 2022

Consolidated Statements of Cash Flows for the years ended December 31, 2024, 2023 and 2022

Notes to Consolidated Financial Statements

2. Consolidated Financial Statement Schedule

Schedule II - Valuation and Qualifying Accounts

3. Exhibits

The following exhibits are filed with or incorporated by reference in this report. Where such filing is made by incorporation by reference to a previously filed registration statement or report, such registration statement or report is identified in parentheses. We will furnish any exhibit upon request to: ADTRAN Holdings, Inc., Attn: Investor Relations, 901 Explorer Boulevard, Huntsville, Alabama 35806. There is a charge of $0.50 per page to cover expenses for copying and mailing.

Effective as of July 8 2022, ADTRAN Holdings, Inc. became the successor to ADTRAN, Inc. Any reference to "ADTRAN, Inc." in these exhibits should be read as "ADTRAN Holdings, Inc." as set forth in the Exhibit List below.

Furthermore, effective June 8, 2023, ADVA Optical Networking SE (“ADVA”), a subsidiary of ADTRAN Holdings, Inc., changed its name to Adtran Networks SE. By operation of law, any reference to ADVA Optical Networking SE in these exhibits should be read as Adtran Networks SE as set forth in the Exhibit List below.

Exhibit Number	Description
2.1	Business Combination Agreement, dated August 30, 2021, by and among ADTRAN Holdings, Inc., Acorn HoldCo, Inc., Acorn MergeCo, Inc. and Adtran Networks SE (incorporated by reference to Exhibit 2.1 to Adtran’s Form 8-K filed August 30, 2021)
3.1	Amended and Restated Certificate of Incorporation of ADTRAN Holdings, Inc. (incorporated by reference to Exhibit 3.1 to Adtran's Form 8-K filed July 8, 2022)
3.2	Second Amended and Restated Bylaws of ADTRAN Holdings, Inc. (incorporated by reference to Exhibit 3.1 to the Company's Form 8-K filed October 24, 2023)
4.1*	Description of Securities
10.1	Management Contracts and Compensatory Plans:
	(a) ADTRAN Holdings, Inc. 2006 Employee Stock Incentive Plan (incorporated by reference to Exhibit 4.1 to Adtran’s Registration Statement on Form S-8 (File No. 333-133927) filed May 9, 2006)
	(b) First Amendment to the ADTRAN Holdings, Inc. 2006 Employee Stock Incentive Plan (incorporated by reference to Exhibit 10.3(h) to Adtran’s 2007 Form 10-K filed February 28, 2008)
	(c) Form of Nonqualified Stock Option Agreement under the 2006 Employee Stock Incentive Plan (incorporated by reference to Exhibit 10.1 to the Company's Form 8-K filed June 8, 2006)

(d) Form of Incentive Stock Option Agreement under the 2006 Employee Stock Incentive Plan (incorporated by reference to Exhibit 10.2 to the Company's Form 8-K filed June 8, 2006)

(e) ADTRAN Holdings, Inc. 2015 Employee Stock Incentive Plan (incorporated by reference to Exhibit 10.1 to the Company's Form 8-K filed May 15, 2015)

(f) Form of Option Award Agreement under the ADTRAN Holdings, Inc. 2015 Employee Stock Incentive Plan (incorporated by reference to Exhibit 10.3(p) to the Company's Form 10-K filed February 25, 2020)

(g) ADTRAN Holdings, Inc. Deferred Compensation Program for Employees, as amended and restated as of June 1, 2010 (incorporated by reference to Exhibit 10.3(n) to the Company's Form 10-K filed February 24, 2016)

(h) ADTRAN Holdings, Inc. Deferred Compensation Program for Directors, as amended and restated as of June 1, 2010 (incorporated by reference to Exhibit 10.3(o) to the Company's Form 10-K filed February 24, 2016)

(i) ADTRAN Holdings, Inc. Equity Deferral Program for Employees, as amended and restated as of October 1, 2011 (incorporated by reference to Exhibit 10.3(p) to the Company's Form 10-K filed February 24, 2016)

(j) ADTRAN Holdings, Inc. Equity Deferral Program for Directors, as amended and restated as of October 1, 2011 (incorporated by reference to Exhibit 10.3(q) to the Company's Form 10-K filed February 24, 2016)

(k) Amended and Restated ADTRAN Holdings, Inc. 2020 Employee Stock Incentive Plan (incorporated by reference to Exhibit 10.1(t) to the Company's Form 10-K filed March 1, 2023)

(l) Form of Notice Letter with respect to RSU and PSU awards under the ADTRAN Holdings, Inc. 2020 Employee Stock Incentive Plan (incorporated by reference to Exhibit 10.3 (ae) to the Company's Form 10-K filed February 26, 2021)

(m) Form of Adtran Sales Incentive Compensation Program – General Terms (participants include James D. Wilson) (incorporated by reference to Exhibit 10.3(ad) to the Company's Form 10-K filed February 26, 2021)

(n)	Form of Market-Based Performance Stock Unit Agreement under the ADTRAN Holdings, Inc. 2020 Employee Stock Incentive Plan (incorporated by reference to Exhibit 10.1 to the Company's Form 10-Q filed May 6, 2021)
(o)	Form of Restricted Stock Unit Agreement under the ADTRAN Holdings, Inc. 2020 Employee Stock Incentive Plan (incorporated by reference to Exhibit 10.2 to the Company's Form 10-Q filed May 6, 2021)
(p)	Form of Performance Share Agreement (and Notice Letter) under the ADTRAN Holdings, Inc. 2020 Employee Stock Incentive Plan (incorporated by reference to Exhibit 10.3 to the Company's Form 10-Q filed May 6, 2021)
(q)	Form of Stock Option Award Agreement under the ADTRAN, Inc. 2020 Employee Stock Incentive Plan (incorporated by reference to Exhibit 10.3 to the Company's Form 8-K filed December 5, 2023)
(r)	Summary of Terms of Assumed Options (incorporated by reference to Exhibit 4.1 to the Company's Form S-8 filed July 11, 2022)
(s)(i)	Employment Agreement, dated July 13, 2022, by and between Thomas R. Stanton and ADTRAN Holdings, Inc. (incorporated by reference to Exhibit 10.1 to the Company's Form 8-K filed July 15, 2022) ("CEO Employment Agreement")
(s)(ii)	First Amendment to the CEO Employment Agreement dated March 29, 2023 (incorporated by reference to Exhibit 10.1 to the Company's Form 8-K filed April 3, 2023).
(t)	Amended and Restated Variable Incentive Compensation Plan (incorporated by reference to Exhibit 10.1 to the Company's Form 8-K filed January 26, 2023)
(u)* †	Form of 2025 Variable Incentive Compensation Plan Award Letter
(v) †	Form of 2022 Integration Award Agreement for ADTRAN Holdings, Inc. (incorporated by reference to Exhibit 10.1(ag) to the Company's Annual Report on Form 10-K filed March 1, 2023)
(w)	ADTRAN Holdings, Inc. 2024 Employee Stock Incentive Plan (incorporated by reference to Exhibit 10.1 to the Company's Form 8-K filed May 9, 2024)
(x)	ADTRAN Holdings, Inc. 2024 Directors Stock Plan (incorporated by reference to Exhibit 10.2 to the Company's Form 8-K filed May 9, 2024)
(y)*	Form of Market-Based Performance Stock Unit Agreement under the ADTRAN Holdings, Inc. 2024 Employee Stock Incentive Plan
(z)*	Form of Restricted Stock Unit Agreement under the ADTRAN Holdings, Inc. 2024 Employee Stock Incentive Plan
(aa)(i)	Employment Agreement, dated January 28, 2015, and Amendment Nos. 1-9, by and between Adtran Networks SE and Ulrich Dopfer (incorporated by reference to Exhibit 10.1 to the Company's Form 8-K filed March 30, 2023)
(aa)(ii) †	Eighth Amendment, dated May 26, 2023 including Exhibit 1 thereto, to the Employment Agreement by and between Adtran Networks SE and Ulrich Dopfer (incorporated by reference to Exhibit 10.1 to the Company's Form 8-K filed June 1, 2023)
(aa)(iii)	Ninth Amendment, dated December 4, 2023, to the Employment Agreement by and between Adtran Networks SE and Ulrich Dopfer (incorporated by reference to Exhibit 10.2 to the Company's Form 8-K filed December 5, 2023)
(aa)(iv) †	Tenth Amendment Employment Agreement, dated August 27, 2024, by and between Adtran Networks SE and Ulrich Dopfer (incorporated by reference to Exhibit 10.2 to the Company's Form 8-K filed August 30, 2024)
(bb)(i)	Service Agreement, dated September 29, 2006 and Amendment Nos. 1-16, by and between Adtran Networks and Christoph Glingener (incorporated by reference to Exhibit 10.3 to the Company's Form 8-K filed April 3, 2023)

(bb)(ii)	Seventeenth Amendment, dated March 28, 2023, to Service Agreement by and between Adtran Networks SE and Christoph Glingener (incorporated by reference to Exhibit 10.2 to the Company's Form 8-K filed April 3, 2023)
(bb)(iii) †	Exhibit 1 to the Seventeenth Amendment, dated March 28, 2023 and executed May 31, 2023, to the Service Agreement by and between Adtran Networks SE and Christoph Glingener (incorporated by reference to Exhibit 10.3 to the Company's Form 8-K filed June 1, 2023)
(bb)(iv)	Eighteenth Amendment, dated December 4, 2023, to the Service Agreement by and between Adtran Networks SE and Christoph Glingener (incorporated by reference to Exhibit 10.1 to the Company's Form 8-K filed December 5, 2023
(bb)(v) †	Nineteenth Amendment to Service Agreement, dated August 27, 2024, by and between Adtran Networks SE and Christoph Glingener (incorporated by reference to exhibit 10.1 to the Company's Form 8-K filed August 30, 2024)
(cc)	Consulting Agreement, dated June 28, 2023, by and between ADTRAN Holdings, Inc. and Michael Foliano (incorporated by reference to Exhibit 10.1 to the Company's Form 8-K filed June 28, 2023)
(dd)	ADTRAN Holdings, Inc. Amended and Restated Clawback Policy (incorporated by reference to Exhibit 10.2 to the Company's Form 8-K filed October 24, 2023)
(ee)	Separation Agreement, dated December 4, 2023, by and between the Company and Ronald D. Centis (incorporated by reference to Exhibit 10.1 to the Company's Form 8-K filed December 6, 2023)
10.2+	Credit Agreement dated July 18, 2022, by and among ADTRAN Holdings, Inc. and ADTRAN, Inc. as borrowers, in favor of Wells Fargo Bank, National Association as lender (incorporated by reference to Exhibit 10.1 to the Company's Form 8-K filed July 22, 2022)
10.3+	First Amendment to Credit Agreement, dated August 9, 2023, by and between ADTRAN Holdings, Inc. and Wells Fargo Bank, National Association (incorporated by reference to Exhibit 10.7 to the Company's Form 10-Q filed August 14, 2023)
10.4+	Second Amendment to Credit Agreement and First Amendment to Collateral Agreement, dated as of January 16, 2024, by and among ADTRAN Holdings, Inc., ADTRAN, Inc., Wells Fargo Bank, National Association, and the lenders party thereto (incorporated by reference to Exhibit 10.1 to the Company's Form 8-K filed January 22, 2024)
10.5	Third Amendment to Credit Agreement, dated as of March 12, 2024, by and among ADTRAN Holdings, Inc., ADTRAN, Inc., Wells Fargo Bank, National Association, and the lenders party thereto (incorporated by reference to Exhibit 10.5 to the Company's Form 10-K filed March 15, 2024)
10.6	Fourth Amendment to Credit Agreement, dated as of June 4, 2024, by and among ADTRAN Holdings, Inc., ADTRAN, Inc., Adtran Networks SE, Wells Fargo Bank, National Association, and the lenders party thereto (incorporated by reference to exhibit 10.1 to the Company's Form 8-K filed June 10, 2024)
10.7+	Collateral Agreement dated July 18, 2022, by and among ADTRAN Holdings, Inc., ADTRAN, Inc., and Wells Fargo Bank, National Association (incorporated by reference to Exhibit 10.2 to the Company's Form 8-K filed July 22, 2022)
10.8	ADVA Domestic Collateral Agreement, dated as of June 4, 2024, by and among ADVA NA Holdings, Inc., Adtran Networks North America, Inc., and Adtran Networks SE, in favor of Wells Fargo Bank, National Association (incorporated by reference to exhibit 10.1 to the Company's Form 8-K filed June 10, 2024)
10.9	Guaranty Agreement dated July 18, 2022, by and between ADTRAN Holdings, Inc. and ADTRAN, Inc. in favor of Wells Fargo Bank, National Association (incorporated by reference to Exhibit 10.3 to the Company's Form 8-K filed July 22, 2022)
10.10	ADVA Guaranty Agreement, dated as of June 4, 2024 by and between ADVA NA Holdings, Inc., Adtran Networks North America, Inc., Adtran Networks (UK) Limited, in favor of Wells Fargo Bank, National Association (incorporated by reference to exhibit 10.1 to the Company's Form 8-K filed June 10, 2024)

10.11	Domination and Profit and Loss Transfer Agreement between ADTRAN Holdings, Inc. and Adtran Networks SE, dated November 30, 2022 (incorporated by reference to Exhibit 10.1 to the Company's Form 8-K filed December 5, 2022)
19*	ADTRAN Holdings, Inc. Insider Trading Policy
21*	Subsidiaries of Adtran.
23*	Consent of PricewaterhouseCoopers LLP.
24*	Powers of Attorney.
31*	Rule 13a-14(a)/15d-14(a) Certifications.
32*	Section 1350 Certifications.
97	ADTRAN Holdings, Inc. Policy for the Recovery of Erroneously Awarded Incentive Based Compensation (incorporated by reference to Exhibit 10.1 to the Company's Form 8-K filed October 24, 2023)
101	The following financial statements from the Company's Annual Report on Form 10-K for the year ended December 31, 2024, formatted in inline eXtensible Business Reporting Language (iXBRL): (i) Consolidated Balance Sheets, (ii) Consolidated Statements of Loss, (iii) Consolidated Statements of Comprehensive (Loss) Income, (iv) Consolidated Statements of Changes in Equity, (v) Consolidated Statements of Cash Flows, (vi) Notes to Consolidated Financial Statements, and (vii) Schedule II – Valuation and Qualifying Accounts
104	Cover Page Interactive Data File (formatted in iXBRL and contained in Exhibit 101)

* Furnished or filed herewith, as applicable

+ Schedules and exhibits omitted pursuant to Item 601(a)(5) of Regulation S-K. The Company agrees to furnish a copy of any omitted schedule or exhibit to the SEC upon request.

† Certain identified information has been excluded from these exhibits because it is not material and is the type of information that the Company customarily and actually treats as private and confidential. Redacted information is indicated by [ ] or [***].

ITEM 16. FORM 10-K SUMMARY

Adtran has elected not to provide a summary of the information contained in this report at this time.

SIGNATURES

Pursuant to the requirements of Section 13 or 15(d) of the Securities Exchange Act of 1934, the Registrant has duly caused this report to be signed on its behalf by the undersigned, thereunto duly authorized on this 3rd day of March 2025.

ADTRAN Holdings, Inc.
(Registrant)

By: /s/ Ulrich Dopfer
Ulrich Dopfer
Chief Financial Officer
(Principal Accounting Officer)

Pursuant to the requirements of the Securities Exchange Act of 1934, this report has been signed below by the following persons on behalf of the Registrant and in the capacities indicated on March 3, 2025.

Signature	Title
/s/ Thomas R. Stanton Thomas R. Stanton	Chief Executive Officer and Chairman of the Board (Principal Executive Officer)
/s/ Ulrich Dopfer Ulrich Dopfer	Chief Financial Officer (Principal Accounting Officer)
/s/ H. Fenwick Huss* H. Fenwick Huss	Director
/s/ Gregory McCray* Gregory McCray	Director
/s/ Balan Nair* Balan Nair	Director
/s/ Jacqueline H. Rice* Jacqueline H. Rice	Director
/s/ Nikos Theodosopoulos* Nikos Theodosopoulos	Director
/s/ Kathryn A. Walker* Kathryn A. Walker	Director

*By: /s/ Ulrich Dopfer
Ulrich Dopfer as Attorney in Fact

ADTRAN Holdings, Inc.

SCHEDULE II
VALUATION AND QUALIFYING ACCOUNTS

(In thousands)	Balance at Beginning of Period	Charged to Costs & Expenses	Deductions	Balance at End of Period
Year ended December 31, 2024				
Allowance for Credit Losses	$ 400	900	—	$ 1,300
Deferred Tax Asset Valuation Allowance	$ 86,567	24,483	90	$ 110,960
Year ended December 31, 2023				
Allowance for Credit Losses	$ 49	351	—	$ 400
Deferred Tax Asset Valuation Allowance	$ 5,201	81,590	224	$ 86,567
Year ended December 31, 2022				
Allowance for Credit Losses	$ —	49	—	$ 49
Deferred Tax Asset Valuation Allowance	$ 50,564	—	45,363	$ 5,201

Exhibit 4.1

DESCRIPTION OF THE REGISTRANT'S SECURITIES REGISTERED PURSUANT TO SECTION 12 OF THE SECURITIES EXCHANGE ACT OF 1934

The following description of our securities is intended as a summary only. This description is based the certificate of incorporation, as amended (the "Certificate of Incorporation") of ADTRAN Holdings, Inc. (the "Company," "we," "us," and "our"), the Company's bylaws, as amended and restated (the "Bylaws"), and applicable provisions of the Delaware General Corporation Law (the "DGCL"). This summary is not complete and is qualified in its entirety by reference to the Certificate of Incorporation and the Bylaws, each of which is filed as an exhibit to this Quarterly Report on Form 10-Q. We encourage you to read the Certificate of Incorporation, the Bylaws and the applicable provisions of the DGCL for additional information.

Authorized Capital Stock

Our authorized capital stock consists of 200 million shares of common stock, par value $0.01 per share, and 50 million shares of preferred stock, par value $0.01 per share.

Company Common Stock

Dividends

Holders of our common stock are entitled to receive proportionately any dividends as may be declared by our board of directors, in its discretion, out of funds legally available therefor, subject to any statutory or contractual restrictions on the payment of dividends and to any restrictions on the payment of dividends imposed by the terms of any outstanding preferred stock.

Voting Rights; Amendments to the Certificate of Incorporation

The holders of our common stock are entitled to one vote for each share upon all matters presented to the stockholders.

Under the DGCL, the affirmative vote of a majority of the outstanding shares entitled to vote thereon and a majority of the outstanding stock of each class entitled to vote thereon is generally required to amend a corporation's certificate of incorporation. Additionally, the holders of the outstanding shares of a class of a corporation's capital stock are entitled to vote as a class upon a proposed amendment, whether or not entitled to vote thereon by the certificate of incorporation, if the amendment would increase or decrease the aggregate number of authorized shares of such class; increase or decrease the par value of the shares of such class; or alter or change the powers, preferences or special rights of the shares of such class so as to affect them adversely. Our Certificate of Incorporation does not alter this default amendment process.

Meetings of Stockholders

Our annual meeting of stockholders will be held at such place, if any, either within or without the State of Delaware, or by means of remote communication, and on such date and at such time as our board of directors may fix by resolution and as set forth in the notice of the meeting. Special meetings of stockholders will be held on such date and at such time and at such place, if any, either within or without the State of Delaware, as shall be designated in the notice of meeting or by means of remote communication. Unless otherwise prescribed by law, special meetings of stockholders may only be called at any time by the chairman of the board of directors, chief executive officer, or the president or by order of the board of directors. Except as otherwise required by law, our stockholders are not entitled to call special meetings of stockholders.

Except as otherwise prescribed by law, we will provide a notice of each meeting of stockholders, in the form of a writing or electronic transmission, no more than sixty (60) nor less than ten (10) days before the date of such meeting. The notice will include the place, if any; date and time of the meeting; the means of remote communications, if any, by which stockholders and proxy holders may be deemed to be present and vote at such meeting; the record date for

determining the stockholders entitled to vote at the meeting, if such date is different from the record date for determining stockholders entitled to notice of the meeting; and, in the case of a special meeting, the purpose or purposes for which the meeting is called.

Conversion Rights

No conversion, redemption or sinking fund provisions apply to our common stock, and the holders of our common stock are not subject to calls or assessments by the Company.

Preemptive Rights

Holders of our common stock are not entitled to preemptive or subscription rights with respect to any sale, exchange, offering or issuance of shares of common stock or other securities of the Company.

Cumulative Voting

Holders of our common stock are not entitled to cumulative voting.

Form and Certification

Shares of our common stock are uncertificated. Shares of our common stock are created and maintained in book-entry form by our transfer agent and registrar, American Stock Transfer and Trust Company, LLC.

Stock Exchange Listing

Shares of our common stock are listed on the NASDAQ Global Select Market of The Nasdaq Stock Market LLC ("Nasdaq") under the symbol "ADTN" and on the regulated market segment of the Frankfurt Stock Exchange under the symbol "QH9."

Transfer Agent, Registrar, and Central Registration Agent

The transfer agent and registrar for the Company common stock is American Stock Transfer and Trust Company, LLC.

In order to facilitate the exercise of stockholders' rights, in particular voting rights and participation in meetings of stockholders of the Company via Clearstream, we entered into an agreement with ADEUS Aktregister-Services-GmbH, Königinstrasse 28, 80802 Munich, Germany, which acts as the central registration office. The tasks of the central registration office include the publication of all relevant information required by stockholders to exercise their rights in the German Federal Gazette (Bundesanzeiger), as well as the assumption of administrative tasks within the logistics of participation and voting rights at general meetings of stockholders. We maintain either the central registration office or a comparable service provider.

General Provisions Governing a Change in Authorized Share Capital; Issuance of Common Stock

The DGCL provides that the authorized number of shares of a Delaware corporation must be set forth in the certificate of incorporation. Under the DGCL, our stockholders may authorize an increase in the number of authorized shares by approving an amendment to our Certificate of Incorporation.

Delaware law does not require stockholder approval for any issuance of authorized shares. However, the listing requirements of Nasdaq, which apply as long as our common stock is listed on Nasdaq, require stockholder approval of certain issuances equal to or exceeding 20% of the combined voting power of our common stock. These additional shares may be used for a variety of corporate purposes, including future public offerings to raise additional capital, acquisitions and employee benefit plans.

The existence of unissued and unreserved common stock may enable our board of directors to issue shares to persons friendly to current management, which could render more difficult or discourage an attempt to obtain control of the Company by means of a merger, tender offer, proxy contest or otherwise, and could thereby protect the continuity of our management and possibly deprive stockholders of opportunities to sell their shares of common stock at prices higher than prevailing market prices.

General Provisions Governing a Liquidation of the Company; Liquidation Distributions

Upon the liquidation, dissolution or winding up of the Company, any business combination or a sale or disposition of all or substantially all of the Company's assets, the assets legally available for distribution to the Company's stockholders will be distributable ratably among the holders of our common stock, subject to prior satisfaction of all outstanding debts and other liabilities and the payment of liquidation preferences, if any, on any outstanding preferred stock.

Anti-Takeover Effects of Delaware Law and Our Certificate of Incorporation and Bylaws

Certain provisions of the DGCL, our Certificate of Incorporation, and our Bylaws could make the acquisition of the Company more difficult and could delay, defer or prevent a tender offer or other takeover attempt that a stockholder might consider to be in its best interest, including takeover attempts that might result in the payment of a premium to stockholders over the market price for their shares. These provisions also may promote the continuity of our management by making it more difficult for a person to remove or change the incumbent members of our board of directors.

Authorized but Unissued Preferred Stock

The authorized but unissued shares of our preferred stock are available for future issuance without stockholder approval except as required by law or by any stock exchange on which our common stock may be listed. Our board of directors is authorized to provide for the issuance of shares of our preferred stock in one or more classes or series, and to fix the powers for each class or series (including voting powers), preferences and relative, participating, optional and other special rights and any qualifications, limitations or restrictions thereof as may be permitted by the DGCL. These additional shares may be utilized for a variety of corporate purposes, including future public offerings to raise additional capital, acquisitions and employee benefit plans. The existence of authorized but unissued shares of preferred stock may enable our board of directors to render more difficult or to discourage an attempt to obtain control of us by means of a merger, tender offer, proxy contest or otherwise.

No Cumulative Voting

Our Certificate of Incorporation does not permit stockholders to cumulate votes in the election of directors.

Special Meetings of Stockholders

Our Bylaws provide that, except as otherwise required by law, special meetings of stockholders can only be called by the chairman of the board of directors, the chief executive officer, the president or the board of directors.

Stockholder Action by Written Consent

Our Bylaws provide that any action required to be taken at any annual or special meeting of the stockholders may be taken without a meeting, without prior notice and without a vote if a consent or consents in writing, setting forth the action so taken and bearing the dates of the stockholders who signed the consent, is signed by the holders of outstanding stock having not less than the minimum number of votes that would be necessary to authorize or take such action at a meeting at which all shares of our stock entitled to vote thereon were present and voted, unless our Certificate of Incorporation provides otherwise. Such written consent must be delivered by hand or by certified or registered mail, return receipt requested and no written consent shall be effective to take the corporate action referred to therein unless, within 60 days of the earliest dated written consent received in accordance with the Bylaws, a written consent or consents signed by a sufficient number of holders to take such action is delivered to the Company. Prompt

notice of the taking of such action without a meeting and by less than unanimous written consent shall be given to those stockholders who have not consented in writing.

Advance Notice Requirements for Stockholder Proposals and Nomination of Directors

Our Bylaws require stockholders seeking to bring business before an annual meeting of stockholders, or to nominate individuals for election as directors at an annual or special meeting of stockholders, to provide timely notice in writing. To be timely, a stockholder's notice must be properly furnished to the Company, in the case of an annual meeting, no later than the close of business on the ninetieth (90th) day, nor earlier than the close of business on the one hundred twentieth (120th) day, prior to the first anniversary of the preceding year's annual meeting; provided, however, that subject to the immediately following sentence, in the event that the annual meeting is convened more than thirty (30) days before or more than seventy (70) days after such anniversary date, or if no annual meeting was held in the preceding year, notice by the stockholder must be so received no earlier than the close of business on the one hundred twentieth (120th) day prior to such annual meeting and no later than the close of business on the later of the ninetieth (90th) day prior to such annual meeting or the tenth (10th) day following the day on which public announcement of the date of such meeting is first made by the Company. Our Bylaws also specify requirements as to the form and content of a stockholder's notice. These provisions may preclude our stockholders from bringing matters before the annual meeting of stockholders or from making nominations for directors at meetings of stockholders. These provisions may also discourage or deter a potential acquirer from conducting a solicitation of proxies to elect the potential acquirer's own slate of directors or otherwise attempting to obtain control of the Company.

Removal of Directors; Vacancies

Subject to our Director Resignation Policy, any director or the entire board of directors may be removed, with or without cause, by the holders of a majority of the shares of our capital stock then entitled to vote in an election of directors, except as otherwise provided by applicable law. In addition, any newly created directorship on our board of directors that results from an increase in the number of directors and any vacancy occurring in our board of directors may only be filled by a majority of the directors then in office, although less than a quorum, or by a sole remaining director (and not by the stockholders).

Director Resignations

Director candidates must agree to tender, promptly following the annual meeting at which they are to be elected or re-elected as director, an irrevocable resignation in writing, which shall become effective only if (i) the director fails to receive a sufficient number of votes for an election in an uncontested election of directors and (ii) the board of directors accepts their resignation in accordance with the Director Resignation Policy. Once an incumbent director fails to receive a sufficient number of votes for election in an uncontested election, our Nominating and Corporate Governance Committee will consider on an expedited basis such director's tendered resignation and make a recommendation to the board of directors concerning the acceptance or rejection of such resignation (or any potential alternatives, including the rejection of the resignation coupled with a commitment to seek to address and cure the underlying reasons believed by the Nominating and Corporate Governance Committee in good faith to have substantially resulted in such director failing to receive the requisite votes). The board of directors will then expeditiously take formal action following the certification of the election results from the stockholders' meeting at which the election occurred.

Delaware Business Combination Statute

Section 203 of the DGCL provides that, subject to certain stated exceptions, a corporation may not engage in a business combination with any "interested stockholder" (as defined below) for a period of three years following the time that such stockholder became an interested stockholder, unless:

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

- upon consummation of the transaction which resulted in the stockholder becoming an interested stockholder, the interested stockholder owned at least 85% of the voting stock of the corporation outstanding at the time the transaction commenced, excluding shares owned by persons who are directors and also officers and employee stock plans in which participants do not have the right to determine confidentially whether shares held subject to the plan will be tendered in a tender or exchange offer; or

- at or subsequent to such time, the business combination is approved by the board of directors and authorized at an annual or special meeting of stockholders, and not by written consent by the affirmative vote of 66 2/3% of the outstanding voting stock which is not owned by the interested stockholder.

An "interested stockholder" is, subject to certain exceptions, any person (other than the corporation and any direct or indirect majority-owned subsidiary) who owns 15% or more of the outstanding voting stock of the corporation or is an affiliate or associate of the corporation and was the owner of 15% or more of the outstanding voting stock of the corporation at any time within the three-year period immediately prior to the date of determination, and the affiliates and associates of such person.

A Delaware corporation may "opt out" of these provisions with an express provision in its original certificate of incorporation or an express provision in its certificate of incorporation or bylaws resulting from a stockholders' amendment approved by at least a majority of the outstanding voting shares. We have not opted out of Section 203 of the DGCL and are subject to the provisions therein.

Exclusive Forum

Our Certificate of Incorporation provides that, unless we consent in writing to the selection of an alternative forum, the Court of Chancery of the State of Delaware will, to the fullest extent permitted by law, be the sole and exclusive forum for: (i) any derivative action or proceeding brought on our behalf; (ii) any action asserting a breach of fiduciary duty owed by any of our directors, officers, other employees or stockholders to us or our stockholders, creditors or other constituents, or a claim of aiding and abetting any such breach of fiduciary duty; (iii) any action asserting a claim against the us or our directors or officers arising pursuant to any provision of the DGCL or our Certificate of Incorporation or Bylaws (as either may be amended and/or restated from time to time) or as to which the DGCL confers jurisdiction on the Court of Chancery of the State of Delaware; (iv) any action to interpret, apply, enforce or determine the validity of our Certificate of Incorporation or Bylaws (as either may be amended and/or restated from time to time); (v) any action asserting a claim against us or our directors or officers that is governed by the internal affairs doctrine; or (vi) any action asserting an "internal corporate claim" as that term is defined in Section 115 of the DGCL; provided, however, that, in the event that the Court of Chancery of the State of Delaware lacks subject matter jurisdiction over any such action or proceeding, any other state court of the State of Delaware, or if no state court of the State of Delaware has subject matter jurisdiction, the federal district court for the District of Delaware will be the forum.

Additionally, to prevent having to litigate claims in multiple jurisdictions and the threat of inconsistent or contrary rulings by different courts, among other considerations, our Certificate of Incorporation provides that, unless we consent in writing to the selection of an alternative forum, the federal district courts of the U.S. will be the sole and exclusive forum for the resolution of any complaint asserting a cause of action arising under the federal securities laws.

Exhibit 10.1 (u)

* CERTAIN IDENTIFIED INFORMATION HAS BEEN EXCLUDED FROM THIS EXHIBIT BECAUSE IT IS NOT MATERIAL AND IS THE TYPE OF INFORMATION THE REGISTRANT CUSTOMARILY AND ACTUALLY TREATS AS PRIVATE AND CONFIDENTIAL. REDACTED INFORMATION IS INDICATED BY [***].

Form of VICC Award Letter

Date

Dear Executive,

I am pleased to inform you that you have been selected to participate in the Adtran Incentive Bonus Plan for 2025. Your target bonus amount is x% of your 2025 base salary. This one-time bonus payment will be calculated as described in the Adtran Variable Incentive Cash Compensation (VICC) Program (find details enclosed). In accordance with the program the bonus payment will be paid out based on attainment of target goals for the Company Performance Measurement (CPM) outlined for the program.

Enclosed with this letter is the Policy for Erroneously Awarded Compensation that must be signed and returned to [***].

Any bonus amount that is achieved will be paid in the first quarter of 2026. You must be employed by Adtran at the time of payment.

Refer to Adtran Holdings – Variable Incentive Compensation Plan document for additional information.

Please let me know if you have any questions regarding this information.
Sincerely,

[***]
VP, Human Resources - Americas

Corporate Office
901 Explorer Blvd.
Huntsville, AL 35806

U.S. Mail
P.O. Box 140000
Huntsville, AL 35814-4000

Toll Free: 1 800.923.8726
Telephone: 256.963.8000
www.adtran.com

2025 ADTRAN VARIABLE INCENTIVE CASH COMPENSATION (VICC) PROGRAM

PERFORMANCE MEASURES AND AWARDS

For the year ending December 31, 2025

The Variable Incentive Cash Compensation (VICC) awards will be paid out based on attainment of target goals for the two Company Performance Measurements (CPMs): Total Company Revenue (Adtran Holdings, Inc.) and Total Company Adjusted Earnings before Interest and Taxes ("Adjusted EBIT").

- Each CPM will include a minimum threshold for payout, a "target", and a maximum.
- No payout will occur for a CPM unless the minimum threshold is met for that CPM.
- Attainment of each CPM is independent of the other. Failure to meet the minimum threshold for one CPM does not preclude payout under the other CPM if that measure's minimum threshold is met.
- The sum of the payout percentages achieved for the two CPMs, multiplied by your Target Incentive Compensation equals your VICC payment.
- The payout percentage will be interpolated from the chart below, up to the Maximum, based on the actual achievement of each CPM.
- The total of the payout percentage at target for the combined CPMs will not exceed 100%, and the total of the full VICC award will not exceed 200% of the Target.
- The CPM percentage of the target bonus will be determined and calculated based on each CPM achieved using audited financial results unless otherwise indicated.
- As Adjusted EBIT is a non-GAAP measurement, GAAP audited financial figures will be used to calculate non-GAAP EBIT. Non-GAAP Adjusted EBIT excludes restructuring expenses, acquisitions related expenses and amortization of intangibles, stock compensation expense, the impact of equity market changes on deferred compensation expenses, and any other non-GAAP exclusions adopted by the Company. Adjusted EBIT is equal to Non-GAAP Operating Income.
- The impact of extraordinary events such as: a) a significant acquisition of the assets or stock of another business enterprise not contemplated below; b) a divestiture of a business or asset group; or c) an extraordinary gain or loss in investments in securities may be excluded from the audited results for purposes of determining the achievement of the Company Performance Measures and the related performance award.

Notes:

- For 2025 CPMs, the Maximum Company Revenue is [***] and the Maximum Company Adjusted EBIT is [***].

- 2025 CPM thresholds for any payout are above [***] for Revenue and above [***] for Total Company Adjusted EBIT.

- The 2025 Target Incentive Compensation for each CPM is capped at 100%. The maximum payout is 200% of the Target Incentive Compensation amount.

For additional information, refer to the Adtran Holdings, Inc. Amended and Restated Variable Incentive Compensation Plan.

ADTRAN HOLDINGS, INC.
FORM OF MARKET-BASED PERFORMANCE STOCK UNIT AGREEMENT

This Market-Based Performance Stock Unit Agreement (this "Agreement") sets forth the specified terms of ADTRAN Holdings, Inc.'s grant of the target number of Market-Based Performance Stock Units ("PSUs") set forth in the Morgan Stanley StockPlan Connect (the "Portal") to the applicable grantee named in the Portal (the "Participant") pursuant to the ADTRAN Holdings, Inc. 2024 Employee Stock Incentive Plan (the "Plan") as of the date of grant set forth in the Portal (the "Date of Grant"). All capitalized terms used but not defined herein shall have the meanings ascribed to such terms in the Plan.

Performance Period: The three (3) year period beginning on [___]

Earned PSUs and Delivery: The number of PSUs that are earned pursuant to this Agreement will be based on the total shareholder return ("TSR") of ADTRAN Holdings, Inc. (the "Company") during the Performance Period relative to all companies in the NASDAQ Telecommunications Index. The Participant is eligible to earn between 0% and 150% of the target number of PSUs based on the Company's relative TSR performance during the Performance Period in accordance with the sliding scale set forth below (approximately 3.0% of the target award is earned for each 1 percentile increase up to 100% of the target award and then approximately 2.0% of the target award is earned for each 1 percentile increase up to 150% of the target award). However, there is a 100% payout cap when our TSR out-performs the NASDAQ Telecommunications Index, but our TSR is negative:

The Company's TSR Performance relative to Specified Index (expressed as a percentile)	**PSUs Earned (expressed as a percentage of target)**
Less than 30th Percentile	0%
30th Percentile	25%
35th Percentile	40%
40th Percentile	55%
45th Percentile	70%
50th Percentile	85%
55th Percentile	100%
60th Percentile	110%
65th Percentile	120%
70th Percentile	130%
75th Percentile	140%
80th Percentile	150%
80th or more Percentile	150%

One share of the Company's Common Stock shall be issued to the Participant for every earned PSU. The Company will issue shares of Common Stock to the Participant as soon as administratively practicable following the date that the Committee certifies the level of

performance and the number of PSUs earned by the Participant; provided, however, if any law or regulation requires the Company to take any action (including, but not limited to, the filing of a registration statement under the Securities Act and causing such registration statement to become effective) with respect to such shares of Common Stock before the issuance thereof, then the date of delivery of the shares shall be extended for the period necessary to take such action, to the maximum extent permitted by Section 409A of the Code. Except as specifically set forth herein or as approved by the Committee, the award of PSUs shall automatically be forfeited without payment of any consideration in the event the Participant incurs a Separation from Service for any reason prior to the end of the Performance Period.

Accelerated Vesting and Delivery: In the event of (1) the Participant's death or (2) the Participant's Disability, a portion of the granted PSUs shall be deemed earned by the Participant in an amount equal to (x) 25% of the target number of PSUs granted pursuant to this Agreement multiplied by (y) a fraction, the numerator of which shall equal the number of days elapsed from the Date of Grant to the date of the applicable acceleration event and the denominator of which shall equal the days in the Performance Period. One share of the Company's Common Stock shall be issued to the Participant for every earned PSU as soon as administratively practicable following the acceleration event.

Change of Control: In the event of a Change of Control of the Company and the Participant's involuntary Separation from Service without Cause within twenty-four (24) months following consummation of the Change of Control, any incomplete Performance Period shall end on the date of such Separation from Service, and the portion of the granted PSUs that shall be deemed earned by the Participant shall be based upon the higher of: (i) the actual number of PSUs earned for the Performance Period through the date of the Participant's Separation from Service (as calculated pursuant to the section titled "Earned PSUs and Delivery" herein) or (ii) the target number of PSUs granted pursuant to this Agreement, except that, in each case, the number of PSUs that shall be deemed to be earned, if any, will be pro-rated based on the number of days that the Participant was employed by the Company between January 24, 2025 and the date of the Participant's Separation from Service. One share of the Company's Common Stock shall be issued to the Participant for every earned PSU as soon as administratively practicable following the Separation from Service. The PSUs granted herein shall not vest upon a Change of Control in the absence of a Separation from Service without Cause except as may be approved by the Committee.

Dividend Credits: The Participant shall receive dividend credits upon the Company's payment of cash dividends for its Common Stock during the Performance Period, if declared, as follows:

(1)The Participant shall receive dividend credits on the target number of PSUs awarded on the Date of Grant (the "Original PSUs"), with the amount of such dividend credits credited to the Participant in the form of additional unearned PSUs, as calculated pursuant to the Plan.

(2)The Participant's additional PSUs attributable to any dividend credits will be deemed earned in accordance with the same schedule as the Original PSUs (as described above).

(3)The delivery of additional PSUs attributable to dividend credits shall be made in a cash payment on the same date as the issuance of the Common Stock for the earned PSUs.

Designation of Beneficiary: The Participant hereby designates the following individual as the beneficiary of this Agreement:

Participant Name: Beneficiary Name: Address:
Relationship:

□ Check this box to apply the above beneficiary designation to all prior grants.

To complete this beneficiary designation, this Agreement should be printed out, the information above should be completed, and the Agreement should then be emailed to _____.The Participant may modify this beneficiary designation by submitting the change in writing to the Company.

Beneficiary designations are not effective until received by the Company. If no beneficiary is designated, then except as may be provided in the Plan, any benefits due hereunder following the death of the Participant will be paid to the Participant's estate.

The PSUs are granted pursuant to the Plan and are subject to terms of the Clawback policy. The Participant has received a copy of the Plan's prospectus, including a copy of the Plan. The award's date of grant is deemed to be the date that such award is approved by the Committee or the Chief Executive Officer, as applicable. The Participant is deemed to have accepted this award unless he or she expressly elects to reject the award by notifying Human Resources within 30 days of receiving a notice in the portal that the award has been granted.

If there are any questions regarding this Agreement or the award of PSUs, please refer to the Plan or contact

ADTRAN HOLDINGS, INC.

Thomas R. Stanton
Chief Executive
Officer

EXHIBIT 10.1(Z)

ADTRAN HOLDINGS, INC.
FORM OF RESTRICTED STOCK UNIT AGREEMENT

This Restricted Stock Unit Agreement (this "Agreement") sets forth the specified terms of ADTRAN Holdings, Inc.'s grant of the number of Restricted Stock Units ("RSU") as is set forth in the Morgan Stanley StockPlan Connect (the "Portal") to the applicable grantee named in the Portal (the "Participant") pursuant to the ADTRAN Holdings, Inc. 2024 Employee Stock Incentive Plan (the "Plan") as of the date of grant set forth in the Portal. All capitalized terms used but not defined herein shall have the meanings ascribed to such terms in the Plan.

Vesting and Delivery of Common Stock: The RSUs shall become vested and nonforfeitable according to the following schedule, measured from the date of grant:

Anniversary of the date of grant:	Vested percentage:
One-year anniversary	25%
Two-year anniversary	25%
Three-year anniversary	25%
Four-year anniversary	25%

Under the above schedule, before the one-year anniversary, no part of the Award is vested or nonforteitable.

One share of the Company's Common Stock shall be issued to the Participant for every RSU that becomes vested pursuant to the schedule above. The Company will issue shares of Common Stock to the Participant as soon as administratively practicable following the date the applicable portion of the RSUs have become vested; provided, however, if any law or regulation requires the Company to take any action (including, but not limited to, the filing of a registration statement under the Securities Act and causing such registration statement to become effective) with respect to such shares of Common Stock before the issuance thereof, then the date of delivery of the shares shall be extended for the period necessary to take such action, to the maximum extent permitted by Section 409A of the Code. Except as specifically set forth herein or as approved by the Committee, the unvested portion of the RSUs shall be forfeited in the event the Participant incurs a Separation from Service for any reason.

Change of Control: In the event of a Change of Control of the Company and the Participant's involuntary Separation from Service without Cause within twenty-four (24) months following consummation of the Change of Control, all outstanding unvested RSUs shall immediately vest. The RSUs granted herein shall not vest upon a Change of Control in the absence of a Separation from Service without Cause except as may be approved by the Committee.

Designation of Beneficiary: The Participant hereby designates the following individual as the beneficiary of this Agreement:

Participant Name: _____

Beneficiary Name: _____

Address: _____

_____

Relationship: _____

☐ Check this box to apply the above beneficiary designation to all prior grants.

To complete this beneficiary designation, this Agreement should be printed out, the information above should then be completed, and the Agreement should then be emailed to ____ at ___. The Participant may modify this beneficiary designation by submitting the change in writing to the Company. Beneficiary designations are not effective until received by the Company. If no beneficiary is designated, then except as may be provided in the Plan, any benefits due hereunder following the death of the Participant will be paid to the Participant's estate.

The RSUs are granted pursuant to the Plan. The Participant has received a copy of the Plan's prospectus, including a copy of the Plan. The Participant agrees to the terms of this Agreement, which may be amended only upon a written agreement signed by the parties hereto or as otherwise permitted by the Plan. The Award's date of grant is deemed to be the date that such Award is approved by the Committee or the Chief Executive Officer, as applicable. The Participant is deemed to have accepted this Award unless he or she expressly elects to reject the Award by notifying Human Resources within 30 days of receiving a notice in the portal that the Award has been granted.

If there are any questions regarding this Agreement or the RSUs, please refer to the Plan or contact Joia Thompson at joia.thompson@adtran.com.

ADTRAN HOLDINGS, INC.

Thomas R. Stanton
Chief Executive Officer

ADTRAN HOLDINGS, INC.

INSIDER TRADING POLICY

Effective October 29, 2024

I. INTRODUCTION

United States ("**U.S.**") federal and state securities laws and European Regulation No. 596/2014 (the "**EU Market Abuse Regulation**" or the "**MAR**") prohibit buying, selling, or making other transfers of securities by persons who possess (i) material information that is not generally known or available to the public (as defined under the U.S. securities laws) and/or (ii) inside information (as defined under the MAR). These laws also prohibit persons with such information from disclosing it to others who trade securities on that information.

In light of these prohibitions, ADTRAN Holdings, Inc. (together with its subsidiaries, the "**Company**") has adopted the following policy (this "**Policy**") regarding trading in securities by its directors, officers, employees, independent contractors, and consultants.

You are responsible for not violating U.S. federal and state securities laws, the MAR, or this Policy. We designed this Policy to promote compliance with U.S. federal and state securities laws and the MAR, as well as to protect the Company and you from the serious liabilities and penalties that can result from violations of these laws.

If you violate U.S. federal insider trading laws and/or the MAR, you may have to pay civil or criminal fines. A violation of U.S. federal insider trading laws can result in civil liabilities of up to three times the profit gained or loss avoided by such trading, as well as criminal fines of up to $5 million. You also may have to serve a jail sentence of up to 20 years for violations of U.S. insider trading laws. In addition, the Company could be subject to a civil fine in the U.S. of up to the greater of $2.56 million (subject to adjustment for inflation) and three times the profit gained or loss avoided as a result of your insider trading violations, as well as a criminal fine of up to $25 million.

The U.S. Securities and Exchange Commission ("**SEC**"), the U.S. Financial Industry Regulatory Authority ("**FINRA**"), The Nasdaq Stock Market LLC ("**NASDAQ**"), the German Federal Financial Supervisory Authority ("**BaFin**"), the U.S. Department of Justice and state and other regulators are very effective at detecting and pursuing insider trading cases. The SEC and BaFin each have successfully prosecuted cases against employees trading through foreign accounts, trading by family members and friends, and trading involving only a small number of shares. Therefore, it is important that you understand the breadth of activities that constitute illegal insider trading. This Policy sets out the Company's policy in the area of insider trading and should be read carefully and complied with fully.

If you have any questions, please contact the Company's Chief Financial Officer or the Corporate Legal Department.

II. DEFINITIONS

A. What is "Material Nonpublic Information" under U.S. Securities Laws?

1. Material Information

Material information generally means information that there is a likelihood a reasonable investor would consider important in making an investment decision to buy, hold, or sell securities. Either positive or negative information may be material. Depending on the circumstances, common examples of information that may be material include:

- earnings information, quarterly results and guidance on earnings and other financial measures;

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- significant write-downs in assets or increases in reserves;
- financial condition, including changes in revenue, market share or cost of service;
- proposals, plans or agreements, even if preliminary in nature, involving mergers, acquisitions, divestitures, recapitalization, strategic alliances, joint ventures, licensing arrangements, or purchases or sales of substantial assets;
- initiation of, or developments in, significant litigation, investigations, regulatory actions or proceedings;
- significant regulatory developments;
- liquidity issues;
- extraordinary borrowings;
- changes in debt ratings;
- the Company entering into or the termination of any significant contract or agreement or substantially changing its business relationship with any significant business partner;
- identification of a significant new business opportunity or the development of new significant technologies, products or intellectual property;
- management or organizational changes, including with respect to the Board of Directors;
- changes in compensation policy;
- changes in accounting methods or policies;
- changes in auditors;
- notification by the Company's independent auditor that the Company may no longer rely on the auditor's report;
- cybersecurity risks and incidents, including vulnerabilities and breaches;
- events regarding Company securities (*e.g.*, defaults on any outstanding debt, stock repurchase plans or stock splits; changes in dividends; or public or private sales of additional securities);
- bankruptcy, corporate restructuring, or receivership; and
- the imposition or existence of a special blackout period on trading in Company securities or the securities of another company, or the extension or termination of any such period.

Investigators from the SEC, FINRA, NASDAQ and other federal, state, and foreign regulators will scrutinize a questionable trade after the fact with the benefit of hindsight, so you should always err on the side of deciding that the information is material and not trade. If you have questions regarding specific transactions, please contact the Company's Chief Financial Officer or the Corporate Legal Department.

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2. Nonpublic Information

Nonpublic information is information that is not generally known or available to the public. We consider information to be available to the public only when:

- it has been released to the public by the Company through appropriate channels (*e.g.*, by means of a widely disseminated press release or a filing with the SEC). The fact that information is posted on the Company's website or on social media may not be sufficient to determine that such information is "public"; and

- enough time has elapsed to permit the investment market to absorb and evaluate the information. You should generally consider information to be nonpublic until two (2) full trading days have elapsed following public disclosure. For example, if the Company discloses Material Nonpublic Information before the market opens on a Monday or while the market is open on a Monday, you may not trade until Wednesday (two full trading days after the Company's release), so long as you do not have any additional Material Nonpublic Information after such release. If, however, the Company discloses Material Nonpublic Information after the market closes on such Monday, you may not trade until Thursday (two full trading days after the Company's release), so long as you do not have any additional Material Nonpublic Information after such release.

B. What is "Inside Information" under the MAR?

Inside Information under the MAR is information of a precise nature, which has not been made public, relating, directly or indirectly, to the Company or to one or more financial instruments of the Company, and which, if it were made public, would be likely to have a significant effect on the prices of those financial instruments or on the price of related derivative financial instruments. The term "financial instruments" shall have the meaning ascribed to such term in the MAR, including the common stock of the Company and any other securities issued by the Company, including derivatives thereof.

1. Precise Nature

Information is of a "precise nature" if it indicates circumstances which exist or are expected to come into existence, or an event that has occurred or is expected to occur, where a conclusion can be drawn about the possible effect of those circumstances or events on the prices of the Company's financial instruments.

2. Protracted Process

In the case of a protracted process that is intended to bring about, or that results in a particular circumstances or event (*e.g.*, an M&A transaction), the (multiple) intermediate steps of that process may be deemed to be Inside Information if any intermediate step itself satisfies the criteria described above.

3. Likely to have a significant effect

Information which, if it were made public, would be likely to have a significant effect on the prices of financial instruments, shall mean information a reasonable investor would be likely to use as part of the basis of his or her investment decisions.

C. Trading / Transactions

For purposes of this Policy, references to "trading" and "transactions" include, among other things the transactions set forth below:

- purchases and sales of Company securities in public markets;

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- sales of Company securities obtained through the exercise of employee stock options granted by the Company (for example, through a broker- assisted cashless exercise, which involves the broker selling some or all shares underlying the stock option on the open market);

- making gifts of Company securities (including charitable donations);

- using Company securities to secure a loan;

- voluntary elections you may make with respect to the Company stock fund under the Company's 401(k) plan, including (i) an election to increase or decrease the percentage of your periodic contributions that will be allocated to the Company stock fund; (ii) an election to make an intra-plan transfer of an existing account balance into or out of the Company stock fund; (iii) an election to borrow money against your 401(k) plan account if the loan will result in a liquidation of some or all of your Company stock fund's balance; and (iv) an election to pre-pay a plan loan if the pre-payment will result in allocation of loan proceeds to the Company stock fund; or

- non-automatic changes to your deferred compensation investments involving Company securities.

References to "trading" and "transactions" do not include:

- exercise of Company stock options if no shares are to be sold or if there is a "net exercise" ("net exercise" is the use of shares underlying a stock option to pay the exercise price of the stock option and/or withhold tax obligations);

- vesting of Company stock options, restricted stock or restricted stock units or other securities;

- withholding of shares by the Company to satisfy a tax withholding obligation upon the vesting of restricted stock or restricted stock units;

- automatic purchases of Company securities in the Company's 401(k) plan resulting from your periodic contribution of money to the plan pursuant to your prior payroll deduction and investment election;

- automatic deferred compensation investments that were selected while you were not in possession of any Material Nonpublic Information;

- transactions under a pre-existing written plan, contract, instruction, or arrangement designed in accordance with Rule 10b5-1(c) under the Securities Exchange Act of 1934, as amended (the "**Exchange Act**"); or

- transactions in mutual funds that are invested in Company securities, provided that Company securities do not make up a significant portion of the fund, and that the mutual fund is neither managed nor otherwise controlled by you.

You may freely exercise your stock options if no shares are to be sold, engage in "net exercises," have the Company withhold shares to satisfy your tax obligations, and engage in the other transactions excluded from the definitions of "trading" and "transacting" without violating this Policy.

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III. PERSONS SUBJECT TO THIS POLICY

A. Provisions of this Policy Applicable to all Directors, Officers, Employees, Independent Contractors, and Consultants of the Company

The policies and procedures set forth in Articles I, II, III, IV and VII apply to **all** directors, officers, employees, independent contractors, and consultants of the Company, including its subsidiaries. These policies and procedures also apply to (i) your family members who reside with you (which may include a spouse, a child, a child away at college, stepchildren, grandchildren, parents, stepparents, grandparents, siblings and in-laws), (ii) anyone else who lives in your household, and (iii) any family members who do not live in your household but whose transactions in Company securities are directed by you or are subject to your influence or control, such as parents or children who consult with you before they trade or transact in Company securities (collectively, "family and household members"). These policies and procedures also apply to any corporation or other business entities controlled or managed by you or any of your family and household members, as well as any trusts for which you or any of your family and household members are the trustee or have a beneficial pecuniary interest. BaFin, the SEC and federal prosecutors may presume that trading by family and household members is based on information you supplied and may treat any such transactions as if you had traded yourself. There is no exception for small transactions or transactions that may seem necessary or justifiable for independent reasons, such as the need to raise money for an emergency expenditure. These policies and procedures do not, however, apply to personal securities transactions of family and household members where the purchase or sale decision is made by a third party not controlled by, influenced by or related to you or your family and household members.

B. Provisions of this Policy Applicable to Company Insiders (*i.e.*, Directors, Executive Officers, Senior Vice Presidents, and Persons Likely to be Exposed to Financial Results), as well as Restricted Persons

In addition, directors, executive officers, any employee of the Company employed at the level of Senior Vice President (or the equivalent) or higher, or any other employee who is involved in the preparation of or is reasonably expected to be exposed to the quarterly or annual financial statements of the Company prior to their public release (such directors, executive officers and employees, collectively, "**Company Insiders**")[1] are also required to comply with the policies and procedures set forth in Article V. We have designated those persons listed on Annex A attached hereto as Company Insiders as a result of their position with the Company and their access to Material Nonpublic Information. The Company's Chief Financial Officer is authorized to and shall amend Annex A from time to time as necessary to reflect the addition, resignation, or departure of Company Insiders.

Unless the context requires otherwise, references in this Policy to a Company Insider shall be deemed to include his or her Closely Associated Persons. For purposes of this Policy, a "**Closely Associated Person**" of a person includes (i) any family and household member of such person, (ii) any corporation or other business entity controlled or managed by such person or a family or household member of such person, (iii) any trust for which such person, or a family or household member of such person, is the trustee

[1] For clarity, any person who is considered a person discharging managerial responsibilities for purposes of the MAR (each, a "**Managerial Person**"), which is generally expected to be the Company's Section 16 Insiders, shall also be considered a Company Insider for purposes of this Policy. Under the MAR, a Managerial Person includes (a) a member of the administrative, management or supervisory body of the Company or (b) a senior executive of the Company who (i) is not a member of the bodies referred to in clause (a), (ii) has regular access to Inside Information relating directly or indirectly to the Company and (iii) has the power to take managerial decisions affecting the future developments and business prospects of the Company.

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or has a beneficial pecuniary interest, and (iv) any "person closely associated" with such person for purposes of the MAR.[2]

From time to time, the Company may maintain a list of individuals (a "**Restricted Person List**") who are aware of or have access to information and/or documents relating to a specific event or circumstance that may constitute Material Nonpublic Information and/or Inside Information (each such person, a "**Restricted Person**"). Upon notification by the Company of their inclusion in a Restricted Person List, each Restricted Person is required to comply with the policies and procedures set forth in Article V for so long as such designation applies. Furthermore, unless the context requires otherwise, references in this Policy to a Restricted Person shall be deemed to include his or her Closely Associated Persons.

C. Provisions of this Policy Applicable to Section 16 Insiders (*i.e.*, Directors and Officers of the Company)

Finally, the policies and procedures set forth in Article VI shall apply to (i) the members of the Company's Board of Directors and (ii) those individuals who are designated from time to time by the Board of Directors as "officers" of the Company (as defined in Rule 16a-1(f) of the Exchange Act for purposes of Section 16 ("**Section 16**") of the Exchange Act (collectively, the "**Section 16 Insiders**"). The policies and procedures set forth in Article VI shall also apply to the Closely Associated Persons of the Section 16 Insiders to the extent provided therein. Upon election or appointment, each Section 16 Insider shall provide the Company's Chief Financial Officer with the information about her/him and his/her Closely Associated Persons that is needed for inclusion in the list of Section 16 Insiders and their Closely Associated Persons that the Company maintains for the purpose of compliance with the MAR. The Section 16 Insiders shall notify the Company's Chief Financial Officer of any amendments or updates to such list as and when relevant. In accordance with the MAR, each Section 16 Insider shall inform their Closely Associated Persons about their mandatory obligations and keep a copy of such notification.

IV. POLICIES AND PROCEDURES FOR ALL DIRECTORS, OFFICERS, EMPLOYEES, INDEPENDENT CONTRACTORS, AND CONSULTANTS OF THE COMPANY

A. Trading Policy

You may not trade or transact in Company securities if you are aware of Material Nonpublic Information about the Company. In addition, you may not trade or transact in the stock or other securities of any other company (*e.g.*, the Company's customers, distributors, suppliers, or firms with which the Company may be negotiating a major transaction) if you are aware of Material Nonpublic Information about that company that was learned in the course of or as a result of your employment with the Company or its subsidiaries. In addition, you may not trade or transact in the securities of the Company's majority-owned subsidiary, Adtran Networks SE, while in possession of Material Nonpublic Information about either the Company or Adtran Networks SE. Please refer to the Adtran Networks Group Insider Dealing Policy with respect to trading in Adtran Networks SE's securities.

You may not convey Material Nonpublic Information about the Company to others, or suggest that anyone purchase or sell Company securities, while you are aware of Material Nonpublic Information. You also may not convey Material Nonpublic Information about any other company to others, or suggest that anyone purchase or sell any company's securities, while you are aware of Material Nonpublic Information

[2] Under the MAR, and for purposes of this Policy, a "person closely associated" means (i) a spouse or a partner considered to be equivalent to a spouse, (ii) a dependent child, (iii) a relative who has shared the same household for at least one year on the date of the transaction concerned and (iv) a legal person, trust or partnership, the managerial responsibilities of which are discharged by a Managerial Person or by a person referred to in (i), (ii) or (iii), which is directly or indirectly controlled by such a person, which is set up for the benefit of such person, or the economic interests of which are substantially equivalent to those of such person.

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about that company that was learned in the course of or as a result of your employment with the Company. This practice, known as "tipping", also violates the securities laws and can result in the same civil and criminal penalties that apply if you engage in insider trading directly, even if you do not receive any money or derive any benefit from trades made by persons to whom you passed Material Nonpublic Information. This policy against "tipping" applies to information about the Company and its securities, as well as to information about other companies that you learned in the course of or as a result of your employment with the Company. Persons with whom you have a history, pattern, or practice of sharing confidences - such as family members, close friends, and financial and personal counselors - may be presumed to act on the basis of information known to you; therefore, special care should be taken so that Material Nonpublic Information is not disclosed to such persons. This Policy does not restrict legitimate business communications to Company personnel who require the information in order to perform their business duties. Material Nonpublic Information, however, should not be disclosed to persons outside the Company unless you are specifically authorized to disclose such information and the person receiving the information has agreed, in writing, if appropriate, to keep the information confidential.

Notwithstanding the foregoing, nothing in this Policy shall be construed to prohibit you from having reported or reporting possible violations of U.S. federal law or regulation and/or German law or regulation or having filed or filing a charge or complaint with any U.S. and/or German governmental agency or entity as provided for, protected under or warranted by whistleblower or other similar provisions of applicable law or regulation. Furthermore, this Policy does not limit your ability to communicate with the SEC and/or BaFin or otherwise participate in any investigation or proceeding that may be conducted by the SEC and/or BaFin, including by providing documents or other information to the SEC and/or BaFin without notice to the Company.

B. Unauthorized Disclosure

All directors, officers, employees, independent contractors, and consultants must maintain the confidentiality of Company information for competitive, security and other business reasons, as well as to comply with applicable securities laws (including U.S., German, and EU securities laws). All information you learn about the Company or its business plans is potentially nonpublic information until we publicly disclose it. You should treat this information as confidential and proprietary to the Company. You may not disclose it to others, such as family members, other relatives, or business or, social acquaintances, and you are expressly prohibited from disclosing any information concerning the Company to, or participating in, so-called "expert networks" (*i.e.*, organizations that provide specialized information and research services to the outsiders, such as hedge funds and mutual funds).

Also, legal rules govern the timing and nature of our disclosure of material information to outsiders or the public. Violation of these rules could result in substantial liability for you, the Company, and its management. For this reason, we permit only specifically designated representatives of the Company to discuss the Company with the news media, securities analysts, and investors and only in accordance with the Company's Regulation FD Policy. If you receive inquiries of this nature, refer them to the Company's Authorized Spokespersons as defined in the Company's Regulation FD Policy.

Notwithstanding the foregoing, nothing in this Policy shall be construed to prohibit you from having reported or reporting possible violations of U.S. federal law or regulation and/or German law or regulation or having filed or filing a charge or complaint with any U.S. and/or German governmental agency or entity as provided for, protected under or warranted by whistleblower or other similar provisions of applicable law or regulation. Furthermore, this Policy does not limit your ability to communicate with the SEC and/or BaFin or otherwise participate in any investigation or proceeding that may be conducted by the SEC and/or BaFin, including by providing documents or other information to the SEC and/or BaFin without notice to the Company.

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C. Rule 10b5-1(c) Trading Plans

Rule 10b5-1(c) under the Exchange Act provides for an affirmative defense against insider trading liability under U.S. federal securities laws if trades or transactions occur pursuant to a prearranged "trading plan" that meets specified conditions. **The Company will allow you to enter into a Rule 10b5-1(c) trading plan with respect to Company securities provided that the plan complies with the requirements set forth below.**

Under Rule 10b5-1(c), if you enter into a binding contract, an instruction or a written plan that specifies the amount, price and date on which securities are to be purchased or sold, and these arrangements are established at a time when you are not aware of Material Nonpublic Information, you may claim a defense to insider trading liability if the transactions under the trading plan occur at a time when you have subsequently learned Material Nonpublic Information. A plan effected in accordance with the rule may specify amount, price and date through a formula or may specify trading parameters which another person has discretion to administer, but you must not exercise any subsequent discretion affecting the transactions, and if your broker or any other person exercises discretion in implementing the trades, you must not influence his or her actions and he or she must not be aware of any Material Nonpublic Information at the time of the trades. Trading plans can be established for a single trade or a series of trades.

It is important that you properly document the details of a trading plan. Note that, in addition to the requirements described above, there are a number of additional procedural conditions to Rule 10b5-1(c) that must be satisfied before you can rely on a trading plan as an affirmative defense against an insider trading charge. These requirements include that you act in good faith, that you do not modify your trading instructions while you are aware of Material Nonpublic Information and that you not enter into or alter a corresponding or hedging transaction or position. Because this rule is complex, the Company recommends that you work with a broker and be sure you fully understand the limitations and conditions of the rule before you establish a trading plan.

All Rule 10b5-1(c) trading plans, contracts and instructions entered into by Company Insiders are required to be reviewed and approved by the Company's Chief Financial Officer (or the Chief Executive Officer in the event that the Chief Financial Officer intends to enter into a Rule 10b5-1(c) Plan) for compliance with Rule 10b5-1(c) and the Company's policies concerning such programs, prior to implementing any such plan, contract or instruction. In addition, all amendments, modifications, and terminations of an existing Rule 10b5-1(c) trading plan by a Company Insider must be reviewed and approved by the Chief Financial Officer or Chief Executive Officer, as applicable, before any such amendments, modifications, or terminations are effected. Please be aware that the Company may prohibit you from making certain amendments or modifications, or from prematurely terminating the Rule 10b5-1(c) Plan, for the purposes of complying with the MAR.

Transactions pursuant to Rule 10b5-1(c) trading plans that are effected in accordance with this Policy may occur notwithstanding the other prohibitions included herein.

V. POLICIES AND PROCEDURES FOR COMPANY INSIDERS AND RESTRICTED PERSONS

A. Overview

The subsections set forth below apply to Company Insiders and/or Restricted Persons as specified therein. These restrictions also apply such individuals' Closely Associated Persons.

B. Quarterly Blackout Periods

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Unless authorized in writing by the Chief Financial Officer (following consultation with counsel), Company Insiders may not trade or transact in Company securities during the period (each a "**Quarterly Blackout Period**") beginning immediately after the close of trading on the fourteenth (14th) day of the last month of each fiscal quarter (*i.e.*, immediately after the close of trading on March 14th, June 14th, September 14th and December 14th) and ending at the close of trading on the second (2nd) trading day following the date on which the Company's final financial results for the applicable quarterly or annual period are publicly disclosed (by press release and/or Form 8-K). For example, if earnings information for a completed quarter were released on a Tuesday, the applicable Quarterly Blackout Period would continue through the close of trading on Thursday. During these Quarterly Blackout Periods, Company Insiders are presumed to possess Material Nonpublic Information about the Company's financial results. If the Chief Executive Officer and/or the Chief Financial Officer wishes to effect a trade in the Company's securities during a Quarterly Blackout Period, he or she shall require the prior written consent of the Board of Directors. Permission to trade in the securities during a Quarterly Blackout Period shall only be granted in the case of unusual, exceptional circumstances[3] and where such trading is otherwise not prohibited under applicable law.

In light of these restrictions, if you expect a need to sell Company securities at a specific time in the future, you may wish to consider entering into a prearranged Rule 10b5-1(c) trading plan as discussed in Section IV.C.

While the Company has designed its Quarterly Blackout Periods to comply with the MAR, all Managerial Persons[4] remain responsible for observing the statutory closed periods set forth under the MAR. Consequently, Managerial Persons may not conduct any transactions on their own account or for the account of a third party, directly or indirectly, relating to the shares or debt instruments of the Company or to derivatives or other financial instruments linked to them during a period of thirty (30) calendar days prior to the (anticipated) release of the relevant financial results, including any preliminary financial results, containing key information relating to the Company's financial figures. This includes the release of financial results containing key information relating to the Company's financial figures via an ad hoc notification, an earnings release, or an SEC filing.

C. Special Blackout Periods

From time to time, Material Nonpublic Information regarding the Company (*e.g.*, the negotiation of a merger, acquisition or disposition, an investigation or assessment of cybersecurity incidents, new product developments, or matters affecting the Company's previously announced results or financial statements) may be pending and not publicly disclosed. While such information is pending, the Company may impose a special blackout period (a "**Special Blackout Period**") during which the Restricted Persons are prohibited from trading or transacting in Company securities without the written authorization of the Chief Financial Officer. The Restricted Persons shall be notified by the Company's Chief Financial Officer via email of the details of Special Blackout Period.

If the Chief Executive Officer and/or the Chief Financial Officer wishes to effect a trade in the Company's securities during a Special Blackout Period, he or she shall require the prior written consent of the Board of Directors. Permission to trade in the securities during a Special Blackout Period shall only be granted in the case of unusual, exceptional circumstances and where such trading is otherwise not prohibited under applicable law.

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[3] Unusual, exceptional circumstances may include the trading in securities in the case of severe financial hardship or where the timing of the sale is critical for significant tax planning purposes.

[4] Managerial Persons are generally expected to be the individuals that fall under the category of Section 16 Insiders.

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D. No Trading While in Possession of Material Nonpublic Information

Even if no Quarterly Blackout Period or Special Blackout Period is in effect, the restrictions set forth in Article IV, including the restriction on trading or transacting in Company securities while in possession of Material Nonpublic Information set forth in Section IV.A., continue to apply to all Company Insiders and Restricted Persons, just as they do to all of the Company's directors, officers, employees, independent contracts and consultants. Accordingly, no Company Insiders or Restricted Persons possessing Material Nonpublic Information concerning the Company may trade or transact in Company securities. Persons possessing such information may trade or transact in Company securities only after the close of trading on the second (2nd) full trading day following the Company's widespread public release of the information.

E. Policy Regarding Speculative Transactions, Hedging, Pledging and Trading on Margin

Company Insiders are for purposes of this Policy required to comply with the restrictions set forth below.

1. Speculative Transactions

It is against Company policy for Company Insiders to engage in speculative transactions in Company securities. As such, it is against Company policy for Company Insiders to trade in puts or calls in Company securities, or sell Company securities short.

2. Hedging Transactions

Company Insiders are prohibited from engaging in any hedging transactions involving Company securities because certain forms of hedging transactions, such as zero cost collars and forward sale contracts, in certain instances involve the establishment of a short position (or an equivalent position) in Company securities and limit or eliminate the ability to profit from an increase in the value of Company securities.

3. Pledging and Trading on Margin

Securities held on margin (or margined) or pledged as collateral may be sold without your consent if you fail to meet a margin call or if you default on a loan, a margin or foreclosure sale may result in unlawful insider trading. Because of this danger, Company Insiders are prohibited from margining Company securities or pledging Company securities as collateral for a loan.

4. Short-Term Trading

Company Insiders who purchase Company securities may not sell any Company securities of the same class for at least six months after the date of purchase.

F. Retirement Plan Trading Suspensions

If the Company or the Company's retirement plan fiduciary imposes a temporary suspension of trading during which at least 50% of the retirement plan participants are unable to purchase, sell or otherwise acquire or transfer an interest in the equity securities of the Company, then Company Insiders generally may not trade or transact in Company securities.

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G. Rule 144

Company Insiders who are directors or executive officers of the Company may be deemed to be "affiliates" of the Company. Consequently, shares of Company common stock held by such Company Insiders may be considered to be "restricted securities" or "control securities", the sale of which are subject to compliance with Rule 144 under the Securities Act of 1933, as amended (or any other applicable exemption under the federal securities laws). If this is the case, note that Rule 144 places limits on the number of shares that affiliates may be able to sell and provides that certain procedures must be followed before they can sell shares of Company common stock. Contact the Company's Chief Financial Officer for more information on Rule 144. It is the responsibility of applicable director or executive officer to notify his or her stock brokerage company of his or her status as a Rule 144 affiliate of the Company.

VI. POLICIES AND PROCEDURES FOR SECTION 16 INSIDERS

A. Overview

Section 16 Insiders are for purposes of this Policy required to comply with the restrictions covered below. These restrictions also apply to such individuals' Closely Associated Persons to the extent set forth in the subsections below.

B. Preclearance

The Company requires each Section 16 Insider to contact the Company's Chief Financial Officer before such Section 16 Insider or his or her Closely Associated Persons effects any trade or transaction in Company securities (including a stock plan transaction such as an option exercise, a gift, a contribution to a trust or any other transfer) and obtain prior approval of such trade or transaction from the Company. A Pre-Clearance of Stock Transaction Form ("**Pre-Clearance Form**") is available for this purpose and may be located on the internal intranet Legal Compliance Bridge website (_____). You may also email or contact the Chief Financial Officer to request the Pre-Clearance Form or for any other assistance. All requests must be submitted to the Company's Chief Financial Officer (or the Chief Executive Officer in the event that the Chief Financial Officer intends to effect a trade or transaction in Company securities outside of a Quarterly Blackout Period or a Special Blackout Period) at least two (2) business days in advance of the proposed transaction. The Company's Chief Financial Officer or Chief Executive Officer, as applicable, will then determine whether the transaction may proceed. This preclearance policy applies even if you are initiating a trade or transaction at a time where no Quarterly Blackout Period or Special Blackout Period is in effect. As set forth in Sections V.B and V.C, if the Chief Executive Officer and/or the Chief Financial Officer wishes to effect a trade in the Company's securities during a Quarterly Blackout Period or a Special Blackout Period, he or she shall require the prior written consent of the Board of Directors.

If a trade or transaction is approved under the preclearance policy, it must be executed within five (5) business days after the approval is obtained, but regardless may not be executed if you acquire Material Nonpublic Information concerning the Company, if a Quarterly Blackout Period or Special Blackout Period begins and you have not obtained the Company's express written approval to trade during the applicable blackout period, or if the Company revokes its approval. If a trade or transaction is not completed within the period described above, it must be approved again before it may be executed.

If a proposed trade or transaction is not approved under the preclearance policy, you should refrain from initiating any trade or transaction in Company securities, and you should not inform anyone within or outside of the Company of the restriction.

C. Section 16 of the Exchange Act

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Section 16 Insiders are also required to comply with the reporting obligations and limitations on short-swing transactions set forth in Section 16. The practical effect of these provisions is that (i) Section 16 Insiders will be required to publicly report their transactions in Company securities or, to the extent required by law, the transactions of Closely Associated Persons in Company securities (usually within two (2) business days of the date of the transaction) and (ii) Section 16 Insiders (including Closely Associated Persons to the extent required by law) who purchase and sell Company securities, as determined by Section 16, within a six-month period will be required to disgorge all profits to the Company regardless of whether they had knowledge of any Material Nonpublic Information. In order to facilitate compliance with the reporting obligations under Section 16, Section 16 Insiders are required to pre-clear their transactions in Company securities, including the transactions of their Closely Associated Persons, as set forth in Section VI.B above. The Company has provided separate materials to the Section 16 Insiders regarding compliance with Section 16 and its related rules (see the document titled "Adtran Section 16 Reporting Person Trading Procedure"). It is the responsibility of each Section 16 Insider to notify his or her stock brokerage company of his or her status as a Section 16 Insider.

D. Directors Dealings' Notifications under Article 19(1) of the EU Market Abuse Regulation

In addition, Section 16 Insiders will also be required to comply with the reporting obligations set forth under Article 19(1) of MAR. The practical effect of these provisions is that they will be required to report their transactions in Company securities and, to the extent required by law, the transactions of Closely Associated Persons in Company Securities (usually within three (3) business days of the date of the transaction) to BaFin via the filing of directors dealings' notifications. In order to facilitate compliance with the reporting obligations under Article 19(1) of MAR, Section 16 Insiders are required to pre-clear their transactions in Company securities, including the transactions of their Closely Associated Persons, as set forth in Section VI.B above. The Company may provide separate materials to officers and directors regarding compliance with Article 19(1) of MAR.

VII. MISCELLANEOUS

A. Certification

All directors, officers, employees, independent contractors, and consultants will be required to certify their understanding of and intent to comply with this Policy pursuant to the Acknowledgement and Receipt attached hereto as Annex B.

B. Noncompliance

Each director, officer, employee, independent contractor, or consultant who fails to comply with this Policy or who refuses to certify that he or she has complied with it, if applicable, will be subject to disciplinary action, which could include termination of employment, in accordance with applicable law.

C. Post-Termination Transactions

This Policy will continue to apply to your transactions in Company securities after your employment or service with the Company or its subsidiaries has terminated until such time as you are no longer aware of any Material Nonpublic Information and/or Inside Information or until that information has been publicly disclosed or is no longer material.

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ANNEX A

COMPANY INSIDERS

[To be maintained by the Company]

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ANNEX B

RECEIPT AND ACKNOWLEDGEMENT

I hereby acknowledge that I have received and read a copy of the Company's Insider Trading Policy (the "**Policy**") and agree to comply with its terms, including the policies referenced therein, which have been provided to me. I understand that a violation of insider trading or tipping laws or regulations may subject me to severe civil and/or criminal penalties, and that a violation of the terms of the Policy may subject me to discipline by the Company up to and including termination for cause.

Print name:

Signature:

Date:

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Exhibit 21

SUBSIDIARIES OF ADTRAN HOLDINGS, INC.

December 31, 2024

Name of Subsidiary	Country or State of Incorporation
ADTRAN Networks Pty. Ltd	Australia
ADTRAN Networks Comunicações Ltda.	Brazil
ADTRAN Canada, Inc.	Canada
ADTRAN d.o.o.	Croatia
ADTRAN, Inc.	State of Delaware
ADTRAN International, Inc.	State of Delaware
ADTRAN Networks Worldwide, Inc.	State of Delaware
ADTRAN Networks, LLC	State of Delaware
Bluesocket, Inc.	State of Delaware
ADTRAN Oy	Finland
ADTRAN GmbH	Germany
ADTRAN Networks M.E.P.E.	Greece
ADTRAN Networks India Private Limited	India
ADTRAN Holdings Ltd.	Israel
ADTRAN S.R.L.	Italy
ADTRAN Networks Sdn Bhd	Malaysia
ADTRAN Networks S.A. de C.V.	Mexico
ADTRAN Peru S.R.L.	Peru
ADTRAN Sp. z.o.o.	Poland
ADTRAN s.r.o.	Slovakia
ADTRAN Proprietary Ltd.	South Africa
ADTRAN Switzerland GmbH	Switzerland
ADTRAN SARL	Tunisia
ADTRAN Europe Limited	United Kingdom
ADTRAN Networks and Services Egypt, LLC	Egypt
ADTRAN Networks New Zealand Ltd.	New Zealand
Adtran Technology GmbH	Germany
Adtran Networks North America, Inc.	State of Delaware
Adtran Networks (UK) Limited	United Kingdom
Oscilloquartz SA	Switzerland
Adtran Networks Spólka z o.o.	Poland
Adtran Networks Israel Ltd.	Israel
Adtran Networks (Shenzhen) Ltd.	China
Oscilloquartz Finland Oy	Finland
Adtran Networks Service (Shenzhen) Ltd.	China
Adtran Networks Singapore Pte. Ltd.	Singapore
Adtran Networks Hong Kong Limited	China
Adtran Networks IT Solutions India Private Limited	India
ADVA Optical Networking Serviços Brazil Ltda.	Brazil
Adtran Networks Japan Co., Ltd.	Japan
Adtran Networks AB	Sweden
ADVA NA Holdings Inc.	State of Georgia
Adtran Networks Australia Pty Ltd.	Australia
Adtran Networks B.V.	Netherlands
Adtran Networks Canada, Inc.	Canada
ADVA Network Security GmbH	Germany

Exhibit 23

CONSENT OF INDEPENDENT REGISTERED PUBLIC ACCOUNTING FIRM

We hereby consent to the incorporation by reference in the Registration Statements on Form S-3 (Nos. 333-283311 and 333-268998) and Form S-8 (Nos. 333-266089, 333-266091, 333-279310 and 333-279311) of ADTRAN Holdings, Inc. of our report dated March 3, 2025 relating to the financial statements, financial statement schedule and the effectiveness of internal control over financial reporting, which appears in this Annual Report on Form 10-K.

/s/ PricewaterhouseCoopers LLP
Birmingham, Alabama
March 3, 2025

Exhibit 24

POWER OF ATTORNEY

KNOW ALL MEN BY THESE PRESENTS, that each of the undersigned, being a director of ADTRAN Holdings, Inc., a Delaware corporation (the "Company"), by his or her execution hereof or an identical counterpart hereof, hereby constitutes and appoints Thomas R. Stanton and Ulrich Dopfer, and each of them, his or her true and lawful attorneys-in-fact and agents, with full power of substitution and resubstitution, for him or her and in his or her name, place and stead, in any and all capacities, to sign the Annual Report on Form 10-K of the Company for the fiscal year ended December 31, 2024 and any and all amendments thereto, and any other documents in connection therewith as they or any one of them may deem necessary or desirable, each in such form as they or any one of them may approve, and to file the same, with all exhibits thereto and other documents in connection therewith, with the Securities and Exchange Commission, granting unto said attorneys-in-fact and agents, and each of them, full power and authority to do and perform each and every act and thing requisite or necessary to be done, as fully and to all intents and purposes as he or she might or could do in person, hereby ratifying and confirming all that said attorneys-in-fact and agents or any of them, or their or his substitute or substitutes, may lawfully do or cause to be done by virtue hereof.

IN WITNESS WHEREOF, each of the undersigned has hereunto set his or her hand this 3rd day of March, 2025.

/s/ H. Fenwick Huss
H. Fenwick Huss
Director

/s/ Gregory McCray
Gregory McCray
Director

/s/ Balan Nair
Balan Nair
Director

/s/Jacqueline H. Rice
Jacqueline H. Rice
Director

/s/ Nikos Theodosopoulos
Nikos Theodosopoulos
Director

/s/Kathryn A. Walker
Kathryn A. Walker
Director

Exhibit 31

CERTIFICATIONS

I, Thomas R. Stanton, certify that:

1. I have reviewed this Annual Report on Form 10-K of ADTRAN Holdings, Inc.;

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

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

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

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

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

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

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

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

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

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

Date: March 3, 2025

/s/ Thomas R. Stanton
Thomas R. Stanton
Chief Executive Officer and Chairman of the Board

I, Ulrich Dopfer, certify that:

1. I have reviewed this Annual Report on Form 10-K of ADTRAN Holdings, Inc.;

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

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

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

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

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

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

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

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

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

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

Date: March 3, 2025

/s/ Ulrich Dopfer
Ulrich Dopfer
Chief Financial Officer

(Principal Accounting Officer)

Exhibit 32

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 Annual Report of ADTRAN Holdings, Inc. (the "Company") on Form 10-K for the period ended December 31, 2024 as filed with the Securities and Exchange Commission on the date hereof (the "Report"), I, Thomas R. Stanton, Chief Executive Officer and Chairman of the Board of the Company, certify, pursuant to 18 U.S.C. § 1350, as adopted pursuant to § 906 of the Sarbanes-Oxley Act of 2002, that, to the best of my 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 for the periods described herein.

/s/ Thomas R. Stanton
Thomas R. Stanton
Chief Executive Officer and Chairman of the Board
Date: March 3, 2025

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 Annual Report of ADTRAN Holdings, Inc. (the "Company") on Form 10-K for the period ended December 31, 2024 as filed with the Securities and Exchange Commission on the date hereof (the "Report"), I, Ulrich Dopfer, Chief Financial Officer, certify, pursuant to 18 U.S.C. § 1350, as adopted pursuant to § 906 of the Sarbanes-Oxley Act of 2002, that, to the best of my 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 for the periods described herein.

/s/ Ulrich Dopfer
Ulrich Dopfer
Chief Financial Officer
(Principal Accounting Officer)
Date: March 3, 2025