

Unlocking the future network

2022 ANNUAL REPORT

Adtran

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An unprecedented investment cycle for communications networks

The pace of change in our industry has been phenomenal. Digitization has taken center stage in politics and business, and the necessity for secure, high-performance communications infrastructure has never been greater. We are now in a live, work and learn-from-anywhere era, where home offices and in-person education have been complemented and, in some cases, replaced by virtual meetings, ushering in hybrid communications as the new norm. High speed fiber networks underpin this new model of connectivity, ensuring their position as a strategic asset in the modern economy.

These developments have shifted our mindsets and view of communications networks. Despite global economic uncertainty, funding for fiber networks remains strong, aided by tens of billions of dollars in annual subsidies across the U.S. and Europe. In the US alone, there are multiple large-scale federal stimulus programs focused primarily on accelerating the deployment of fiber networks. These include the \$42.5B Broadband Equity, Access and Deployment program, or BEAD, that is administered by the Department of Commerce, the \$10B Capital Projects Fund that uses funding from the America Rescue Plan Act (ARPA) and is administered by the Department of Treasury, and the \$20B Rural Digital Opportunity Fund (RDOF) that is administered by the Federal Communications Commission (FCC). These are federal programs that have been approved in the past few years, with the vast majority of the funding allocations still planned for the year ahead, and incremental to other existing federal and state subsidy programs. Tens of billions of similar government stimulus programs are being funded by the UK and European Union to ensure fiber connectivity across Europe.

In parallel to this funding cycle, we see many operators shifting away from high-risk vendors and looking to diversify their supply chain. As a trusted western supplier with a strong presence across the US and Europe, Adtran is well-positioned to benefit from these funding and supplier transition tailwinds. The race to build out fiber optic infrastructure is on and, together with our customers and partners, we aim to execute on our vision to enable a fully-connected world, where the power and freedom to communicate is available to everyone, everywhere, in a secure, efficient and sustainable environment.

Funding for fiber networks remains strong, aided by tens of billions of dollars in annual subsidies across the U.S. and Europe ””

Building a scaled leader for the fiber everywhere era

Besides the positive developments on the demand side of our industry, we are also excited about the progress we have made in combining our business with ADVA. We announced the proposed combination in August 2021, achieved shareholder approval in January 2022, closed the business combination in July 2022 following FDI approval from the German government, and completed registration of the DPLTA in January 2023. We are now operating as one company and can execute on our mission to be the trusted partner and quality leader for automated, secure, software-driven networking solutions that empower our customers to connect the world.

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We believe that this business combination will bring significant value to our shareholders, customers, and employees.

The new Adtran has a more diverse customer base, both geographically and in customer type, a broader and more differentiated fiber networking portfolio, and a stronger regional presence, especially in the US and Europe. These benefits are well aligned with the fiber investment cycle and high-risk vendor swap opportunities we see in North America and Europe, and the combination allows us to maximize our competitive advantage during this unique window in the market.

Ultimately, we are confident that our stronger portfolio, which includes fiber networking solutions from the optical core to the customer premise that are complemented by software solutions that simplify the end-to-end management and operations of these networks, will be viewed very favorably by our much larger combined customer base and this will drive incremental value to our customers, employees, and shareholders. As an added benefit, we have a more diverse customer mix that includes a broad mix of large service provider, regional service provider, enterprise, government, and internet content provider customers.

Additionally, the new Adtran business model provides economies of scale and operational efficiencies that will reduce costs and increase profitability. We believe that the new Adtran will have a stronger balance sheet and a more diversified revenue stream, allowing us to invest in new technologies and capabilities to better serve our customers and stay ahead of the competition.

We understand that any business combination can be complex, but more than half a year following the closing, we are confident that with our detailed planning, committed resources, and timely execution, it will bring long-term benefits to all stakeholders. We will continue to keep you updated on the progress of our unification.

Capitalizing on the mega trends in fiber optic networking

The investment cycle in our industry is largely focused on the expansion of fiber networking. There are several key trends in this space that are driving the most investment. The first trend is the rapid investment in fiber-based broadband access which connects homes and businesses directly with fiber for high-speed broadband services. Adtran is an industry leader and pioneer in this space, with our open, disaggregated fiber access platforms leading the growth for us. According to industry research firm Dell'Oro, we were up 84% Year-over-Year (YoY) for PON OLT port shipments in the NAM+EMEA region for 3Q22, and we expect further growth in this segment this year following the launch of our latest fiber access platform that sets new industry benchmarks in scalability, density, and power efficiency. Our success in fiber access is closely coupled to our success with our mesh Wi-Fi platforms, which extend multi-Gig connectivity into homes to take advantage of higher speed fiber access networks. This past year was a record year for us in this segment, and we expect further success in this area this year.

The second key trend is the upgrade of the middle mile or edge transport systems that are used to backhaul services from these increasingly higher speed access networks. Communications service providers use optical wavelength division multiplexing (WDM) technology to increase the capacity,

reach and efficiency of these transport networks that are used to interconnect the fiber aggregation sites to geographically diverse data center and internet backbone sites. WDM is another core expertise of our company, and our portfolio is adding value to thousands of networks around the globe. Expanding capacity in carrier infrastructure, middle mile transport, interconnecting data centers, and building trusted network infrastructure for government and research networks are all use cases with sustainable demand for WDM in years to come. According to Omdia, ADVA gained 4% in the large European optical networking market over the last two years, more than any other vendor in that space, taking market share from Huawei. As part of the larger Adtran, we can leverage this portfolio to further accelerate our market momentum, win more footprint, and serve existing customers better.

A third trend to watch is the role that fiber networks play in 5G wireless networks. High speed fiber networks connect 5G radio sites to mobile cores, providing the foundation for these rapidly growing wireless networks. Connecting radio heads in a scalable and efficient manner is strategically important, as is the delivery and assurance of precision timing – again a core expertise we have in our portfolio through our Oscilloquartz technology. We also see Adtran's investments in optical time-domain reflectometry

(OTDR) and other advanced testing and measurement techniques as improving the reliability and performance of fiber-optic networks, enhancing our opportunities to participate in the growth associated with 5G.

the rise of software is a differentiating element in many networking areas ”

And finally, the rise of software is a differentiating element in many networking areas. Adtran has invested heavily in software platforms that orchestrate, manage, and proactively optimize the performance of networks ranging from the optical core to the customer premise while also providing a suite of end user focused applications. These software applications, increasingly deployed as cloud-based SaaS applications, simplify the deployment and ongoing operations of the network while improving the end user experience. For the service provider, this results in reduced operational expense and higher ARPU through differentiated service offerings. With our much broader portfolio under a common software platform, along with new capabilities like virtual network functions (VNF) orchestration added to the mix, we will be able to add more value to our customers and further differentiate our overall portfolio.

The road ahead

While our order intake continues to develop positively, we continue to focus on the supply side, related cost challenges and integration efforts following our business combination. We see signs of normalization in the semiconductor supply chain and expect to lower our backlog and inventories over the next few quarters.

As we look ahead, we are optimistic about the future growth prospects of our company. We have a strong pipeline of new products and services, and we are well positioned to capitalize on emerging trends in our industry. Our software capabilities are strengthening, offering increasing value to our customers and partners. And as we add the ADVA technologies to our portfolio, we have a solution set that we believe is second to none. We have a differentiated and comprehensive tool kit that empowers our customers to connect every home, business, data center and 5G site with fiber – highly automated and secure – and with strong local support in more countries than ever before.

We will continue to focus on cost management and operational efficiency while investing in key areas to drive growth. We are confident that our strategic plans and disciplined execution will enable us to deliver strong financial performance and create value for our shareholders.

Finally, I would like to thank one more time our dedicated employees for their consistent and valuable performance, especially in these challenging times. We believe in our people and foster company culture that is built on a foundation of communication, trust, collaboration and an entrepreneurial spirit. These values enable us to be a global technology leader and a strong customer advocate. With a diverse and inclusive team spread across the globe, our culture embraces creativity and seeks innovation and quality in everything we do. We will continue to invest all our energy and creativity in innovative solutions for the benefit of our customers, shareholders and employees.



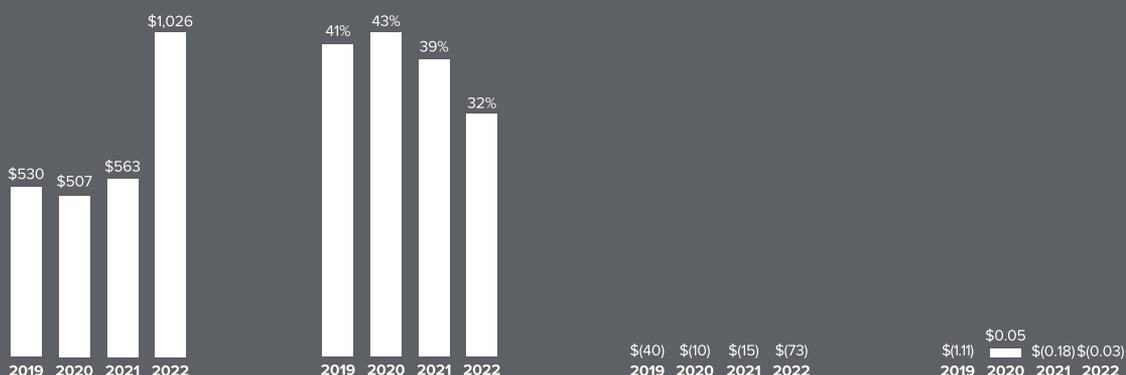
Tom Stanton
Chairman & CEO
Adtran Holdings, Inc.

We have a “
differentiated and
comprehensive tool
kit that empowers our
customers to connect
every home, business,
data center and 5G
site with fiber

Financial highlights

Company financial summary

(In millions, except per share amounts)



Total revenue

Gross margin

Operating loss

(Loss) Earnings per common share attributable to ADTRAN Holdings, Inc. - diluted

Consolidated statements of loss

(In thousands, except per share amounts)

Years ended December 31,	2022	2021
Total revenue	\$1,025,536	\$563,004
Loss before income taxes	\$(70,963)	\$(6,305)
Net loss attributable to ADTRAN Holdings, Inc.	\$(2,037)	\$(8,635)
Loss per common share attributable to ADTRAN Holdings, Inc. - diluted	\$(0.03)	\$(0.18)

Consolidated balance sheets data

(In thousands)

December 31,	2022	2021
Unrestricted cash and marketable securities	\$118,707 ¹	\$100,634 ²
Total assets	\$1,881,865	\$569,017
Total equity	\$1,303,613	\$357,102

¹ Net of \$22.9 million in dividend payments during 2022 ² Net of \$17.5 million in dividend payments during 2021

**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, 2022

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
(State of Incorporation)

87-2164282
(I.R.S. Employer Identification Number)

901 Explorer Boulevard
Huntsville, Alabama 35806-2807
(Address of principal executive offices, including zip code)

(256) 963-8000
(Registrant's telephone number, including area code)

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

<u>Title of each class</u>	<u>Trading Symbol(s)</u>	<u>Name of each exchange on which registered</u>
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	<input checked="" type="checkbox"/>	Accelerated Filer	<input type="checkbox"/>
Non-accelerated Filer	<input type="checkbox"/>	Smaller Reporting Company	<input type="checkbox"/>
Emerging growth company	<input type="checkbox"/>		

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, 2022 was \$852,431,295 based on a closing market price of \$17.53 as reported on the NASDAQ Global Select. There were 78,630,365 shares of common stock outstanding as of February 27, 2023.

DOCUMENTS INCORPORATED BY REFERENCE

Portions of the Proxy Statement for the registrant's 2023 Annual Meeting of Stockholders are incorporated herein by reference in Part III to the extent described in Part III.

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

ADTRAN Holdings, Inc.
Annual Report on Form 10-K
For the Fiscal Year Ended December 31, 2022

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SIGNATURES

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 its merger with and into its wholly-owned direct subsidiary, ADTRAN Holdings, 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.

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.

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 our behalf. We and our representatives may from time to time make written or oral forward-looking statements, including statements contained in this report, our other filings with the Securities and Exchange Commission (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 the Business Combination and DPLTA

- We may fail to realize the anticipated strategic and financial benefits sought from the Business Combination.
- We have experienced operational challenges as a result of the Business Combination and may also experience negative synergies and loss of customers.
- The terms of the DPLTA may have a material adverse effect on our financial results and condition.
- We are exposed to additional litigation risk and uncertainty with respect to the remaining minority shareholders of ADVA, which litigation may require us to pay a higher purchase price for additional ADVA shares than the amount provided for under the DPLTA.
- We have incurred and expect to continue to incur significant transaction fees and costs in connection with the Business Combination and post-closing integration efforts.
- We incurred a substantial amount of indebtedness in connection with the Business Combination and DPLTA. Our failure to meet our debt service obligations could have a material adverse effect on our business, financial condition and results of operations.
- We may be unable to successfully retain and motivate our personnel, including personnel at ADVA.
- The terms of our and ADVA's credit agreements restrict our current and future operations, particularly our ability to respond to changes or to take certain actions.
- Negative publicity related to post-closing integration measures may adversely affect us.

Risks related to our financial results and Company success

- Our revenue for a particular period can be difficult to predict, and a shortfall in revenue may harm our operating results.
- The lengthy sales and approval process required by service providers for new products could result in fluctuations in our revenue.
- 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 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 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.

- 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 may include write-downs of excess or obsolete inventory.
- The continuing growth of our international operations could 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.
- If we fail to manage our exposure to worldwide financial and securities markets successfully, our operating results and financial statements could be materially impacted.
- The terms of the credit agreement governing our senior credit facility restrict our current and future operations, particularly our ability to respond to changes or to take certain actions.
- 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 will require a significant amount of cash to service our indebtedness, our potential payment obligations to ADVA shareholders under the DPLTA, and other obligations.
- We could be required to recognize impairment charges related to goodwill and other intangible assets.
- 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.

Risks related to COVID-19

- The ongoing COVID-19 pandemic has impacted and may continue to impact our business, results of operations, financial condition and cash flows, particularly our supply chain.

Risks related to our control environment

- Breaches of our information systems and cyber-attacks could compromise our intellectual property and cause significant damage to our business and reputation.
- If we fail to maintain proper and effective internal control over financial reporting we could have a material weakness in our internal controls, that if not remediated, could materially adversely affect us.

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.
- Software under license from third parties for use in certain of our products may not continue to be available to us on commercially reasonable terms.
- Our use of open source software could impose limitations on our ability to commercialize our products.

- We may incur 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.

Risks related to the Company's stock price

- Our operating results may fluctuate in future periods, which may adversely affect our stock price.
- 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.
- Central Banks' monetary policy actions could increase our costs of borrowing money and negatively impact our financial condition and future operations.
- Rising inflation could negatively impact our revenues and profitability if increases in the prices of our products and services or a decrease in customer spending result in lower sales.
- 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.

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
10G EPON	10-Gigabit EPON (as defined below)
Acorn HoldCo	Acorn HoldCo, Inc., a Delaware corporation and currently a wholly-owned direct subsidiary of the Company
ADVA	ADVA Optical Networking SE, a European stock corporation incorporated under the laws of the European Union and Germany
ADSL	Asymmetric Digital Subscriber Line
ADTN	Ticker symbol for ADTRAN
ADTRAN GmbH	ADTRAN Gesellschaft mit beschränkter Haftung; Limited liability subsidiary of ADTRAN, Inc. in Germany
ALM	Active line monitoring
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
ATM	Asynchronous Transfer Mode
BBF	Broadband Forum
CAD/CAM	Computer-Aided Design/Computer-Aided Manufacturing
CARES Act	Coronavirus Aid, Relief, and Economic Security Act
Carrier	Entity that provides voice, data or video services to consumers and businesses
COSO	Committee of Sponsoring Organizations of the Treadway Commission
CPE	Customer-Premises Equipment
CSP	Communication Service Provider
C-TPAT	United States Customs Trade Partnership Against Terrorism
DOCSIS	Data Over Cable Service Interface Specification
DPLTA	Domination and Profit and Loss Transfer Agreement
DPU	Distribution Point Unit
DSL	Digital Subscriber Line
DSLAM	Digital Subscriber Line Access Multiplexer
DSO	Days Sales Outstanding
EMEA	Europe, Middle East and Africa
EPON	Ethernet Passive Optical Network
ERP	Enterprise Resource Planning Software
ESG	Environmental, Social and Governance
Ethernet	Means of connecting computers over a LAN (as defined below)
ETSI	European Telecommunications Standards Institute
EU	European Union
EURIBOR	Euro Interbank Offered Rate
FCC	Federal Communications Commission
FCPA	Foreign Corrupt Practices Act
FOB	Free on Board
FSAN	Full Service Access Network
FTTN	Fiber to the Node

FTTdp	Fiber to the distribution point
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
HDSL	High-bit-rate Digital Subscriber Line
hiX	ADTRAN Multiservice Access Platform sold in the EU
ICT	Information and Communications Technology
ILEC	Incumbent Local Exchange Carrier
IoT	Internet of Things
IP	Internet Protocol
ISO	International Organization for Standardization
ITU-T	International Telecommunication Union – Telecommunication Standardization Sector
LAN	Local Area Network
LATAM	Latin America
LIBOR	London Inter-bank Offered Rate
Mbps	Megabits Per Second
MEF	Metro Ethernet Forum
micro-node	Small fixed access nodes that use VDSL2 and Gfast to deliver ultra-broadband services to a small number of end users
MSO	Multiple System Operator
NASDAQ	National Association of Securities Dealers Automated Quotations, an American stock exchange based in New York City
NFV	Network Functions Virtualization
ODM	Original Design Manufacturer
OEM	Original Equipment 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
OSP	Outside Plant
OTT	Over the Top
PCAOB	Public Company Accounting Oversight Board
PON	Passive Optical Network
PSU	Performance Stock Unit
QSPF	Quad Small Form-factor Pluggable
RDOF	Rural Digital Opportunity Fund
REACH	Registration, Evaluation, Authorization, and Restriction of Chemicals
RFoG	Radio Frequency over Glass
RoHS	Restriction of the Use of Certain Hazardous Substances in Electrical and Electronic Equipment
RSU	Restricted Stock Unit
SaaS	Software-as-a-Service
SD-Access	Software Defined Access

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
SFP	Small Form-factor Pluggable
SFP+	Enhanced Small Form-factor Pluggable
SI	Person or company that specializes in bringing together component subsystems into a whole and ensuring that those subsystems function together.
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
TDM	Time Division Multiplexed
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
VDSL2	Very high-speed Digital Subscriber Line 2
vWLAN	virtual Wireless Local Area Network
VoIP	Voice over Internet Protocol
WAN	Wide Area Network
WEEE	Waste Electrical and Electronic Equipment; European Community Directive 2012/19/EU on waste electrical and electronic equipment
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
xDSL	All types of digital subscriber lines
XFP	10-Gigabit Small Form-factor Pluggable
XGS-PON	Updated standard for Passive Optical Networks that can support 10 Gbps symmetrical data transfer

PART I

ITEM 1. BUSINESS

Company Overview

We are a leading global provider of open 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 traditional communication services providers, alternative service providers, such as utilities, municipalities and fiber overbuilders, cable/MSOs, SMBs and distributed enterprises. 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 of people 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 also 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, research and development, and production facilities in strategic global locations.

In 2022, following the business combination (the "Business Combination") with ADVA Optical Networking SE ("ADVA"), which included the Merger, we became the sole owner of and successor to ADTRAN, Inc. and the majority shareholder of ADVA. ADTRAN, Inc. is a leading global provider of open, disaggregated networking and communications solutions that enable voice, data, video, and internet communications across any network infrastructure. Its award-winning end-to-end fiber broadband solutions portfolio spans from OLTs to in-home services and intelligent SaaS solutions. ADVA is a global provider of open networking solutions with over 25 years of experience in optical networking, carrier Ethernet access and network synchronization. ADVA has led the industry for over two decades with open and secure networking solutions that carefully balance space, power and cost. Together, we serve customers in a broad range of industries in over 100 countries. We believe that our combined technology portfolio can best address current and future requirements, especially regarding 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 cloud edge (data center) to the subscriber edge (customer premise) serving both the residential and enterprise connectivity markets. 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. No information contained on our website is intended to be included as part of, or incorporated by reference into, this report.

Domination and Profit and Loss Transfer Agreement

The DPLTA between the Company, as the controlling company, and ADVA Optical Networking SE, 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 ADVA (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 ADVA, (ii) ADVA 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 ADVA. The obligation of ADVA to transfer its annual profit to the Company applies for the first time to the profit generated, if any, in the ADVA fiscal year 2023. The obligation of the Company to absorb ADVA's annual net loss applies for the first time to the loss generated, if any, in the ADVA fiscal year 2023.

Additionally, and subject to certain limitations pursuant to applicable law and the specific terms of the DPLTA, the DPLTA provides that ADVA shareholders (other than us) be offered, at their election, (i) to put their ADVA shares to the Company in exchange for a compensation in cash of EUR 17.21 per share (the "Exit Compensation"), or (ii) to remain ADVA shareholders and receive a recurring

compensation in cash of EUR 0.59 (EUR 0.52 net under the current tax regime) per share for each full fiscal year of ADVA (the “Annual Recurring Compensation”). The Annual Recurring Compensation is due on the third banking day following the ordinary general shareholders’ meeting of ADVA for the respective preceding fiscal year (but in any event within eight months following expiration of the fiscal year) and is first granted for the 2023 fiscal year, payable for the first time after the ordinary general shareholders’ meeting of ADVA in 2024.

The adequacy of both forms of compensation have been challenged by minority shareholders of ADVA 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 or Annual Recurring Compensation (in each case, including interest thereon) than agreed upon in the DPLTA.

The opportunity for outside ADVA shareholders to tender ADVA 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*).

We currently hold 33,961,170 no-par value bearer shares of ADVA, representing 65.30% of ADVA’s outstanding shares as of February 14, 2023.

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.

During the year ended December 31, 2022, we recognized \$14.2 million of transaction costs. We expect to incur integration costs and costs associated with our performance under the DPLTA during 2023 and such costs are expected to be material.

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. Our cloud-managed Wi-Fi gateways, virtualization software, and switches provide a mix of wired and wireless connectivity at the customer premises. In addition, our Carrier Ethernet products support a variety of applications at the network edge ranging from mobile backhaul to connecting enterprise customers (“Subscriber Solutions”). Our portfolio includes products for multi-gigabit service delivery over fiber or alternative media to homes and businesses. We support traditional chassis-based network solutions, such as the Total Access 5000 and hiX 5600. We also accelerate the industry’s transition to open, disaggregated fiber access solutions with our SDX Series. Data streams are aggregated via our XG400 product family and synchronized by our Oscilloquartz offerings (“Access and Aggregation Solutions”). All resulting traffic requires transport through fiber-based networks as supported by our FSP 3000 and MicroMux product families while the underlying infrastructure is monitored by our ALM product offering (“Optical Networking Solutions”). Our customers can use our Mosaic and Ensemble software suites to manage and orchestrate our complete portfolio of subscriber solutions, access and aggregation solutions and optical networking solutions. The Mosaic and Ensemble software suites include a mix of orchestration and management solutions that simplify the deployment and virtualization of next generation fiber networks.

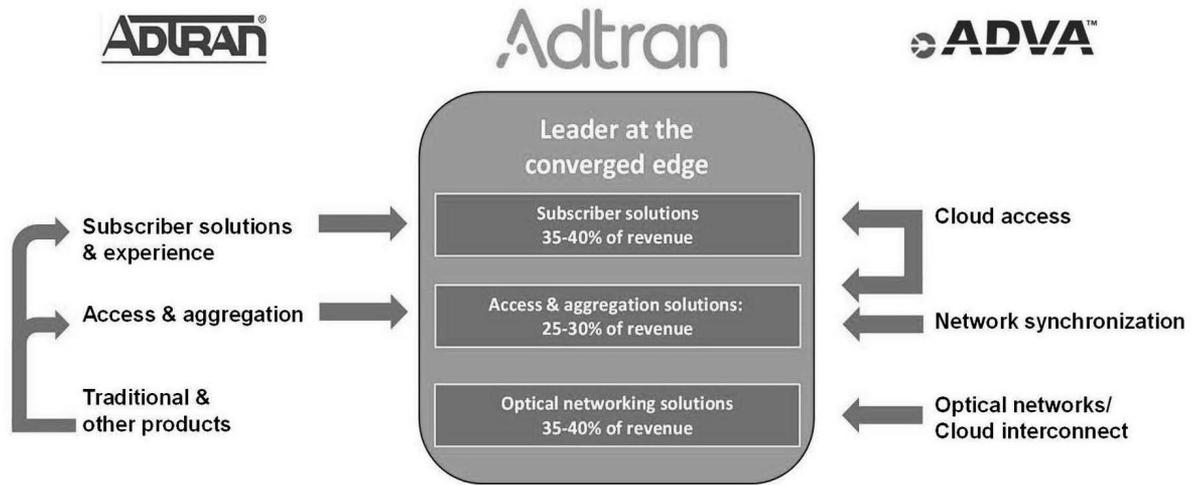
Services & Support Segment

The Services & Support segment offers a comprehensive portfolio of network design, implementation, maintenance and cloud-hosted services supporting our 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 our Mosaic One platform that manages end-to-end network and service optimization for both fiber access infrastructure and mesh Wi-Fi connectivity. We back these services with a global support organization that offers on-site and off-site support services with varying SLAs. By pairing our network solutions with our global services and support organization, customers can turn to us as their single turnkey partner to assist with the deployment and maintenance of modern fiber-based networks to connect homes, businesses and datacenters with the metro or network core.

Revenue Categories

In addition to classifying our operations into two reportable segments, we report revenue across three categories of products and services: (1) Subscriber Solutions, (2) Access & Aggregation Solutions and (3) Optical Networking Solutions.

Prior to the Business Combination with ADVA on July 15, 2022, we reported revenue across the following three categories: (1) Access & Aggregation, (2) Subscriber Solutions & Experience and (3) Traditional & Other Products. Following the Business Combination with ADVA, we have recast these revenues such that our former Access & Aggregation revenue is combined with a portion of the applicable ADVA solutions to create Access & Aggregation Solutions, our former Subscriber Solutions & Experience revenue is combined with a portion of the applicable ADVA 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 is a new revenue category added to represent a meaningful portion of ADVA's portfolio.



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.

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

Residential Gateways ("RGs"): <ul style="list-style-type: none"> Residential Gateways Gfast CPE 	Optical Networking Terminals ("ONTs"): <ul style="list-style-type: none"> EPON ONUs GPON/XGS-PON ONTs
Enterprise Connectivity: <ul style="list-style-type: none"> Traditional SSE Routers Switches 	Edge Compute: <ul style="list-style-type: none"> Edge Cloud (VEC)
Carrier Ethernet Network Interface Devices ("CE NIDs"): <ul style="list-style-type: none"> FSP 150-GE110 FSP 150-XG100 FSP 150-XG210 FSP 150-XG300 FSP 150-XG400-NIDs 	Software: <ul style="list-style-type: none"> MCP AOE and ACI-E Mosaic One Ensemble Controller
Service: <ul style="list-style-type: none"> 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 Access: <ul style="list-style-type: none"> SDX OLT TA5000 Fiber Systems EPON OLT 	Broadband products: <ul style="list-style-type: none"> Gfast DPUs HiX Total Access FTTN Traditional Broadband
Aggregation products: <ul style="list-style-type: none"> SDX Aggregation FSP 150 XG400 	Software: <ul style="list-style-type: none"> MCP AOE and ACI-E Mosaic One Ensemble Controller Ensemble Activator (Disaggregated NOS)

<p>Synchronizations and Timing:</p> <ul style="list-style-type: none"> • OSA CoreSync Cesium • OSA CoreSync GM/SSU • OSA EdgeSync+ • OSA EdgeSync • OSA AccessSync 	<p>Services:</p> <ul style="list-style-type: none"> • Care • Build • Training • Professional Services • Software Services • Managed Services
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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 includes 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:

<p>Optical Transport:</p> <ul style="list-style-type: none"> • FSP3000 R7 • FSP3000C • WDM Legacy 	<p>Pluggables:</p> <ul style="list-style-type: none"> • MicroMux • Pluggable Optics
<p>Services:</p> <ul style="list-style-type: none"> • Build • Care • Training • Professional Services • Software Services • Managed Services 	<p>Active Line Moduling:</p> <ul style="list-style-type: none"> • 16 ALM • 64 ALM
<p>Software:</p> <ul style="list-style-type: none"> • MCP • AOE and ACI-E • Mosaic One • Ensemble Controller 	

Industry Overview

The global growth of cloud and mobility, home office and mobile working, industrial applications and 5G are accelerating the demand for more bandwidth, requiring more flexible provisioning of telecommunications services and more precise network synchronization. Unprecedented levels of investment by communications service providers in their networks is being driven by the pursuit of growth in subscriber acquisition, retention, and average revenue per user, alongside the streamlining of operations to reduce operational costs and complexity, while 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, merger obligations 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. Increasing numbers of connected devices, shifting working arrangements, the transition of entertainment over to OTT video, along with the evolution of gaming towards subscription models where new hybrids of download and streaming are emerging globally. This is further compounded with 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, ever lower latency for interactive cloud applications and smart home video surveillance applications continue to increase, so too does the need for fiber-based broadband to every home, business and location of socioeconomic activity.

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. This transition has created an unprecedented market opportunity where the comprehensive replacement of copper and coaxial networks along with the equipment that enables broadband over them, opens what has historically been a stagnant market to an entirely new wave of fresh competition.

This new market entrance opportunity is further enhanced by shifts in the geopolitical landscape alongside architectural evolutions. Several vendors that once dominated the European and other markets have found themselves classified on the high-risk vendor register where resistance is increasingly emerging about their use in national network infrastructures. This further levels the playing field for the remaining vendor community. In their pursuit of efficiency, operators are embracing new architectures, reflecting those used throughout the web scale industry by the hyper-scalers. This is resulting in an additional inflection point where traditional access network equipment architectures are coming under increasing scrutiny about their longevity, efficiency and scalability.

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. ADVA's technology complements ADTRAN's portfolio and significantly expands the solutions set we can offer to our customers, helping them in their quest to enable the rapidly advancing digitalization of ecosystems around the world. Optical networking technology provides the scalable transmission capacity needed to handle bandwidth growth. Cloud access solutions allow the flexible and fast deployment of new communication services including state-of-the-art edge computing solutions, and the synchronization technology ensures maximum performance in the network.

We aspire to be one of the top communication technology players in the world and the 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. ADTRAN has 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:* More 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.

Customers

We have a diverse global customer base that includes Tier-1, -2 and -3 service providers, alternative service providers, such as utilities, municipalities and fiber overbuilders, cable/MSOs, SMBs and distributed enterprises. Many network operators require product approval before the purchase or installation of a product. The nature of our business involves a dynamic process of submitting new and succeeding generations of products for approval prior to orders being placed.

One service provider customer individually comprised more than 10% of our revenue in 2022. Additionally, our revenue in the U.S., U.K. and Germany comprised more than 10% of our revenue in 2022. 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 domestic and international 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 competition based on some combination 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, 2022, 2021 and 2020, research and development expenditures totaled \$173.8 million, \$108.7 million and \$113.3 million, respectively.

We develop the majority of our products internally, and 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/NFV 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. In 2022, we again encountered supply chain disruptions and component shortages, which resulted in us re-engineering many of our products to work around component availability and end of life issues. *See Inventory included in Part I, Item 1 of this report for additional information regarding our supply chain disruptions.*

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 2022, we released many market-leading products like additions to our SDX OLT range, new residential gateway and ONT families, outdoor packet demarcation devices, 100G packet demarcation, encryption/security products, 800G transport solutions and the unique Optical Cesium based atomic clocks. Furthermore, we enhanced 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. It 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 area 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 e.g. 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. With the current global supply chain and transportation constraints, and limited availability of semiconductor chips and other components of our products, we have experienced and may continue to experience extended lead times, increased logistics intervals and costs, and lower volume of products deliveries, which have and may continue to have a material adverse effect on our operating results and could have a material adverse effect on customer relations and our financial condition. We believe these supply chain challenges and their adverse impact on our industry will continue to ease during 2023. *See Inventory included in Part I, Item 1 of this report for additional information.*

We rely on subcontractors for 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 and Norcross, Georgia. 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 customer, industry and privacy standards, including those relating to emission of electromagnetic energy and safety specifications.

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.

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-, coaxial- 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, Cisco, CommScope, Juniper Networks, Ribbon Communications. In our Access & Aggregation solutions category, key competitors include Calix, Casa Systems, Ciena, CommScope, DZS, Harmonic, Huawei, Nokia, Reliance/Radisy, Vecima Networks and ZTE. Main competitors of our Optical Networking solutions portfolio are Ciena, Cisco, Ekinops, Huawei, Infinera, Nokia, Ribbon and ZTE.

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 R&D 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.

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 (expense). 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 (loss) income.

Inventory

A substantial portion of our shipments in any fiscal period relates 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. However, with the current global supply chain and transportation constraints, and limited availability of semiconductor chips and other components of our products, we have experienced and may continue to experience extended lead times, increased logistics intervals and costs, and lower volume of products deliveries, which have had and may continue to have a material adverse effect on our operating results and could have a material adverse effect on our customer relations and our financial condition.

We have seen increased demand for our products due to the Business Combination with ADVA, increased volume of sales activity to service provider customers and as a result of customer strategies designed to mitigate supply constraints and assure access to needed products. To meet this demand, we have enhanced and implemented supply chain management systems and processes to manage the materials planning and production processes. We maintain substantial inventories of raw materials for long lead time components to support this demand and avoid expedite fees. In the current environment, our raw material inventory has grown due to increased purchases in preparation for strategic inventory buffer purchases as well as new product ramp ups to ensure supply continuity during the COVID-19 pandemic. We expect inventory levels to fluctuate as we attempt to maintain sufficient inventory in response to COVID-19 uncertainties related to supply chain and supply, seasonal cycles of our business and ensuring competitive lead times while managing the risk of inventory. We also maintain substantial finished goods inventories. Our practice of maintaining sufficient inventory levels to assure prompt delivery of our products and services increases the amount of inventory that may be considered excess and/or obsolete. This excess and obsolete inventory may require us to write down the value of the inventory, which may have an adverse effect on 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

Our products must comply with various regulations and standards established by communications authorities in various countries, as well as those of certain international bodies. Environmental legislation within the EU may increase our cost of doing business as we amend our products to comply with these requirements. For example, the EU issued the RoHS directive, the WEEE directive and the REACH regulation. We continue to implement measures to comply with these and other similar directives and regulations from additional countries.

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. We strive to ensure that our corporate practices also conform to GDPR requirements, which protect digital data for all EU residents, and to other applicable data protection laws, including the California Consumer Privacy Act. 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.

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.”

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 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 eliminating 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. 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:

- established an ESG Committee of the Board of Directors;
- maintained our mature environmental management system certified to ISO 14001 from 2006;
- advanced our Energy Management program where we have continually set targets for reduced energy and water consumption since 2005;
- continued investment in Wind Renewable Energy Credits;
- purchased certified carbon offsets to achieve net zero for our Scope 1 emissions;
- continued to monitor and report our carbon emissions to CDP;
- adopted a platform to engage top suppliers to obtain an ESG assessment aligned with international standards, allowing us to monitor ESG risks in our supply chain;
- the Technology organization established Eco-Design guidelines;
- completed an initial Life Cycle Assessment pilot;
- initiated innovative packaging solutions to reduce materials and waste;
- committed to SBTi for Net Zero targets within the next two years;
- increased visibility of our program internally and externally through customer engagement, joining peer sustainability groups, offering training to team members and web site enhancements;
- implemented GRI standards; and
- actively engaged our stakeholders with investor and supply chain assessments

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.”

ESG Report

Due to certain regulations, proceedings of the merger and the operations of ADTRAN and ADVA during 2022 there will be separate reports published for the two organizations. These ESG reports provide additional information regarding ADTRAN Holding's ESG program. Within the report is information on our environmental programs, initiatives related to our people and our community. This information can be found on our website at: www.adtran.com/en/about-us/esg/environmental. No information contained on our website is intended to be included as part of, or incorporated by reference into, 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 of December 31, 2022, we had 3,307 full-time employees, with 1,417 in the U.S. and 1,890 in our international subsidiaries located in North America, Latin America, EMEA and APAC regions. 1,948 of these full-time employees are employees of ADVA and its subsidiaries. We also utilized 177 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, 2022, approximately 170 employees (75%) 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. Although these collective bargaining agreements will expire on September 30, 2024, negotiations with the employees of ADTRAN GmbH for a new collective bargaining agreement are ongoing and we have not experienced any work stoppage. As of December 31, 2022, ADVA had 85 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 building our organization's future.

Diversity, Equity and Inclusion

We believe that maintaining a diverse and inclusive workforce is critical 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 and respected and can, therefore, bring their most authentic self to work.

In addition to diversity in our workforce, we seek to ensure diversity in our Board of Directors with respect to skills, experience, gender, race and ethnicity. Our Board of Directors is comprised of nine members, three 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' wellbeing. As a result, 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.

In response to the COVID-19 pandemic, we implemented significant changes that were determined to be in the best interest of our employees and the communities in which we operate. We introduced enhanced health and safety standards that are in compliance with, or exceed, local, state and federal recommendations and regulations in the U.S. and at our international locations. This includes having our global employees work from home, hybrid or on-site. In areas where it is necessary to have critical, on-site personnel, such as at our manufacturing facilities, additional health and safety measures have been implemented to provide the safest environment possible for these workers.

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. Employees also have access to the ADTRAN Learning Network. This platform houses all required training, as well as optional training in a variety of areas.

Intellectual Property

ADTRAN develops and owns 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 2023 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 ADTRAN corporate logo is a registered trademark of ours, as is the name “ADTRAN”, “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

Set forth below is certain information regarding our current executive officers. The age of each executive set forth below is as of February 28, 2023.

Thomas R. Stanton 2007 to present	Age 58 Chief Executive Officer and Chairman of the Board
Michael K. Foliano 2019 to present 2006 to 2019	Age 62 Senior Vice President of Finance and Chief Financial Officer Senior Vice President of Operations
Christoph Glingener 2022 to present 2007 to 2022	Age 54 Chief Executive Officer (ADVA Optical Networking SE) Chief Technology Officer of ADVA Optical Networking SE
James D. Wilson, Jr. 2019 to present 2015 – 2019 2006 – 2015	Age 52 Chief Revenue Officer Senior Vice President of Technology and Strategy Senior Vice President and General Manager of Carrier Networks

There are no family relationships among our directors or executive officers.

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, 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 the Business Combination and DPLTA

We may fail to realize the anticipated strategic and financial benefits sought from the Business Combination.

We may not realize all of the anticipated benefits of the Business Combination. The success of the Business Combination will depend on, among other things, our ability to combine our business with ADVA's business in a manner that facilitates growth as a provider of fiber networking solutions and realizes anticipated cost savings. We believe that the Business Combination provides an opportunity for revenue growth in optical transport solutions, fiber access solutions and subscriber solutions.

Additionally, our ability to realize anticipated benefits of the Business Combination could be affected by a number of other factors, including: the need for greater than expected cash or other financial resources or management time in order to integrate ADVA; increases in other expenses related to the Business Combination, including restructuring and other exit costs; the timing and impact of purchase accounting adjustments; accounting for IFRS to U.S. GAAP adjustments; difficulties in employee or management integration; the impact of appraisal proceedings in connection with the DPLTA; and unanticipated liabilities associated with the Business Combination. Any potential cost-saving opportunities may take several years following the Business Combination to implement, and any results of these actions may not be realized for several years thereafter, if at all.

However, we must successfully combine the business in a manner that permits these anticipated benefits to be realized. In addition, we must achieve the anticipated growth and cost savings without adversely affecting current revenues and investments in future growth. Further, providing integrated fiber networking solutions can be highly complex and can involve the design, development, implementation and operation of new solutions and the transitioning of clients from traditional platforms to new platforms. If we are not able to effectively provide different solutions and successfully achieve the growth and cost savings objectives, the anticipated benefits of the Business Combination may not be realized fully, or at all, or may take longer to realize than expected.

We have experienced operational challenges and may also experience negative synergies and loss of customers.

Integrating the operations and personnel of the ADTRAN and ADVA businesses involves complex operational, technological and personnel-related challenges. This process has been and will continue to be time-consuming and expensive, and it has and may continue to disrupt our business. Difficulties in the integration of the business, which may result in significant costs and delays, include:

- managing a significantly larger company;
- integrating and unifying the offerings and services available to customers and coordinating distribution and marketing efforts;
- coordinating corporate and administrative infrastructures and harmonizing insurance coverage;
- unanticipated issues in coordinating accounting, information technology, communications, administration and other systems;
- difficulty addressing possible differences in corporate cultures and management philosophies;
- challenges associated with converting ADVA's financial reporting from international financial reporting standards (IFRS) to accounting principles generally accepted in the U.S. (U.S GAAP) and compliance with the Sarbanes-Oxley Act of 2002, as amended, and the rules promulgated thereunder by the SEC;
- legal and regulatory compliance;
- dual market filing and publications obligations;
- creating and implementing uniform standards, controls, procedures and policies;
- litigation relating to the transactions contemplated by a reorganization, including shareholder litigation;
- diversion of management's attention from other operations;
- maintaining existing agreements and relationships with customers, distributors, providers and vendors and avoiding delays in entering into new agreements with prospective customers, distributors, providers and vendors;
- realizing the benefits from our restructuring programs;
- unforeseen and unexpected liabilities related to the Business Combination, including the risk that certain executive officers may be subject to additional fiduciary duties and liability;

- identifying and eliminating redundant and underperforming functions and assets;
- effecting actions that may be required in connection with obtaining regulatory approvals; and
- a deterioration of credit ratings.

We have and may continue to lose customers or our share of customers' business as entities that were customers of both ADTRAN and AVDA seek to diversify their suppliers of services and products.

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

On January 16, 2023, the DPLTA with ADVA became effective. The DPLTA allows us to issue binding instructions to the management board of ADVA, which could be disadvantageous to ADVA and result in a decline in the business and earnings power of ADVA. This could have a material adverse effect on the assets, financial position and income of ADVA, which in turn could have a material adverse effect on our financial condition.

Additionally, pursuant to the terms of the DPLTA, each ADVA shareholder (other than the Company) has received an offer to elect either (1) to remain an ADVA shareholder and receive from us an Annual Recurring Compensation payment, or (2) to receive Exit Compensation. Assuming all of the minority holders of currently outstanding ADVA shares were to elect the second option, we would be obligated to make aggregate Exit Compensation payments of approximately EUR 310.6 million or approximately \$333.2 million based on an exchange rate as of December 31, 2022. Shareholders electing the first option of Annual Recurring Compensation may later elect the second option. The opportunity for outside ADVA shareholders to tender ADVA shares in exchange for Exit Compensation expires on March 16, 2023 (subject to appraisal proceedings). Our obligation to pay Annual Recurring Compensation under the DPLTA would lead to a continuing payment obligation, which would amount to approximately EUR \$10.6 million, or \$11.4 million based on the current exchange rate, per year assuming none of the minority ADVA 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 amount of this Annual Recurring Compensation payment obligation pursuant to the DPLTA could exceed the amount of dividends that otherwise might be distributed by ADVA to minority shareholders and would even have to be paid if ADVA incurs losses, which could have a material adverse impact on our financial results and financial condition.

We are exposed to additional litigation risk and uncertainty with respect to the remaining minority shareholders of ADVA, which litigation may require us to pay a higher purchase price for additional ADVA shares than the amount provided for under the DPLTA.

As a result of the Business Combination, we continue to be exposed to litigation risk and uncertainty associated with the remaining minority shareholders of ADVA. The terms of the DPLTA, including the adequacy of compensation payments to minority ADVA shareholders under the terms of the DPLTA, have been challenged by minority shareholders of ADVA by initiating court-led appraisal proceedings under German law. We cannot rule out that the competent court in these appraisal proceedings may adjudicate higher Exit Compensation or Annual Recurring Compensation payment obligations (in each case, including interest thereon) than agreed upon in the DPLTA, the financial impact and timing of which is uncertain.

We have incurred and expect to continue to incur significant transaction fees and costs in connection with the Business Combination and post-closing integration efforts.

We have incurred and expect to continue to incur a number of significant non-recurring implementation and restructuring costs associated with combining the operations of ADTRAN and ADVA. In addition, we have incurred significant banking, legal, accounting and other transaction fees and costs related to the Business Combination. As of December 31, 2022, we have incurred \$26.1 million of transaction costs related to the Business Combination.

We expect to incur additional integration costs, as well costs associated with the implementation of the DPLTA and such costs are expected to be material.

Any cost savings or other efficiencies related to the integration of the businesses that could offset these transaction- and combination-related costs over time may not be achieved in the near term, or at all. In addition, the timeline in which cost savings are expected to be realized is lengthy and may not be achieved. Failure to realize these synergies and cost reductions and other efficiencies in a timely manner or at all could have a material adverse effect on our business and cash flows, financial condition and results of operations.

We incurred a substantial amount of indebtedness in connection with the Business Combination and the DPLTA. Our failure to meet our debt service obligations could have a material adverse effect on our business, financial condition and results of operations.

Subsequent to the closing of the Business Combination, we entered into a new credit facility providing for borrowings of up to \$400 million and under which we have incurred \$60.0 million of indebtedness as of December 31, 2022. Subsequent to the closing of the Business Combination, ADVA entered into a new revolving line of credit with Norddeutsche Landesbank - Girozentrale which it subsequently repaid and terminated, and a revolving line of credit with DZ Bank. As of December 31, 2022, ADVA had borrowings of \$16.1 million and \$9.1 million of borrowings under the two revolving lines of credit, respectively. Additionally, subsequent to December 31, 2022, the Company borrowed an additional \$127.5 million under the new credit facility, a portion of which was used to pay down and retire ADVA's notes payable and credit facility agreements except for ADVA's new revolving line of credit with DZ Bank, which remains outstanding. See "Cash Requirements" in Part I, Item 7 of this report for additional information.

Our increased indebtedness could adversely affect our operations and liquidity. Our level of indebtedness could, among other things:

- 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;

- 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;
- make it more difficult for us to continue to pay the current dividend or cause us to reduce the dividend paid to the Company's stockholders;
- limit our ability to take advantage of significant business opportunities, such as acquisition opportunities, and to react to changes in market or industry conditions;
- cause us to be more vulnerable to general adverse economic and industry conditions;
- cause us to be disadvantaged compared to competitors with less leverage; and
- limit our ability to borrow additional money in the future to fund working capital, capital expenditures, research and development and other general corporate purposes.

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. However, there can be no assurance that we will be able to manage any of these risks successfully. In addition, the 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.

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 related risks that we face could intensify.

We may be unable to successfully retain and motivate our personnel, including personnel at ADVA.

The success of the Business Combination and our post-closing integration efforts depends, in part, on our ability to retain the talents and dedication of key employees, including key decision-makers, currently employed by ADTRAN, Inc. and ADVA. Some of our employees have decided and others may decide not to remain with us as a result of the Business Combination. If key employees terminate their employment, or if an insufficient number of employees are retained to maintain effective operations, our business activities may be adversely affected and management's attention may be diverted from successfully integrating ADTRAN and ADVA to hiring suitable replacements, all of which may cause our business to deteriorate. We may not be able to locate suitable replacements for any key employees who leave or offer employment to potential replacements on reasonable terms. In addition, we may not be able to motivate certain key employees due to organizational changes, reassignments of responsibilities, the perceived lack of appropriate opportunities for advancement or other reasons. If we fail to successfully retain and motivate our employees, relevant capabilities and expertise may be lost which may have an adverse effect on our cash flows, financial condition, results of operations and the business operations in general.

The terms of our and ADVA's credit agreements restrict our current and future operations, particularly our ability to respond to changes or to take certain actions.

Our Credit Agreement and ADVA's revolving line of credit with DZ Bank contain a number of restrictive covenants that impose significant operating and financial restrictions on us and/or our subsidiaries and may limit our ability to engage in acts that may be in our long-term best interest, including restrictions on our and/or our subsidiaries' ability to:

- incur additional indebtedness and guarantee indebtedness;
- pay dividends or make other distributions or repurchase or redeem capital stock;
- prepay, redeem or repurchase certain debt;
- issue certain preferred stock or similar equity securities;
- make loans and investments;
- sell assets;
- incur liens;
- enter into transactions with affiliates;
- alter the businesses we conduct; and
- consolidate, merge or sell all or substantially all of our assets.

In addition, the restrictive covenants in such credit facilities require us and/or our subsidiaries to maintain specified financial ratios and satisfy other financial condition tests. Our ability to meet those financial ratios and tests can be affected by events beyond our control, and we may be unable to meet them.

A breach of the covenants or restrictions under such credit facilities could result in an event of default. Such a default may allow the creditors to accelerate the related debt and may result in the acceleration of any other debt to which a cross-acceleration or cross-default provision applies. In addition, an event of default under such credit facilities 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 such credit facilities, those lenders could proceed against the collateral granted them to secure that indebtedness. In the event our lenders or noteholders accelerate the repayment of our borrowings, we and our subsidiaries may not have sufficient assets to repay that indebtedness. As a result of these restrictions, we may be:

- limited in how we conduct our business;
- 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.

These restrictions may affect our ability to grow in accordance with our strategy. In addition, our financial results, our substantial indebtedness and our credit ratings could adversely affect the availability and terms of our financing.

We could be required to recognize impairment charges related to goodwill and other intangible assets.

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 underperformance 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. Any charges relating to such impairments could materially adversely affect our business, financial condition and results of operations in the periods recognized.

Negative publicity related to integration measures may adversely affect us.

Political and public sentiment in connection with post-closing integration measures following the Business Combination may result in a significant amount of adverse press coverage and other adverse public statements. Adverse press coverage and public statements, whether or not driven by political or popular sentiment, may also result in legal claims or in investigations by regulators, legislators and law enforcement officials. Responding to these investigations and lawsuits, regardless of the ultimate outcome of the proceedings, can divert the time and effort of senior management from operating the business. Addressing any adverse publicity, governmental scrutiny or enforcement or other legal proceedings could be time-consuming and expensive and, regardless of the factual basis for the assertions being made, could have a negative impact on our reputation, on the morale and performance of our employees and on our relationships with regulators, suppliers and customers. It may also have a negative impact on our ability to take timely advantage of various business and market opportunities. The direct and indirect effects of negative publicity, and the demands of responding to and addressing it, may have a material adverse effect on our business, cash flows, financial condition and results of operations.

Risks related to our financial results and Company success

Our revenue for a particular period can be difficult to predict, and a shortfall in revenue may harm our operating results.

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. 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. Supply of semiconductor chips and other components of our products has become constrained resulting in extended lead times and increased costs. Transportation constraints, including shortages for both air and surface freight, as well as labor shortages in the transportation industry, have also affected the timing and the cost of obtaining raw materials and production supplies. As a result, our gross margin percentage declined in the second half of 2021 and throughout 2022. If supply chain constraints and transportation constraints continue, it could cause our net revenue and gross profit to decline or to grow at a slower rate than in previous quarters. 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. Currently, our revenue growth and profitability in the near-term are being impacted by supply chain constraint issues. While we are working closely with our suppliers and customers to address the near-term supply chain challenges facing the industry and believe these challenges will continue to lessen and will begin to normalize during 2023, there can be no assurance this will be the case.

In the past, 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. These expenses and the impact of long-term commitments are relatively fixed in the short term. A shortfall in revenue could lead to operating results being below expectations because we may not be able to quickly reduce these fixed expenses in response to short-term business changes.

The lengthy sales and approval process required by service providers for new products could result in fluctuations in our revenue.

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 have been

successful in the past in obtaining these approvals; however, 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, could result in fluctuations of revenue and uneven operating results from quarter to quarter or year to year. 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 are dependent on individual purchase orders as discussed elsewhere in this report.

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 to our large customers have fluctuated, and may fluctuate in the future, significantly from quarter to quarter and year to year. 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, political unrest, armed conflicts (such as the ongoing military conflict in Ukraine), or outbreaks of disease, such as the COVID-19 pandemic, around the world; and
- Business Combination purchase price allocations.

For example, since the third quarter of 2021 and continuing throughout 2022, we have incurred and may continue to incur supply chain constraint expenses, including price inflation for certain electronic components, semiconductor chips and transportation related costs, which have lowered our gross margins and decreased our profitability.

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 (including the COVID-19 pandemic), geopolitical tensions (including as a result of the ongoing conflict in Ukraine and China-Taiwan relations) or a significant natural disaster (including as a result of climate change); 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 to increase. 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. For example, wafer foundries that support chipmakers have not invested enough in recent years to increase capacities to the levels need to support demand from all of their customers and wafers have a long lead time for production, in some cases in excess of 30 weeks, which has led to a recent shortage in chip supplies. 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. In addition, our supply chain challenges are forcing us to devote a substantial portion of our research and development expenses to redesign existing products, reducing our capacity to develop new products. For a discussion of the impact of the COVID-19 pandemic on our supply chain, see “- *The ongoing COVID-19 pandemic has impacted and may continue to impact our business, results of operations and financial condition, particularly our supply chain and workforce.*”

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.

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. 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;
- 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 to existing customers.

Managing our inventory is complex and may 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 may 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.

The continuing growth of our international operations could expose us to additional risks, increase our costs and adversely affect our operating results, financial condition and cash flows.

We are expanding our presence in international markets, which represented 49.5%, 33.5% and 30.5% of our net revenue for the years ended December 31, 2022, 2021 and 2020, respectively, and as a result, we anticipate increased revenue and operating costs in these markets. This international expansion has increased and may continue to increase our operational risks and impact our results of operations, including:

- 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 conflict in Ukraine. The U.S. and certain other countries imposed sanctions on Russia and could impose further sanctions against it, which could damage or disrupt international commerce and the global economy. Other potential consequences 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 region, increased political discontent, especially in the regions most affected by the conflict 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.

In February 2022, armed conflict escalated between Russia and Ukraine. The U.S. and certain other countries have imposed sanctions on Russia and could impose further sanctions, which could damage or disrupt international commerce and the global economy. We are complying with a broad range of U.S. and international sanctions and export control requirements imposed on Russia.

If we are unable to successfully address the potential risks associated with our overall international expansion, our operating results, financial condition and cash flows may be negatively impacted.

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. The unplanned departure of one or more of these individuals could adversely affect our business. 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 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 will be critical to the future success of our business.

If we fail to manage our exposure to worldwide financial and securities markets successfully, our operating results and financial statements could be materially impacted.

We are exposed to financial market risks, including changes in interest rates and prices of marketable equity and fixed-income securities. The global macroeconomic environment has been challenging and inconsistent due to uncertainty in the global central bank monetary policy and uncertainty in global credit markets and the geopolitical environment in many areas of the world. The primary objective of the majority of our investment activities is to preserve principal while at the same time achieving appropriate yields without significantly increasing risk. To achieve this objective, a majority of our marketable securities are investment grade corporate and municipal fixed-rate bonds, U.S. government bonds and municipal money market instruments denominated in U.S. dollars. While we do invest a portion of our investment portfolio in equities, which are subject to market risks, including the loss of principal, our equity investments are generally invested in professionally-managed portfolios with the objective of exceeding the performance of their underlying benchmarks.

We have significant investments in corporate bonds, municipal fixed-rate bonds, asset-backed bonds, mortgage/agency-backed bonds, U.S. government bonds and foreign government bonds. Through December 31, 2022, we have not been required to impair any of these investments; however, we have and may continue to experience a reduction in value or loss of liquidity in these investments, which may have an adverse effect on our results of operations, liquidity and financial condition. Fixed-rate interest securities may have their fair value adversely impacted due to a rise in interest rates, while variable-rate securities may produce less income than expected if interest rates fall. Our investments are subject to general credit, liquidity, market and interest rate risks, which may increase because of conditions in the financial markets and related credit liquidity issues. Consequently, our future investment income may fall short of expectations due to changes in interest rates, or we may suffer losses in principal if we are forced to sell securities that decline in fair value due to changes in interest rates.

See “Management’s Discussion and Analysis of Financial Condition and Results of Operations – Liquidity and Capital Resources” in Part II, Item 7 of this report, “Quantitative and Qualitative Disclosures about Market Risk” in Part II, Item 7A of this report and Note 6 of Notes to the Consolidated Financial Statements in Part II, Item 8 of this report for more information about our investments.

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-exchange 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 will require a significant amount of cash to service our indebtedness, our potential payment obligations to ADVA 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 ADVA. Additionally, pursuant to the terms of the DPLTA, each ADVA shareholder (other than the Company) has received an offer to elect either (1) to remain an ADVA shareholder and receive from us an Annual Recurring Compensation payment, or (2) to receive Exit Compensation. Any failure to satisfy our payment obligations under the DPLTA could harm our business, financial condition and results of operations. *See “Risk Factors - The terms of the DPLTA may have a material adverse effect on our financial results and condition” in Part I, Item 1A of this report for additional information.*

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 will depend 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 or if 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 refinance all or a portion

of our indebtedness on or before the maturity thereof, sell assets, reduce or delay capital investments or seek to raise additional capital, any of which could have a material adverse effect on us.

In addition, we may not be able to effect any of these actions, if necessary, on commercially reasonable terms or at all. Our ability 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 our 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 ADVA 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.

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 management 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;
- 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 requires 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. 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 with indefinite lives acquired in connection with a transaction becomes impaired, we may be required to incur additional material charges relating to the impairment of those assets. In order to complete an acquisition, we may issue common shares, potentially creating dilution for existing shareholders, 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.

Risks related to COVID-19

The ongoing COVID-19 pandemic has impacted and may continue to impact our business, results of operations and financial condition, particularly our supply chain.

The global spread of COVID-19 created significant volatility, uncertainty and economic disruption. Due to the pandemic and a global semiconductor chip shortage, we experienced disruption and delays in our supply chain and significant price increases with certain of our manufacturing partners, and those disruptions, delays and price increases may continue. For example, in the second half of 2021 and throughout 2022, our results of operations were negatively impacted by increased expenses resulting from supply chain disruptions. Current global supply chain and transportation constraints, including delays in supply chain deliveries and the related global semiconductor chip shortage, may continue to have a material adverse effect on our operating results and could have a material adverse effect on customer relations and our financial condition. We believe these supply chain challenges and their adverse impact on our industry will continue to ease during 2023. However, there can be no assurance that the ongoing disruptions due to COVID-19, the related global semiconductor chip shortage or other supply chain constraints or price increases will be resolved in the near term, which could continue to adversely affect our business, financial condition, and results of operations. We will continue to evaluate the nature and extent of the impact of COVID-19 and supply chain constraints on our business.

Risks related to our control environment

Breaches of our information systems and cyber-attacks 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 cyber-attacks and other attempts to gain unauthorized access. We have a comprehensive approach to cybersecurity, which includes prevention, detection, containment, and response. Our layered defense approach encompasses proactive security monitoring of our global infrastructure by both internal solutions and multiple third-party Security Operation Centers. Additionally, we routinely perform patch management, vulnerability scans, penetration tests and continuous monitoring across our entire enterprise. Our security policy framework includes meaningful and enforceable Information Security policies and procedures. The cybersecurity program is aligned with our mission and business objectives, reviewed periodically for improvements, and is supported by experienced and certified security professionals. This is supplemented by an information security awareness program that spans our global workforce. Despite this, our network and storage applications and those systems and applications maintained by our third-party providers may be targeted by cyber-attacks or potentially breached due to operator error, fraudulent activity, or other system disruptions. For example, a vulnerability named “Log4Shell” was reported for the widely used Java logging library, Apache Log4j 2 (“Log4j”), in December of 2021. Although we did not identify indicators of compromise in response to the Log4j vulnerability, we cannot assure that future vulnerabilities or malware attacks will not be successful in breaching our system and in turn, have a material impact our business. Unauthorized access or disclosure of our information could compromise our intellectual property and expose sensitive business information. Our information systems are designed to appropriate industry standards and resiliently engineered to reduce downtime in the event of power outages, weather or climate events and cybersecurity issues. 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, including, for example, the ongoing military conflict in Ukraine with Russia, from which a number of recent cybersecurity events have been alleged to have originated. We carry cybersecurity insurance policies meant to limit our risk and exposure should one of these cybersecurity issues occur. However, a significant failure 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.

As part of our due diligence and integration planning process, the Company’s cybersecurity team has conducted a review of ADVA’s cybersecurity program. Additionally, prior to integration of facilities, networks, or systems, the Company also engage CrowdStrike, a global cybersecurity leader to conduct an enterprise-wide compromise assessment to determine if there were any targeted compromises by nation-state actors of the ADVA information technology landscape. The results from the CrowdStrike Compromise assessment indicated that there was no indication of compromise of the ADVA information technology environment. As part of the integration plan, the Company intends to expand its current cybersecurity program to cover all ADVA’s global infrastructure and adopt any mature cybersecurity practices already in place. A significant failure of our review and integration of ADVA’s cybersecurity program could expose us to penalties for failing to comply with the EU’s GDPR requirements as well as result in significant remediation costs and a disruption to our operations.

If we fail to maintain proper and effective internal control over financial reporting we could have a material weakness in our internal controls, that if not remediated, could materially adversely affect us.

Section 404 of the Sarbanes-Oxley Act of 2002 (“Section 404”) requires us to include in our Annual Reports on Form 10-K an assessment by the Company’s management of the effectiveness of our internal control over financial reporting, as well as a report from our independent registered public accounting firm on the effectiveness of our internal control over financial reporting. We must perform system and process evaluation and testing of our internal control over financial reporting to allow management and our independent registered public accounting firm to report on the effectiveness of our internal control over financial reporting, as required by Section 404. Our compliance with Section 404 may require that we incur substantial accounting expense and expend significant management efforts.

As permitted by SEC guidance, we currently exclude ADVA in our evaluation of internal control over financial reporting and related disclosure controls and procedures for the first year after the Business Combination. However, we are in the process of extending our oversight and monitoring processes that support our internal control over financial reporting and disclosure controls and procedures to include ADVA’s operations.

If we are not able to maintain the adequacy of our internal control over financial reporting, including any failure to implement required new or improved controls, or if we experience difficulties in the implementation of or the implemented controls required in connection with the Business Combination, our business, financial condition and operating results could be harmed. In addition, if management or our independent registered public accounting firm is unable to conclude that our internal control over financial reporting is effective, we

could lose investor confidence in the accuracy and completeness of our financial statements, which could have an adverse effect on our stock price or lead to litigation claims.

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. 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. For instance, we offer a large number of products that apply primarily to the delivery of high-speed digital communications over the local loop utilizing copper wire. We compete favorably with our competitors by developing a high-performance line of these products. We market products that apply to fiber optic transport in the local loop. We expect, however, that use of coaxial cable and fixed and mobile wireless access in place of local loop access will increase. Also, MSOs are increasing their presence in the local loop. To meet the requirements of these new delivery systems and to maintain our market position, we expect to continue to develop new products and/or modify existing products. We expect that the addition of fiber-based products focused on the cable MSO operators, using EPON and fixed wireless access solutions will better position us to benefit from spending in these adjacent markets.

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. 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 may require the use of hazardous materials that are subject to environmental, health and safety regulations. 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. Changes in international tariff structures could adversely impact our product costs. We also have experienced and expect to continue to experience increased 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.

To date, we believe that we have successfully managed the risks of our dependence on these subcontractors through a variety of efforts, which include seeking and developing alternative subcontractors while maintaining existing relationships; however, 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 develop 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 a claim of intellectual property infringement against us is 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 affected adversely.

Software under license from third parties for use in certain of our products may not continue to be available to us on 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 expenses.

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.

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.

Risks related to the Company's stock price

Our operating results may fluctuate in future periods, which may 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, the timing of their replenishment orders, 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;
- the effect of escalating tensions along the Russia-Ukraine border. The U.S. and certain other countries imposed sanctions on Russia and could impose further sanctions against it, which could damage or disrupt international commerce and the global economy; and
- changes in tax laws and regulations or accounting pronouncements.

As a result, operating results for a particular future period are difficult to predict, and prior results are not necessarily indicative of results to be expected in future periods. Any of the above-mentioned factors, or other factors discussed elsewhere in this report, could have a material adverse effect on our business, results of operations, financial condition and cash flows that could adversely affect our stock price.

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. 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, numerous states have adopted within the past three years 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. 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.
- 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. Because a significant portion of our total revenue is generated from revenue outside of the U.S., we have proactively implemented internally and externally focused measures and controls to address this risk. We help ensure that our employees understand the key requirements of FCPA compliance and the consequences of non-compliance through training courses and detective controls. ADTRAN senior management and employees whose responsibilities include international activities are required to complete an online training program and pass an exam every two years. We have put processes in place to help detect non-compliance through providing our employees access to a worldwide reporting “hotline,” available by phone and online, that is maintained by a third-party provider. Finally, we perform annual reviews of our employees’ expense reports and corporate credit card activity to identify possible corruption concerns. We have also implemented controls to help ensure our third-party partners and customers observe FCPA requirements. Prior to selling to new international distributors, resellers or agents, we review third-party data and check them against over 200 denied party lists from government institutions worldwide for potential FCPA concerns. We also require international distributors, resellers and agents to complete an Anti-Corruption Due Diligence Questionnaire, which is reviewed and assessed by a cross-functional compliance committee and our export-compliance function.

- environmental, health and safety regulation 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 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.

Changes in trade policy in the U.S. and other countries, specifically the U.K. and China, 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. In particular, there have been a number of significant geopolitical events, including trade tensions and regulatory actions, involving the governments of the U.S. and China. The U.S. government has raised tariffs, and imposed new tariffs, on a wide range of imports of Chinese products, including component elements of our solutions and certain finished goods products that we sell. U.S. tariff policy involving imports from China are slated for a broad review in 2023. The U.S. government has also introduced broad new restrictions on imports from China allegedly manufactured with forced labor, and the EU has debated similar restrictions. China has retaliated by raising tariffs, and imposing new tariffs, on certain exports of U.S. goods to China, as well as introducing blocking measures to restrict the ability of domestic companies to comply with U.S. trade restrictions. For instance, over the course of 2020, the U.S. introduced significant further restrictions limiting access to controlled U.S. technology to additional Chinese government and commercial entities. More recently, in October 2022, the U.S. Department of Commerce imposed additional export control restrictions targeting the provision of, inter alia, certain semiconductors and related technology to China that could further disrupt supply chains that could adversely impact our business. In addition, the U.S. Federal Communications Commission (the “FCC”) in November 2022 prohibited communications equipment deemed to pose an unacceptable risk to national security from obtaining the equipment authorization that allows the products to be imported, marketed, or sold in the U.S. This prohibition currently includes telecommunications equipment produced by Huawei and its affiliates and subsidiaries and four other Chinese companies, and additional entities may be subsequently added to this list. The situation involving U.S.-China trade relations remains volatile and uncertain and there can be no assurance that further actions by either country will not have an adverse impact on our business, operations and access to technology, or components thereof, sourced from China.

The past few years have been challenging for the credit markets due to a shift from a time of quantitative easing to a time of quantitative tightening by central banks around the world. If global economic and market conditions, or economic conditions in key markets, remain uncertain or further deteriorate, we may experience material impacts on our business and operating results. We may also be adversely affected in ways that we do not currently anticipate.

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) beginning in the Company’s 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”), an international association comprised of 38 countries, including the U.S., has issued proposals that change long-standing tax principles including on a global minimum tax initiative. On December 12, 2022 the EU member states agreed to implement the OECD’s Pillar 2 global corporate minimum tax rate of 15% on companies with revenues of at least EUR 750 million, which would go into effect in 2024. Other countries including the U.K., Switzerland, Canada, Australia and South Korea are also actively considering changes to their tax laws to adopt certain parts of the OECD’s proposals.

Central Banks' monetary policy actions could increase our costs of borrowing money and negatively impact our financial condition and future operations.

Market interest rates are rising and are expected to continue to rise across the yield curve. Depending on future inflation levels, the rise of nominal interest rates may produce a rise in real interest rates. Higher interest rates resulting from tightening monetary policy are expected to increase credit costs and decrease credit availability. Increases in interest rates could increase our costs of borrowing money under certain of our debt facilities with variable interest rates, which would negatively impact our financial condition and future operations.

Rising inflation could negatively impact our revenues and profitability if increases in the prices of our products and services or a decrease in customer spending result in lower sales.

Recent significant increases in inflation may 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 an inflationary environment, because certain of our customer contracts provide for fixed pricing and/or due to our competitor’s pricing strategies, we may be unable to raise the sales prices of our products and services at or above the rate at which our costs increase, which would reduce our profit and operating margins and could 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.

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.

Many governments, regulators, investors, employees, customers and other stakeholders are increasingly focused on environmental, social and governance 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 environmental, social and governance 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 environmental, social and governance 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.

ITEM 1B. UNRESOLVED STAFF COMMENTS

None.

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. Two office buildings in Huntsville, Alabama serve both our Network Solutions and our Services & Support segments. 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 2032. For more information, *see Note 9 of 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

From time to time we are 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 us to pay damages, entitle claimants to other relief, such as royalties, or could prevent us from selling some of our products in certain jurisdictions. At this time, we are unable to predict the outcome of or estimate the possible loss or range of loss, if any, associated with these legal matters.

ITEM 4. MINE SAFETY DISCLOSURES

Not applicable.

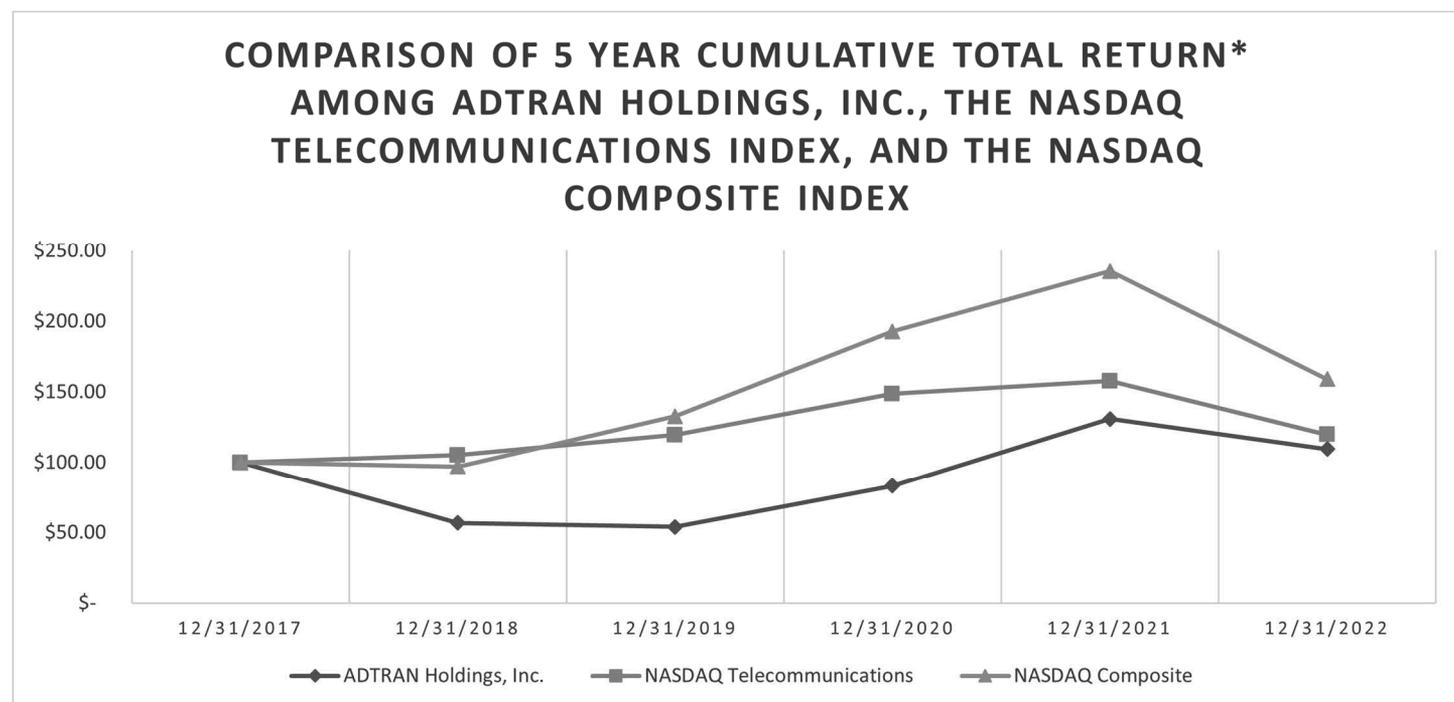
PART II

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 February 27, 2023, we had 45 stockholders of record and approximately 19,485 beneficial owners of shares held in street name.

Performance Graph

The graph below matches our cumulative 5-Year total shareholder return on common stock (specifically, the total shareholder 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 12/31/2017 to 12/31/2022.



* \$100 invested on 12/31/17 in stock or index-including reinvestment of dividends. Fiscal year ending December 31.

	12/31/17	12/31/18	12/31/19	12/31/20	12/31/21	12/31/22
ADTRAN Holdings, Inc.	\$ 100.00	\$ 56.83	\$ 53.88	\$ 83.18	\$ 130.95	\$ 109.66
NASDAQ Telecommunications	\$ 100.00	\$ 105.27	\$ 119.63	\$ 148.58	\$ 157.71	\$ 119.73
NASDAQ Composite	\$ 100.00	\$ 97.18	\$ 132.88	\$ 192.74	\$ 235.56	\$ 158.97

The stock price performance included in this graph is not necessarily indicative of future stock price performance.

Stock Repurchases

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

<u>Period</u>	<u>Total Number of Shares Purchased</u>	<u>Average Price Paid per Share</u>	<u>Total Number of Shares Purchased as Part of Publicly Announced Plans or Programs ⁽¹⁾</u>	<u>Maximum Number of Shares that May Yet Be Purchased Under the Plans or Programs</u>
October 1, 2022 – October 31, 2022	—	\$ —	—	—
November 1, 2022 – November 30, 2022	—	\$ —	—	—
December 1, 2022 – December 31, 2022	—	\$ —	—	—
Total	<u>—</u>		<u>—</u>	

⁽¹⁾ During the year ended December 31, 2022, the Company did not repurchase any shares of Company Common Stock and there is no current authorization to repurchase Company Common Stock.

We declared a quarterly dividend of \$0.09 per share of common stock to record holders in each quarter of 2022. The declaration and payment by us of any future dividends to holders of our common stock is at the sole discretion of our Board of Directors.

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, 2021, filed with the SEC on February 25, 2022, 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 Quarterly Report on Form 10-Q 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 ADVA prior to the Merger.

Overview

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 Tier-1, -2 and -3 service providers, alternative service providers, such as utilities, municipalities and fiber overbuilders, cable/MSOs, SMBs and distributed enterprises. 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, administrative and research and development facilities in strategic global locations.

ADTRAN Holdings, Inc. solely owns ADTRAN, Inc. and is the majority shareholder of ADVA Optical Networking SE ("ADVA"). ADTRAN is a leading global provider of open, disaggregated networking and communications solutions. ADVA is a global provider of network solutions for data, storage, voice and video services. The combined technology portfolio can best address current and future requirements, especially regarding the convergence of solutions at the network edge.

In addition to the Company's reportable segments, revenue is also reported for the following three categories – Subscriber Solutions, Access & Aggregation Solutions, and Optical Networking Solutions.

Prior to the Business Combination with ADVA on July 15, 2022, ADTRAN reported revenue across the following three categories: (1) Access & Aggregation, (2) Subscriber Solutions & Experience and (3) Traditional & Other Products. Following the Business Combination with ADVA, we have recast these revenues such that ADTRAN's former Access & Aggregation revenue is combined with a portion of the applicable ADVA solutions to create Access & Aggregation Solutions, ADTRAN's former Subscriber Solutions & Experience revenue is combined with a portion of the applicable ADVA 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 is a new revenue category added to represent a meaningful portion of ADVA's portfolio.

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.

ADVA Domination and Profit and Loss Transfer Agreement

The DPLTA between the Company, as the controlling company, and ADVA Optical Networking SE, 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 ADVA (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 ADVA, (ii) ADVA 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 ADVA. The obligation of ADVA to transfer its annual profit to the Company applies for the first time to the profit, if any, generated in the ADVA fiscal year 2023. The obligation of the Company to absorb ADVA's annual net loss applies for the first time to the loss, if any, generated in the ADVA fiscal year 2023.

Additionally, and subject to certain limitations pursuant to applicable law and the specific terms of the DPLTA, the DPLTA provides that ADVA shareholders (other than us) be offered, at their election, (i) to put their ADVA shares to the Company in exchange for a compensation in cash of EUR 17.21 per share (the "Exit Compensation"), or (ii) to remain ADVA shareholders and receive a recurring compensation in cash of EUR 0.59 (EUR 0.52 net under the current tax regime) per share for each full fiscal year of ADVA (the "Annual Recurring Compensation"). The Annual Recurring Compensation is due on the third banking day following the ordinary general shareholders' meeting of ADVA for the respective preceding fiscal year (but in any event within eight months following expiration of the fiscal year) and is first granted for the 2023 fiscal year, payable for the first time after the ordinary general shareholders' meeting of ADVA in 2024. The adequacy of both forms of compensation have been challenged by minority shareholders of ADVA 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 or Annual Recurring Compensation (in each case, including interest thereon) than agreed upon in the DPLTA.

The opportunity for outside ADVA shareholders to tender ADVA 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*).

We currently hold 33,961,170 no-par value bearer shares of ADVA, representing 65.30% of ADVA's outstanding shares as of February 14, 2023.

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 10.5 of this Annual Report on Form 10-K.

During the year ended December 31, 2022, we recognized \$14.2 million of transaction costs relating to the Business Combination. We expect to incur integration costs and costs associated with the implementation of the DPLTA during 2023 and such costs are expected to be material.

Multi-Year Integration Program

During the fourth quarter of 2022, the Company initiated a multi-year integration program designed to optimize the assets, business processes, and information technology systems of the Company.

The program has identified several potential cost synergies, including:

- realizing operational scale;
- combined sales channels;
- streamlining corporate and general and administrative functions; and
- combined sourcing and production costs.

We have and will continue to invest significant dollars to restructure the workforce, optimize legacy systems, streamline legal entities and consolidate real estate holdings. By executing these integration activities, we expect to deliver greater innovation for customers, career enrichment opportunities for employees, and enhanced value for shareholders. *See Note 23 of the Notes to Consolidated Financial Statements, included in Part II, Item 8 of this report for additional information.*

Financial Performance and Trends

We ended 2022 with a year-over-year revenue increase of 82.2% as compared to the year ended December 31, 2021, driven by increased volume of sales activity due to the Business Combination with ADVA and to service provider customers. During 2022, we had one 10% revenue customer which was a domestic service provider customer and our five largest customers comprised 38.3% of our revenue. Our year-over-year domestic revenue increased by 38.1%, driven by increased sales volume due to the Business Combination with ADVA and an increased sales volume of residential gateways and optical network terminals in our Network Solutions segment. Internationally, our revenue increased by 169.7% compared to the prior year period, primarily driven by increased volume of sales activity due to the Business Combination with ADVA and increased shipments to a Tier-1 network operator in Europe. We experienced strong demand for our solutions during 2022 and achieved significant year-over-year bookings growth. Bookings are defined as orders received for a product or service during a fiscal period that will be delivered or performed sometime in the future and is a forward looking metric that we utilize to help us understand future revenue growth for the Company. Bookings are generally subject to modification and/or cancellation per the terms of the order. Our increase in demand comes from service providers planning to deploy our fiber access platforms, in-home service delivery platforms and SaaS applications. We expect this growth to accelerate. During 2021 and 2022, we secured several Tier-1 next-generation fiber customers, and previously announced Tier-1 fiber customers significantly increased their bookings for our fiber access platforms. Although we expect our revenue growth and profitability in the near-term to continue to be negatively impacted by supply chain issues, our outlook continues to strengthen given the increased demand for our products and our expectation of an improving supply chain over the longer term.

A substantial portion of our shipments of inventory 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. However, with the current global supply chain and transportation constraints, and limited availability of semiconductor chips and other components of our products, we have experienced and may continue to experience extended lead times, increased logistics intervals and costs, and lower volume of products deliveries, which have had and may continue to have a material adverse effect on our operating results and could have a material adverse effect on our customer relations and our financial condition.

The extent of the impact of the novel coronavirus (“COVID-19”) pandemic on our business remains uncertain and difficult to predict because of the dynamic and evolving nature of the situation. Despite the widespread availability of COVID-19 vaccines and related treatments, the global impact of the outbreak continues to adversely affect many industries, and different geographies continue to reflect the effects of public health restrictions in various ways. The economic recovery following the impact of the COVID-19 pandemic is only partially underway and has been gradual, uneven and characterized by meaningful dispersion across sectors and regions with uncertainty regarding its ultimate length and trajectory. The COVID-19 pandemic and related countermeasures have previously impacted our operations. During 2022, notwithstanding improvement in many markets in which we operate due to a return to more normalized business operations, certain markets continued to be adversely impacted by COVID-19 or as a result of policies relating to COVID-19.

Additionally, due to the pandemic and a global semiconductor chip shortage, we experienced disruption and delays in our supply chain and significant price increases with certain of our manufacturing partners, and those disruptions, delays and price increases may continue. For example, in the second half of 2021 and throughout 2022, our results of operations were negatively impacted by increased expenses resulting from supply chain disruptions. With the current global supply chain and transportation constraints, including delays in supply chain deliveries and the related global semi-conductor chip shortage may continue to have a material adverse effect on our operating results and could have a material adverse effect on customer relations and our financial condition. We believe these supply chain challenges and their adverse impact on our industry will continue to ease during 2023. However, there can be no assurance that the ongoing disruptions due to COVID-19, the related global semiconductor chip shortage or other supply chain constraints or price increases will be resolved in the near term, which could continue to adversely affect our business, financial condition, and results of operations. We will continue to evaluate the nature and extent of the impact of COVID-19 on our business.

Our operating results have fluctuated, and may continue to fluctuate, on a quarterly basis due to several factors, including customer order activity, supply chain constraints, component availability, the Company's consolidation, purchase accounting, and integration with ADVA. A substantial portion of our shipments in any fiscal period relates 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 requiring us to maintain higher inventory levels. These factors may result in limited order flow visibility. However, with the current global supply chain and transportation constraints, and limited availability of semiconductor chips and other components of our products, we have experienced and may continue to experience extended lead times, increased logistics intervals and costs, and lower volume of products deliveries, which have had and may continue to have a material adverse effect on our operating results and could have a material adverse effect on customer relations and our financial condition. We believe these supply chain challenges and their adverse impact on our industry will continue at least through fiscal 2023 and expect that the extended lead times and elevated supply chain costs experienced by our industry will persist for the reasonably foreseeable future. It is unclear when the supply environment will become less volatile and what impacts the supply environment will have on the industry in future periods. Operating expenses are relatively fixed in the short term; therefore, a shortfall in quarterly revenues could significantly impact our financial results in a given quarter.

Our operating results may also fluctuate as a result of a number of other factors, including a decline in general economic and market conditions, specifically the decline that initially resulted from the COVID-19 pandemic and that may recur and foreign currency exchange rate movements, inflation, regional conflicts, increased competition, customer order patterns, changes in product and services mix, 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. Specifically, we expect inflationary pressures on input costs, such as raw materials and labor, and distribution costs to increase. 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. 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. 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 assure prompt delivery of our products may cause us to incur expediting costs to meet customer delivery requirements, which may negatively impact our operating results.

We are exposed to changes in foreign currencies relative to the U.S. dollar, which are references to the differences between the foreign-exchange 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 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.

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) Income expressed as a percentage of revenue for the years indicated. Amounts may not foot due to rounding.

	<i>Year Ended December 31,</i>		
	<u>2022</u>	<u>2021</u>	<u>2020</u>
Revenue			
Network Solutions	89.4%	88.6%	86.5%
Services & Support	10.6	11.4	13.5
Total Revenue	100.0	100.0	100.0
Cost of Revenue			
Network Solutions	63.1	54.7	48.2
Services & Support	5.0	6.5	8.8
Total Cost of Revenue	68.1	61.2	57.0
Gross Profit	31.9	38.8	43.0
Selling, general and administrative expenses	20.4	22.1	22.5
Research and development expenses	16.9	19.3	22.4
Asset impairments	1.7	—	—
Operating Loss	(7.1)	(2.6)	(1.9)
Interest and dividend income	0.2	0.5	0.4
Interest expense	(0.3)	—	—
Net investment (loss) gain	(1.1)	0.3	1.0
Other income (expense), net	1.4	0.7	(0.6)
Loss Before Income Taxes	(6.9)	(1.1)	(1.2)
Income tax benefit (expense)	6.1	(0.4)	1.7
Net (Loss) Income	(0.9)%	(1.5)%	0.5%
Less: Net Loss attributable to non-controlling interest	(0.7)	—	—
Net (Loss) Income attributable to ADTRAN Holdings, Inc.	(0.2)%	(1.5)%	0.5%

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, 2022 and December 31, 2021. For a discussion of a comparison of the years ended December 31, 2021 and December 31, 2020, 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, 2021, filed with the SEC on February 25, 2022.

Comparison of Years Ended December 31, 2022 and December 31, 2021

Revenue

Our revenue increased 82.2% from \$563.0 million for the year ended December 31, 2021 to \$1,026 million for the year ended December 31, 2022. The increase in revenue for the year ended December 31, 2022 is primarily attributable to a \$365.9 million increase in volume of sales activity due to the Business Combination with ADVA and a \$96.6 million increase in volume of sales activity related to our ADTRAN, Inc. operations. The increase in revenue by category for the year ended December 31, 2022 was primarily attributable to a \$261.1 million increase in Optical Networking Solutions products due to the Business Combination with ADVA and a \$184.2 million increase in Subscriber Solutions products. Although our revenue increased, supply of semiconductor chips and other components of our products has become constrained resulting in extended lead times and increased costs. Transportation constraints, including shortages for both air and surface freight, as well as labor shortages in the transportation industry, have also affected the timing and the cost of obtaining raw materials and production supplies. Although our revenue growth and profitability in the near-term may be impacted by these global supply chain issues, our longer term outlook continues to strengthen given our progress with new customer opportunities and the increased customer demand.

Network Solutions segment revenue increased 83.8% from \$498.8 million in 2021 to \$916.8 million in 2022, due primarily to the increase of \$320.3 million in volume of sales activity due to the Business Combination with ADVA and the increase in revenue for Subscriber Solutions products of \$107.0 million, partially offset by a decrease in Access & Aggregation Solutions products of \$9.3 million revenue in our ADTRAN, Inc. operations.

Services & Support revenue increased by 69.5% from \$64.2 million in 2021 to \$108.7 million in 2022. The increase in revenue for 2022 was primarily attributable to the increase of \$45.6 million in volume of sales activity from the Business Combination with ADVA partially offset by a \$3.1 million decrease in revenue for Access & Aggregation Solutions products in our ADTRAN, Inc. operations.

Domestic revenue increased by 38.1% from \$374.6 million in 2021 to \$517.4 million in 2022, driven by increased volume of network termination and fiber CPE in our Network Solutions segment. In addition, such growth was a result of increased revenue to Tier-2 and Tier-3 customers with diversified business among our fiber access and CPE, service provider CPE and services.

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., increased by 169.7% from \$188.4 million for the year ended December 31, 2021 to \$508.1 million for the year ended December 31, 2022. International revenue, as a percentage of total revenue, increased from 33.5% for the year ended December 31, 2021 to 49.5% for the year ended December 31, 2022. The increase in international revenue for 2022 was primarily attributable to the increase in volume of \$263.8 million in sales activity from the Business Combination with ADVA and increased shipments to a Tier-1 network operator and multiple alternative network operators in Europe. While international revenue has increased to approximately 49.5% of total revenues for the year ended December 31, 2022, the mix of our Network Solutions and Services & Support segments as a percentage of total international revenue remains relatively linear. For the year ended December 31, 2022 as compared to the year ended December 31, 2021, changes in foreign currencies relative to the U.S. dollar decreased our net sales by approximately \$41.5 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 ADVA 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, ADVA's 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 increased from 61.2% for the year ended December 31, 2021 to 68.1% for the year ended December 31, 2022. The increase was primarily attributable to acquisition related expenses, adjustments consisting of intangible amortization of 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 ADVA, as well as supply chain constraint related expenses and to a lesser extent changes in customer and product mix and a regional revenue shift in our ADTRAN, Inc. operations. As our current inventory that was acquired in the Business Combination with ADVA is sold, we expect that our cost of revenue as a percentage of revenue will return to more normalized levels. For the year ended December 31, 2022, changes in foreign currencies relative to the U.S. dollar decreased our cost of revenue by approximately \$9.6 million.

Network Solutions cost of revenue, as a percentage of that segment's revenue, increased from 61.7% of revenue in 2021 to 70.6% of revenue in 2022. The increase in cost of revenue as a percentage of revenue was primarily attributable to acquisition related expenses, amortizations and adjustments consisting of intangible amortization of 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 ADVA, as well as supply chain constraint related expenses and to a lesser extent changes in customer and product mix and a regional revenue shift in our ADTRAN, Inc. operations.

Services & Support cost of revenue, as a percentage of that segment's revenue, decreased from 57.3% of revenue in 2021 to 47.1% of revenue in 2022. The decrease in cost of revenue as a percentage of revenue was primarily attributable to customer mix and changes in Services & Support mix as a result of the Business Combination with ADVA.

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 decreased from 38.8% for the year ended December 31, 2021 to 31.9% for the year ended December 31, 2022. The decrease was primarily attributable to increases in cost of revenue related to acquisition related expenses, adjustments consisting of intangible amortization of 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 ADVA, as well as supply chain constraint related expenses and to a lesser extent changes in customer and product mix and a regional revenue shift in our ADTRAN, Inc. operations partially offset by an increase in volume of sales activity due to the Business Combination with ADVA and an increase in volume of sales activity related to our ADTRAN, Inc. operations.

As a percentage of that segment's revenue, Network Solutions gross profit decreased from 38.3% for the year ended December 31, 2021 to 29.4% for the year ended December 31, 2022. The decrease was primarily attributable to increases in cost of revenue related to acquisition related expenses, adjustments consisting of intangible amortization of 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 ADVA, as well as supply chain constraint related expenses and to a lesser extent changes in customer and product mix and a regional revenue shift in our ADTRAN, Inc. operations partially offset by an increase in volume of sales activity due to the Business Combination with ADVA and an increase in volume of sales activity related to our ADTRAN, Inc. operations.

As a percentage of that segment's revenue, Services & Support gross profit increased from 42.7% for the year ended December 31, 2021 to 52.9% for the year ended December 31, 2022. The increase was primarily attributable to an increase in volume of sales activity due to the Business Combination with ADVA, an increase in volume of sales activity related to our ADTRAN, Inc. and a decrease in cost of revenue attributable to customer mix and changes in Services & Support mix as a result of the Business Combination with ADVA.

Selling, General and Administrative Expenses

Selling, general and administrative expenses as a percentage of revenue decreased from 22.1% for the year ended December 31, 2021 to 20.4% for the year ended December 31, 2022. 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 as these costs are relatively fixed in the short term.

Selling, general and administrative expenses increased by 67.9% from \$124.4 million for the year ended December 31, 2021 to \$208.9 million for the year ended December 31, 2022. 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 increase in selling, general and administrative expenses was primarily attributable to increased expenses related to the Business Combination with ADVA such as employee-related costs due to an increase in the number of employees, amortization of intangible assets, depreciation of property, plant and equipment and transactions costs. For the year ended December 31, 2022 as compared to the year ended December 31, 2021, changes in foreign currencies relative to the U.S. dollar decreased our selling, general and administrative expenses by approximately \$4.4 million.

Research and Development Expenses

Research and development expenses as a percentage of revenue decreased from 19.3% for the year ended December 31, 2021 to 16.9% for the year ended December 31, 2022. Research and development expenses as a percentage of revenue will fluctuate whenever there are incremental product development activities or significant fluctuations in revenue for the periods being compared as these costs are relatively fixed in the short term.

Research and development expenses increased by 59.9% from \$108.7 million for the year ended December 31, 2021 to \$173.8 million for the year ended December 31, 2022. The increase in research and development expenses was primarily attributable to increased expenses related to the Business Combination with ADVA such as employee-related costs due to an increase in the number of employees and expenses related to our multi-year integration program, amortization of intangible assets and depreciation of property, plant and equipment. For the year ended December 31, 2022 as compared to the year ended December 31, 2021, changes in foreign currencies relative to the U.S. dollar decreased our research and development expenses by approximately \$5.2 million.

ADVA 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 year ended December 31, 2022, the Company recognized \$1.1 million 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 year ended December 31, 2021. *See Note 11 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 decreased by 25.4% from \$2.8 million for the year ended December 31, 2021 to \$2.1 million for the year ended December 31, 2022. The decrease in interest and dividend income was primarily attributable to a decrease in the investment balance for the twelve months ended December 31, 2022. Our investments decreased from \$71.0 million as of December 31, 2021 to \$33.0 million as of December 31, 2022 and was primarily attributable to the sale of certain equity and fixed income investments for working capital and other purposes.

Interest Expense

Interest expense increased from less than \$0.1 million for the year ended December 31, 2021 to \$3.4 million for the year ended December 31, 2022. The increase in interest expense was primarily related to an increase in assumed debt associated with the Business Combination with ADVA and the new Wells Fargo Credit Agreement. *See Note 13 and Note 14 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 (Loss) Gain

We recognized a net investment gain of \$1.8 million and a loss of \$11.3 million for the years ended December 31, 2021 and 2022, respectively. The fluctuations in our net investments were primarily attributable to 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 6 of Notes to Consolidated Financial Statements included in Part II, Item 8 of this report for additional information.*

Other Income (Expense), net

Other income (expense), net, increased from income of \$3.8 million for the year ended December 31, 2021 to income of \$14.5 million for the year ended December 31, 2022. For the years ended December 31, 2022 and 2021, other income (expense), net, is comprised primarily of unrealized gains on foreign exchange contracts, gains and losses on foreign currency transactions and income from excess material sales. *See Note 12 of Notes to Consolidated Financial Statements included in Part II, Item 8 of the report for additional information on foreign exchange contracts.*

Income Tax Benefit (Expense)

Our effective tax rate changed from an expense of 37.0%, for the year ended December 31, 2021 to a benefit of 87.5% for the year ended December 31, 2022. The change in the effective tax rate for the year ended December 31, 2022, was driven primarily by the release of the majority of our valuation allowance against our domestic deferred tax assets during the fourth quarter of 2022, that was partially offset by increased international tax expense primarily as a result of our closing of the Business Combination with ADVA during the third quarter of 2022. *See Note 15 of the Notes to Consolidated Financial Statements included in Part II, Item 8 of this report for additional information.*

Net (Loss) Income Attributable to ADTRAN Holdings, Inc.

As a result of the above factors, our net loss attributable to ADTRAN Holdings, Inc. decreased from \$8.6 million for the year ended December 31, 2021 to a net loss of \$2.0 million for the year ended December 31, 2022. As a percentage of revenue, net loss was 1.5% for the year ended December 31, 2021 and net loss was 0.2% for the year ended December 31, 2022.

Liquidity and Capital Resources

Liquidity

We have historically financed, our ongoing business with existing cash, investments and cash flow from operations. In the current supply environment we also expect to utilize our credit arrangements to manage our working capital needs. We have used, and expect to continue to use, existing cash, investments, credit arrangements and cash generated from operations for working capital, business acquisitions, shareholder dividends 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, 2022, the Company has incurred a total of \$26.1 million of transaction costs related to the Business Combination. We will also be obligated to compensate any annual net loss of ADVA under the DPLTA. Additionally, pursuant to the terms of the DPLTA, each ADVA shareholder (other than the Company) has received an offer to elect either (1) to remain an ADVA shareholder and receive from us an Annual Recurring Compensation payment, or (2) to receive Exit Compensation. Assuming all of the minority holders of currently outstanding ADVA shares were to elect the second option, we would be obligated to make aggregate Exit Compensation payments of

approximately EUR 310.6 million or approximately \$333.2 million, based on an exchange rate as of December 31, 2022. Shareholders electing the first option of Annual Recurring Compensation may later elect the second option. The opportunity for outside ADVA shareholders to tender ADVA shares in exchange for Exit Compensation expires on March 16, 2023 (subject to appraisal proceedings). Our obligation to pay Annual Recurring Compensation under the DPLTA would lead to a continuing payment obligation, which would amount to approximately EUR 10.6 million or \$11.4 million (based on the current exchange rate), per year assuming none of the minority ADVA 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.

We believe that our cash and cash equivalents, investments, cash generated from operations and access to funds under the new Wells Fargo credit facility (described below) will be adequate to meet our operating and capital needs and our obligations under the Business Combination and the DPLTA for at least the next 12 months.

As of December 31, 2022, cash on hand was \$108.6 million and short-term investments were \$0.3 million, which resulted in available short-term liquidity of \$108.9 million, of which \$86.3 million was held by our foreign subsidiaries. As of December 31, 2021, cash on hand was \$56.6 million and short-term investments were \$0.4 million, which resulted in available short-term liquidity of \$57.0 million, of which \$47.7 million was held by our foreign subsidiaries. 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. The decrease in short-term liquidity from December 31, 2021 to December 31, 2022 was primarily attributable to the sale of certain equity and fixed income investments for working capital and other purposes.

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. There can be no assurances that we would be successful in effecting these actions on commercially reasonable terms or at all.

Operating Activities

Net cash used in operating activities of \$44.2 million during the year ended December 31, 2022 decreased by \$47.2 million compared to \$3.0 million of net cash provided during the year ended December 31, 2021. This decrease was primarily due to net cash outflows from working capital, specifically, an inventory build related to component availability, an increase in accounts receivables and transaction costs related to the Business Combination partially offset by an increase in the average number of days payable to our trade suppliers. Additional details related to our working capital and its drivers are discussed below.

Net accounts receivable increased 76.0% from \$158.7 million as of December 31, 2021 to \$279.4 million as of December 31, 2022. There was an allowance for credit losses of less than \$0.1 million as of December 31, 2022 and no allowance for credit losses as of December 31, 2021. The increase in net accounts receivable was due primarily to the increase in sales volume related to the Business Combination with ADVA and an increase in sales volume in our ADTRAN, Inc. operations. Quarterly accounts receivable DSO decreased from 95 days as of December 31, 2021 to 72 days as of December 31, 2022. The decrease in DSO was due to customer and geographical mix associated with the Business Combination with ADVA and timing of sales within the quarter.

Other receivables increased 192.4% from \$11.2 million as of December 31, 2021 to \$32.8 million as of December 31, 2022. The increase in other receivables was primarily attributable to an increase in prepaid taxes associated with Business Combination with ADVA and contract assets partially offset by a decrease in our receivables for sales of raw materials and reclaimed duty drawbacks.

Annual inventory turnover decreased from 2.60 turns as of December 31, 2021 to 2.46 turns as of December 31, 2022. Inventory increased 205.6% from \$139.9 million as of December 31, 2021 to \$427.5 million as of December 31, 2022. The increase in inventory was due to Business Combination with ADVA and strategic inventory buffer purchases given extended component lead times and availability constraints as well as new product ramp ups to ensure supply continuity. We expect inventory levels to fluctuate as we attempt to maintain sufficient inventory in response to supply chain uncertainties.

Accounts payable increased 131.9% from \$102.5 million as of December 31, 2021 to \$237.7 million as of December 31, 2022. The increase in accounts payable was primarily due to the increase in volume of operating costs associated with the Business Combination with ADVA, additional purchases of raw material inventory and extended payment terms. 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 totaled approximately \$17.1 million and \$5.7 million for the years ended December 31, 2022 and 2021, respectively. These expenditures were primarily used to purchase manufacturing and test equipment, software, computer hardware and building improvements.

Our combined short-term and long-term investments decreased \$38.0 million from \$71.0 million as of December 31, 2021 to \$33.0 million as of December 31, 2022. This decrease reflects the impact of the sale of portions of our equity and fixed income investments and the net unrealized and realized gains and losses on our investments.

We typically invest all available cash not required for immediate use in operations, primarily in securities that we believe bear minimal risk of loss. See Note 6 of Notes to Consolidated Financial Statements included in Part II, Item 8 of this report for additional information.

As of December 31, 2022, our corporate bonds, municipal bonds, asset-backed bonds, mortgage/agency bonds, U.S. government bonds and other government bonds were classified as available-for-sale and had a combined duration of 1.74 years with an average Standard & Poor's credit rating of AA-. Because our investment portfolio has a high-quality rating and contractual maturities of short duration, we are able to obtain prices for these bonds derived from observable market inputs, or for similar securities traded in an active market, on a daily basis.

Our long-term investments decreased 53.7% from \$70.6 million as of December 31, 2021 to \$32.7 million as of December 31, 2022. Our investments include various marketable equity securities classified as long-term investments with a fair market value of \$0.8 million and \$12.6 million, as of December 31, 2022 and 2021, respectively. Long-term investments as of December 31, 2022 and 2021 also included \$22.9 million and \$26.9 million, respectively, related to our deferred compensation plan.

Financing Activities

Dividends

During 2022 and 2021, we paid shareholder dividends totaling \$22.9 million and \$17.5 million, respectively. The continued payment of dividends is at the discretion of the Company's Board of Directors and is subject to general business conditions and ongoing financial results of the Company. The following table shows dividends per common share paid to our shareholders in each quarter of 2022 and 2021:

Dividends per Common Share				
	2022		2021	
First Quarter	\$	0.09	\$	0.09
Second Quarter	\$	0.09	\$	0.09
Third Quarter	\$	0.09	\$	0.09
Fourth Quarter	\$	0.09	\$	0.09

On February 20, 2023, the Company announced that its Board of Directors declared a quarterly cash dividend of \$0.09 per common share to be paid to the Company's stockholders of record at the close of business on March 7, 2023. The dividends will be paid on March 21, 2023 in the aggregate amount of approximately \$7.0 million.

Stock Repurchase Program

There were no stock repurchases during the years ended December 31, 2022 and 2021, and there currently is no authorized stock repurchase plan.

Stock Option Exercises

To accommodate employee stock option exercises, the Company issued 0.5 million and 0.4 million shares of common stock and treasury stock which resulted in proceeds of \$6.9 million and \$6.4 million during the years ended December 31, 2022 and 2021, respectively. Additionally, to accommodate ADVA Optical Networking SE stock option exercises, ADVA Optical Networking SE issued 0.1 million of ADVA Optical Networking SE common stock which resulted in proceeds of \$0.8 million, during the period July 15, 2022 to December 31, 2022. ADVA Optical Networking SE stock options outstanding as of December 31, 2022 totaled 81 thousand (representing less than 0.2% of ADVA's outstanding shares), of which 27 thousand were exercisable.

Employee Pension Plan

We maintain a defined benefit pension plan 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.

In connection with the Business Combination, we acquired \$29.6 million of additional obligations and \$22.3 million of assets related to postemployment benefit plans for certain groups of employees at our new operations outside of the U.S. Plans vary depending on the legal, economic, and tax environments of the respective country. For defined benefit plans, accruals for pensions and similar commitments have been included in the results for this year. The new defined benefit plans are for employees in Switzerland, Italy, Israel and India:

- 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 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.

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, 2022, the estimated fair market value of our defined benefit pension plans' assets increased to \$48.7 million from \$32.7 million at December 31, 2021.

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 \$59.3 million and \$44.2 million as of December 31, 2022 and 2021, respectively.

The components of net periodic pension cost, other than the service cost component, are included in other income (expense), net in the Consolidated Statements of (Loss) Income. The components of net periodic pension cost and amounts recognized in other comprehensive (loss) income for the years ended December 31, 2022 and 2021 were (\$5.8) million and (\$5.0) million, respectively.

Actuarial gains and losses are recorded in accumulated other comprehensive (loss) 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. We estimate that less than \$0.1 million will be amortized from accumulated other comprehensive (loss) income into net periodic pension cost in 2023 for the net actuarial loss. The net actuarial loss recognized in accumulated other comprehensive loss as of December 31, 2022 and 2021 was \$1.1 million and \$7.7 million, respectively. *See Note 15 of Notes to Consolidated Financial Statements included in Part II, Item 8 of this report for additional information.*

Off-Balance Sheet Arrangements

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.

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, 2022, 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).

<i>(In thousands)</i>	Total	2023	2024	2025	2026	2027	After 2027
Wells Fargo credit agreement ⁽¹⁾	\$ 60,000	\$ 60,000	\$ —	\$ —	\$ —	\$ —	\$ —
Nord/LB revolving line of credit ⁽²⁾	16,091	16,091	—	—	—	—	—
Syndicated credit agreement working capital line of credit ⁽³⁾	10,727	10,727	—	—	—	—	—
DZ Bank revolving line of credit ⁽⁴⁾	9,118	9,118	—	—	—	—	—
Syndicated credit agreement note payable ⁽⁵⁾	24,598	24,598	—	—	—	—	—
Purchase obligations ⁽⁶⁾	552,440	527,562	24,141	309	167	261	—
Operating lease obligations ⁽⁷⁾	34,976	8,992	8,076	6,740	3,825	2,865	4,478
Totals	\$ 707,950	\$ 657,088	\$ 32,217	\$ 7,049	\$ 3,992	\$ 3,126	\$ 4,478

(1) See description below.

(2) See description below.

(3) See description below.

(4) See description below.

(5) See description below.

(6) 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 2023 and going through 2027. See Note 20 of the Notes to Consolidated Financial Statements, included in Part II, Item 8 of this report for more information.

(7) 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 one month to 119 months as of December 31, 2022.

New Wells Fargo Credit Agreement

On July 18, 2022, ADTRAN Holdings, Inc. and ADTRAN, Inc., as the borrower, 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”). The Credit Agreement allows for borrowings of up to \$100 million in aggregate principal amount, subject to being increased to up to \$400 million in aggregate principal amount upon the Company or Borrower’s execution of a DPLTA with ADVA or a parent of ADVA, among other conditions (the “Senior Credit Facilities Increase”). The DPLTA 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 ADVA (Jena). See Note 24 of the Notes to Consolidated Financial Statements for further information.

As of December 31, 2022, ADTRAN, Inc.'s borrowings under the revolving line of credit were \$60.0 million in tranches that mature during the first quarter of 2023 and can either be repaid or borrowed again for a one month, three month or six month period. In addition, we may issue up to \$25 million in letters of credit against the first \$100 million in our total facility. As of December 31, 2022, we had a total of \$21.3 million in letters of credit with ADTRAN, Inc. outstanding against our eligible borrowings, leaving a net amount of \$18.7 million available for future borrowings. Upon the DPLTA becoming effective on January 16, 2023, the available total borrowings under the Wells Fargo Credit Agreement increased from \$100 million to \$400 million. On January 31, 2023, the Company increased its borrowings under the Credit Agreement from \$60.0 million to \$187.5 million. In February 2023, the borrowings under the Credit Agreement were paid down by \$7.5 million, leaving \$180.0 million of borrowings as of February 28, 2023. After considering our outstanding letters of credit, this leaves the Company approximately \$198.7 million available for future borrowings as of February 28, 2023. The Company used approximately \$51.4 million of the proceeds from the borrowings under the Credit Agreement to retire the outstanding borrowings under ADVA's syndicated credit agreement note payable, syndicated credit agreement working capital line of credit and the Nord/LB revolving line of credit. ADVA's \$9.1 million of borrowings under its revolving line of credit with DZ Bank remain outstanding. 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.

All U.S. borrowings under the Credit Agreement (other than swingline loans, which will bear interest at the Base Rate (as defined below)) will bear interest, at the Company's option, at a rate per annum equal to (A)(i) 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%, (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%, plus (ii) the applicable rate, ranging from 0.5% to 1.25% (the "Base Rate"), or (B) the sum of the Adjusted Term SOFR (as defined in the Credit Agreement) plus the applicable rate, ranging from 1.4% to 2.15%, provided that such sum is subject to a 0.0% floor (such loans utilizing this interest rate, "SOFR Loans"). All EU borrowings under the Credit Agreement (other than swingline loans) will bear interest at a rate per annum equal to the sum of the Euro Interbank Offered Rate as administered by the European Money Markets Institute (or a comparable or successor administrator approved by the Administrative Agent) plus the applicable rate, ranging from 1.5% to 2.25%, provided that such sum is subject to a 0.0% floor (such loans utilizing this interest rate, "EURIBOR Loans"). The applicable rate is based on the consolidated net leverage ratio of the Company and its subsidiaries as determined pursuant to the terms of the Credit Agreement. Default interest is 2.00% per annum in excess of the rate otherwise applicable in the case of any overdue principal or any other overdue amount.

In addition to paying interest on outstanding principal under the Credit Agreement, the Company is required to pay a commitment fee to the lenders under the Credit Agreement in respect of unutilized revolving loan commitments and an additional commitment ticking fee at a rate of 0.25% on the commitment amounts of each lender until the earliest of (i) the date of the Senior Credit Facilities Increase, (ii) the Company's voluntary termination of the credit facility commitment, and (iii) December 31, 2023. 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 participations in letters of credit at the then applicable rate for SOFR Loans.

The Credit Agreement permits the Company to prepay any or all of the outstanding loans or to reduce the commitments under the Credit Agreement without incurring premiums or penalties (except breakage costs with respect to SOFR Loans and EURIBOR Loans). The Credit Agreement 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, pay dividends or other payments on capital stock, make restricted payments, engage in mergers or consolidations, engage in transactions with affiliates, modify its organizational documents, and enter into certain restrictive agreements. It also contains customary events of default (subject to customary cure periods and materiality thresholds). Furthermore, the Credit Agreement requires that the Consolidated Total Net Leverage Ratio (as defined in the Credit Agreement) of the Company and its subsidiaries tested on the last day of each fiscal quarter not exceed 3.25 to 1.0 through September 30, 2024 and 2.75 to 1.00 from December 31, 2024 and thereafter, subject to certain exceptions. The Credit Agreement also requires that the Consolidated Interest Coverage Ratio (as defined in the Credit Agreement) of the Company and its subsidiaries tested on the last day of each fiscal quarter not fall below 3.00 to 1.00. The Credit Agreement matures in July 2027 but provides the Company with an option to request extensions subject to customary conditions.

Finally, pursuant to a Collateral Agreement, dated as of July 18, 2022, among the Company, ADTRAN, Inc. and the Administrative Agent, ADTRAN, Inc.'s obligations under the Credit Agreement are secured by substantially all of the assets of ADTRAN, Inc. and the Company. In addition, the Company has guaranteed ADTRAN, Inc.'s obligations under the Credit Agreement pursuant to a Guaranty Agreement, dated as of July 18, 2022, by ADTRAN, Inc. and the Company in favor of the Administrative Agent.

Nord/LB Revolving Line of Credit

On August 8, 2022, ADVA entered into a \$16.1 million revolving line of credit with Norddeutsche Landesbank - Girozentrale (Nord/LB) that bears interest of Euro Short Term Rate plus 1.4% and which matures in August 2023. During the term of the loan, ADVA is obligated to maintain an adjusted net debt to cover ratio that is equal to or less than 2.75. As of December 31, 2022, ADVA's borrowings under the revolving line of credit were \$16.1 million. On January 31, 2023, the Company increased its borrowings under the Wells Fargo Credit Agreement. A portion of the proceeds from the borrowings were used to retire the outstanding borrowings under the Nord/LB revolving line of credit.

Syndicated Credit Agreement Working Capital Line of Credit

In September 2018, ADVA 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. The interest rate for the working capital line of credit is adjusted periodically based on a defined leverage ratio and is currently EURIBOR plus 1.35% as of December 31, 2022. The working capital line of credit matures in September 2023. As of December 31, 2022, borrowings under the working capital line of credit totaled \$10.7 million. On January 31, 2023, the Company increased its borrowings under the Wells Fargo Credit Agreement. A portion of the proceeds from the borrowings were used to retire the outstanding borrowings under the syndicated credit agreement working capital line of credit.

DZ Bank Money Market Facility

As of December 31, 2022, ADVA's borrowings under its revolving line of credit with DZ Bank totaled \$9.1 million, with no amounts available for future borrowings. The interest rate is currently a fixed rate of 2.85%, which resets monthly based on renewal of the loan.

Syndicated Credit Agreement Note Payable

In September 2018, ADVA entered into a syndicated credit agreement with Bayerische Landesbank and Deutsche Bank AG Branch German Business to borrow \$63.7 million. As of December 31, 2022, the amount outstanding under the note payable is \$24.6 million. The interest rate for the note payable is adjusted periodically based on a defined leverage ratio and is currently EURIBOR plus 1.35% as of December 31, 2022. The note payable matures in September 2023. On January 31, 2023, the Company increased its borrowings under the Wells Fargo Credit Agreement. A portion of the proceeds from the borrowings were used to retire the outstanding borrowings under the syndicated credit agreement note payable.

Currency Hedging Arrangements

On November 3, 2022, the Company entered into a Euro/U.S. dollar cross-currency swap arrangement (the “Swap”) with Wells Fargo Bank, N.A. (the “Hedge Counterparty”). The Swap, which is 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, enable the Company to convert a portion of its Euro denominated payment obligations under the DPLTA into U.S. Dollars. Under the Swap, the Company will exchange an aggregate notional amount of \$160.0 million U.S. dollars for Euros at a daily fixed forward rate ranging from \$0.98286 to \$1.03290. The aggregate amount of \$160.0 million will be divided into eight quarterly tranches of \$20.0 million. The Company, at its sole discretion, may exchange all or part of each tranche on any given day within the applicable quarter; provided, however, that it must exchange the full tranche by the end of such quarter. The Swap may be accelerated or terminated early for a number of reasons, including but not limited to (i) non-payment by the Company or the Hedge Counterparty, (ii) breach of representation or warranty or covenant by either party or (iii) insolvency or bankruptcy of either party.

ADVA Domination and Profit and Loss Transfer Agreement

On December 1, 2022, we, as the controlling company, entered into the DPLTA with ADVA, as the controlled company (the “DPLTA”). The DPLTA, 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 ADVA (Jena).

Under the DPLTA, subject to certain limitations pursuant to applicable law, (i) we are entitled to issue binding instructions to the management board of ADVA, (ii) ADVA will transfer all of its annual profits to us, subject to, among other things, the creation or dissolution of certain reserves, and (iii) we will generally absorb all annual losses incurred by ADVA. The obligation of ADVA to transfer its annual profit to us, as well as our obligation to absorb ADVA’s annual net loss, applies for the first time to the profits or losses generated in the ADVA fiscal year 2023.

Additionally, and subject to certain limitations pursuant to applicable law and the specific terms of the DPLTA, the DPLTA provides that ADVA shareholders (other than us) be offered, at their election, (i) to put their ADVA shares to the Company in exchange for a compensation in cash of EUR 17.21 per share (the “Exit Compensation”), or (ii) to remain ADVA shareholders and receive a recurring compensation in cash of EUR 0.59 (EUR 0.52 net under the current tax regime) per share for each full fiscal year of ADVA (the “Annual Recurring Compensation”). The Annual Recurring Compensation is due on the third banking day following the ordinary general shareholders’ meeting of ADVA for the respective preceding fiscal year (but in any event within eight months following expiration of the fiscal year) and is first granted for the 2023 fiscal year, payable for the first time after the ordinary general shareholders’ meeting of ADVA in 2024. The adequacy of both forms of compensation have been challenged by minority shareholders of ADVA 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 or Annual Recurring Compensation (in each case, including interest thereon) than agreed upon in the DPLTA. Our aggregate potential payment obligations under the DPLTA are discussed above under “*Liquidity*”.

The opportunity for outside ADVA shareholders to tender ADVA 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*).

We currently hold 33,961,170 no-par value bearer shares of ADVA, representing 65.30% of ADVA’s outstanding shares as of February 14, 2023.

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.

During the year ended December 31, 2022, we recognized \$14.2 million of transaction costs relating to the Business Combination. We expect to incur integration costs and costs associated with the implementation of the DPLTA during 2023 and such costs are expected to be material.

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, 2022 and 2021, we had commitments related to these bonds totaling \$21.1 million and \$22.9 million, respectively, which expire at various dates through April 2031. 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 Notes to the 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. Review of contracts with customers, for both direct customers and distributors, are performed and assessed for principal versus agent considerations to determine primary responsibility for delivery of performance obligation, presumed inventory risk, and discretion in establishing pricing, when applicable. 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 are recorded as revenue and the related cost which we have elected to account for as a cost of fulfilling the related contract is included in cost of revenue. Revenue, value-added and other taxes collected concurrently with revenue-producing activities are excluded from revenue. Costs of obtaining a contract, if material, are capitalized and amortized over the period that the related revenue is recognized if greater than one year. 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 \$60.4 million and \$27.0 million as of December 31, 2022 and 2021, 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.

Accounts Receivable Factoring

The Company has entered into a factoring agreement to sell certain receivables to an unrelated third-party financial institution on a non-recourse basis. These transactions are accounted for in accordance with Accounting Standards Codification ("ASC") Topic 860, *Transfers and Servicing*, and result in a reduction in accounts receivable because the agreements transfer 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 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) Income. On each sale date, the financial institution retains from the sale price a default reserve, up to a required balance, which is held by the financial institution in a reserve account and pledged to the Company. The financial institution 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.

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. Our reserve for excess and obsolete inventory was \$51.8 million and \$44.6 million at December 31, 2022 and 2021, respectively. Inventory disposals charged against the reserve were \$2.9 million and \$1.0 million for the years ended December 31, 2022 and December 31, 2021, respectively.

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 shareholder 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, 2022, total unrecognized compensation expense related to the non-vested portion of market-based PSUs, RSUs and restricted stock was approximately \$15.8 million.

Pursuant to the Business Combination, which closed on July 15, 2022, ADVA stock option holders were entitled to have their ADVA 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 are subject to assumed ADVA 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, 2022, total unrecognized compensation expense related to the non-vested portion of stock options was approximately \$8.3 million.

Goodwill

Goodwill represents the excess purchase price over the fair value of net assets acquired. The carrying value of goodwill is tested for impairment in the fourth quarter of each year or more frequently if events or circumstances indicate it may be impaired. The quantitative goodwill impairment test is performed at the level of the reporting unit. The identification of our reporting units begins at the operating segment level and considers whether components one level below the operating segment levels should be identified as reporting units for the purpose of testing goodwill for impairment. For goodwill impairment testing purposes, we determined the Company's reporting units are generally the same as its operating segments, which are identified in Note 18 to the Consolidated Financial Statements.

Our general policy is to qualitatively assess the carrying value of goodwill each reporting period for events or changes in circumstances that would more likely than not reduce the fair value of the reporting unit below its carrying amount. In connection with the Business Combination with ADVA the Company recognized \$350.5 million of goodwill upon the closing of the exchange offer on July 15, 2022. Therefore, we decided to proceed directly to the quantitative test of goodwill and forego the qualitative assessment. We estimate the fair value of our reporting units based on an income approach, whereby we calculate the fair value of a reporting unit based on the present value of estimated future cash flows. A discounted cash flow analysis requires us to make various judgmental assumptions about future sales, operating margins, growth rates and discount rates, which are based on our budgets, business plans, economic projections, anticipated future cash flows and market participants. We also estimate the fair value of our reporting units based on a peer group analysis, whereby companies in the telecommunications industry or with a comparable product and market structure are used to calculate a fair enterprise value using revenue, EBITDA and debt multiples of trading value. Based on our analysis, management concluded that there was no impairment of goodwill as of December 31, 2022. No goodwill impairment charges were recognized during the years ended December 31, 2021 and 2020. The balance of our goodwill was \$381.7 million and \$7.0 million as of December 31, 2022 and 2021, 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.

As part of the purchase price allocation related to the Business Combination with ADVA, the Company recognized \$403.8 million of intangible assets on July 15, 2022. Intangible assets are reviewed for impairment whenever events and circumstances indicate impairment may have occurred. The Company assessed impairment triggers related to intangible assets during the fourth quarter of 2022, 2021 and 2020. As a result, no quantitative impairment test of long-lived assets was performed as of December 31, 2022, 2021 and 2020, and no impairment losses of intangible assets were recorded during the years ended December 31, 2022, 2021 and 2020. The balance of our intangible assets was \$401.2 million and \$19.3 million as of December 31, 2022 and 2021, respectively.

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 2022, after considering all quantitative and qualitative evidence, including our cumulative income position, historical operating performance and future income projections, we have determined that the positive evidence overcame the negative evidence and have concluded that it is more likely than not that a substantial portion of our U.S. federal and certain other state deferred tax assets were realizable. As a result we have released the majority of our valuation allowance against those assets. However, the amount of deferred tax assets considered realizable could be adjusted in future periods in the event that sufficient evidence is no longer present to support a conclusion that it is more likely than not that all or a portion of our domestic deferred tax assets will be realized.

We establish reserves to remove some or all of the tax benefit of any of our tax positions at the time we determine that the positions become uncertain. We adjust these reserves, including any impact on the related interest and penalties, as facts and circumstances change.

Liability for Warranty

Our products generally include warranties of 90 days to five years for product defects. We accrue for warranty returns at the time of product shipment based on our historical return rate and an estimate of the cost to repair or replace the defective products. We engage in extensive product quality programs and processes, including actively monitoring and evaluating the quality of our component suppliers. Our products continue to become more complex in both size and functionality as many of our product offerings migrate from line card applications to total systems. The increasing complexity of our products will cause warranty incidences, when they arise, to be more costly. Our estimates regarding future warranty obligations may change due to product failure rates, material usage, and other rework costs incurred in correcting a product failure. In addition, from time to time, specific warranty accruals may be recorded if unforeseen problems arise. Should our actual experience relative to these factors be worse than our estimates, we will be required to record additional warranty expense. The liability for warranty obligations totaled \$7.2 million and \$5.4 million at December 31, 2022 and 2021, respectively. These liabilities are included in accrued expenses and other liabilities in the accompanying Consolidated Balance Sheets.

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 \$10.6 million and \$11.4 million at December 31, 2022 and December 31, 2021, respectively. This liability is included in pension liability 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) Income 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 interest rates and foreign currency exchange rates. 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, which limits, 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, 2022, \$100.1 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 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, 2022, approximately \$10.6 million of our cash and investments may be directly affected by changes in interest rates. As of December 31, 2022, we held \$1.5 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, 2022, assuming all other variables remain constant, would reduce annualized interest income on our cash and investments by less than \$0.1 million. In addition, we held \$9.1 million of fixed-rate bonds whose fair values may be directly affected by a change in interest rates. A hypothetical 50 basis point increase in interest rates as of December 31, 2022, assuming all other variables remain constant, would reduce the fair value of our fixed-rate bonds by approximately \$0.1 million. As of December 31, 2022, the carrying amounts of our revolving credit agreements and notes payable totaled \$95.9 million and \$24.6 million, respectively, where a change in interest rates would impact our interest expense. A hypothetical 50 basis point increase in interest rates as of December 31, 2022, assuming all other variables remain constant, would increase our interest expense by \$0.6 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, 2022.

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, 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 sterling. 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 28.5% of total operating expense for the year ended December 31, 2022, respectively). Therefore, our revenue, gross margins, operating expenses and operating income (loss) are all subject to foreign currency fluctuations. As a result, changes in currency exchange rates could cause variations in our operating income (loss).

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 \$8.0 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 \$10.4 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, 2022, 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, 2022, we had 47 forward contracts outstanding with a fair value of \$11.9 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 12 of Notes to Consolidated Financial Statements included in Part II, Item 8 of this report.*

In addition, on November 3, 2022, the Company entered into the Swap with the Hedge Counterparty, which enables the Company to convert a portion of its Euro denominated payment obligations under the DPLTA into U.S. Dollars. Under the Swap, the Company will exchange an aggregate notional amount of \$160.0 million U.S. dollars for Euros at a daily fixed forward rate ranging from \$0.98286 to \$1.03290. The aggregate amount of \$160.0 million will be divided into eight quarterly tranches of \$20.0 million. The Company, at its sole discretion, may exchange all or part of each tranche on any given day within the applicable quarter; provided, however, that it must exchange the full tranche by the end of such quarter. The Swap may be accelerated or terminated early for a number of reasons, including

but not limited to (i) non-payment by the Company or the Hedge Counterparty, (ii) breach of representation or warranty or covenant by either party or (iii) insolvency or bankruptcy of either party.

For further information about the fair value of our investments as of December 31, 2022, see *Note 6 of 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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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, 2022 and 2021, and the related consolidated statements of (loss) income, of comprehensive (loss) income, of changes in equity and of cash flows for each of the three years in the period ended December 31, 2022, 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, 2022, 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, 2022 and 2021, and the results of its operations and its cash flows for each of the three years in the period ended December 31, 2022 in conformity with accounting principles generally accepted in the United States of America. Also in our opinion, the Company maintained, in all material respects, effective internal control over financial reporting as of December 31, 2022, based on criteria established in Internal Control - Integrated Framework (2013) issued by the COSO.

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 on Internal Control over Financial Reporting appearing under Item 9A. 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.

As described in Management's Report on Internal Control over Financial Reporting, management has excluded ADVA Optical Networking SE from its assessment of internal control over financial reporting as of December 31, 2022, because it was acquired by the Company in a purchase business combination during 2022. We have also excluded ADVA Optical Networking SE from our audit of internal control over financial reporting. ADVA Optical Networking SE is a subsidiary whose total assets and total revenues excluded from management's assessment and our audit of internal control over financial reporting represent 41.42% and 35.68%, respectively, of the related consolidated financial statement amounts as of and for the year ended December 31, 2022.

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 matter communicated below is a matter arising from the current period audit of the consolidated financial statements that was communicated or required to be communicated to the audit committee and that (i) relates 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 matter below, providing a separate opinion on the critical audit matter or on the accounts or disclosures to which it relates.

Acquisition of ADVA Optical Networking SE – Valuation of Developed Technology, Customer Relationships, and Backlog Intangible Assets

As described in Note 2 to the consolidated financial statements, the Company completed the acquisition of ADVA Optical Networking SE for total purchase consideration of \$578.3 million on July 15, 2022. Assets acquired and liabilities assumed were recognized at their respective fair values as of July 15, 2022, which resulted in the recognition of \$403.8 million of identifiable intangible assets. The fair value of the identifiable intangible assets acquired as of the acquisition date primarily consisted of developed technology of \$291.9 million, customer relationships of \$32.7 million, and backlog of \$52.2 million. In determining the fair value, management utilized various methods of the income approach depending on the asset. The estimation of fair value required significant judgment by management related to net cash flows reflecting the risk inherent in each cash flow stream, competitive trends, market comparables and other factors. Inputs were generally determined by taking into account historical data, current and anticipated market conditions, and growth rates. Developed technology and customer relationships were valued using the multi-period excess earnings method. Backlog was valued using the distributor method. Significant assumptions used in the discounted cash flow analysis for (i) developed technology were the revenue growth rates, long-term revenue growth rate, discount rate, earnings before interest, taxes, depreciation, and amortization (EBITDA) margins, obsolescence factors, income tax rate, tax depreciation, and economic depreciation; (ii) customer relationships were earnings before interest and taxes (EBIT) margins, contributory asset charges, and customer attrition rate; and (iii) backlog were EBIT margins, adjusted EBIT margins, and contributory asset charges.

The principal considerations for our determination that performing procedures relating to the valuation of the developed technology, customer relationships, and backlog intangible assets acquired in the acquisition of ADVA Optical Networking SE is a critical audit matter are (i) the significant judgment by management when developing the fair value estimates of the identifiable intangible assets acquired; (ii) a high degree of auditor judgment, subjectivity, and effort in performing procedures and evaluating management's significant assumptions related to the revenue growth rates, long-term revenue growth rate, discount rate, EBITDA margins, obsolescence factors, income tax rate, tax depreciation, and economic depreciation used in the valuation of the developed technology; EBIT margins, contributory asset charges, and customer attrition rate used in the valuation of the customer relationships; and EBIT margins, adjusted EBIT margins, and contributory asset charges used in the valuation of the backlog; 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 the acquisition accounting, including controls over the valuation of the identifiable intangible assets acquired. These procedures also included, among others (i) reading the purchase agreement; (ii) testing management's process for developing the fair value estimates of the developed technology, customer relationships, and backlog intangible assets; (iii) evaluating the appropriateness of the multi-period excess earnings and distributor methods; (iv) testing the completeness and accuracy of underlying data used by management in the valuation methods; and (v) evaluating the reasonableness of significant assumptions used by management related to the revenue growth rates, long-term revenue growth rate, discount rate, EBITDA margins, obsolescence factors, income tax rate, tax depreciation, and economic depreciation used in the valuation of the developed technology; EBIT margins, contributory asset charges, and customer attrition rate used in the valuation of the customer relationships; and EBIT margins, adjusted EBIT margins, and contributory asset charges used in the valuation of the backlog. Evaluating the reasonableness of management's significant assumptions related to the revenue growth rates, long-term revenue growth rate, EBITDA margins, obsolescence factors, income tax rate, tax depreciation, and economic depreciation related to the developed technology; the EBIT margins, contributory asset charges, and customer attrition rate related to the customer relationships; and EBIT margins, adjusted EBIT margins, and contributory asset charges related to backlog involved considering (i) the past performance of the acquired business; (ii) the consistency with external market and industry data; and (iii) whether these 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 valuation methods used and (ii) the reasonableness of the discount rate significant assumption.

/s/ PricewaterhouseCoopers LLP

Birmingham, Alabama

March 1, 2023

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, 2022 and 2021

ASSETS	<u>2022</u>	<u>2021</u>
Current Assets		
Cash and cash equivalents	\$ 108,644	\$ 56,603
Restricted cash	—	215
Short-term investments (includes \$340 and \$350 of available-for-sale securities as of December 31, 2022 and 2021, respectively, reported at fair value)	340	350
Accounts receivable, less allowance for credit losses of \$49 and \$0 as of December 31, 2022 and 2021, respectively	279,435	158,742
Other receivables	32,831	11,228
Inventory, net	427,531	139,891
Prepaid expenses and other current assets	33,577	9,296
Total Current Assets	882,358	376,325
Property, plant and equipment, net	110,699	55,766
Deferred tax assets, net	6,210	9,079
Goodwill	381,724	6,968
Intangibles, net	401,211	19,293
Other non-current assets	66,998	30,971
Long-term investments (includes \$8,913 and \$29,717 of available-for-sale securities as of December 31, 2022 and 2021, respectively, reported at fair value)	32,665	70,615
Total Assets	\$ 1,881,865	\$ 569,017
LIABILITIES AND EQUITY		
Current Liabilities		
Accounts payable	\$ 237,699	\$ 102,489
Revolving credit agreements outstanding	95,936	—
Notes payable	24,598	—
Unearned revenue	41,193	17,737
Accrued expenses and other liabilities	35,235	13,673
Accrued wages and benefits	44,882	14,900
Income tax payable, net	9,032	6,560
Total Current Liabilities	488,575	155,359
Non-current unearned revenue	19,239	9,271
Pension liability	10,624	11,402
Deferred compensation liability	26,668	31,383
Non-current lease obligations	22,807	3,269
Other non-current liabilities	10,339	1,231
Total Liabilities	578,252	211,915
Commitments and contingencies (see Note 20)		
Equity		
Common stock, par value \$0.01 per share; 200,000 shares authorized; 78,088 shares issued and 77,889 outstanding as of December 31, 2022 and 79,652 shares issued and 49,063 shares outstanding as of December 31, 2021	781	797
Additional paid-in capital	895,834	288,946
Accumulated other comprehensive income (loss)	46,713	(11,914)
Retained earnings	55,338	740,820
Less treasury stock at cost: 198 and 30,590 shares as of December 31, 2022 and 2021, respectively	(4,125)	(661,547)
Non-controlling interest	309,072	—
Total Equity	1,303,613	357,102
Total Liabilities and Equity	\$ 1,881,865	\$ 569,017

See accompanying notes to consolidated financial statements.

ADTRAN Holdings, Inc.
Consolidated Statements of (Loss) Income
(In thousands, except per share amounts)
Years ended December 31, 2022, 2021 and 2020

	2022	2021	2020
Revenue			
Network Solutions	\$ 916,793	\$ 498,834	\$ 438,015
Services & Support	108,743	64,170	68,495
Total Revenue	1,025,536	563,004	506,510
Cost of Revenue			
Network Solutions	647,105	307,841	244,226
Services & Support	51,179	36,786	44,733
Total Cost of Revenue	698,284	344,627	288,959
Gross Profit	327,252	218,377	217,551
Selling, general and administrative expenses	208,889	124,414	113,972
Research and development expenses	173,757	108,663	113,287
Asset impairment	17,433	—	65
Operating Loss	(72,827)	(14,700)	(9,773)
Interest and dividend income	2,123	2,844	1,936
Interest expense	(3,437)	(34)	(5)
Net investment (loss) gain	(11,339)	1,761	4,850
Other income (expense), net	14,517	3,824	(3,254)
Loss Before Income Taxes	(70,963)	(6,305)	(6,246)
Income tax benefit (expense)	62,075	(2,330)	8,624
Net (Loss) Income	\$ (8,888)	\$ (8,635)	\$ 2,378
Less: Net Loss attributable to non-controlling interest	(6,851)	—	—
Net (Loss) Income attributable to ADTRAN Holdings, Inc.	\$ (2,037)	\$ (8,635)	\$ 2,378
Weighted average shares outstanding – basic	62,346	48,582	47,996
Weighted average shares outstanding – diluted	62,346	48,582	48,288
(Loss) earnings per common share attributable to ADTRAN Holdings, Inc. – basic	\$ (0.03)	\$ (0.18)	\$ 0.05
(Loss) earnings per common share attributable to ADTRAN Holdings, Inc. – diluted	\$ (0.03)	\$ (0.18)	\$ 0.05

See accompanying notes to consolidated financial statements.

ADTRAN Holdings, Inc.
Consolidated Statements of Comprehensive Income (Loss)
(In thousands)
Years ended December 31, 2022, 2021 and 2020

	<u>2022</u>	<u>2021</u>	<u>2020</u>
Net (Loss) Income	\$ (8,888)	\$ (8,635)	\$ 2,378
Other Comprehensive Income (Loss), net of tax			
Net unrealized (loss) gain on available-for-sale securities	(284)	(584)	316
Defined benefit plan adjustments	4,597	4,008	(395)
Foreign currency translation gain (loss)	53,396	(3,699)	4,857
Other Comprehensive Income (Loss), net of tax	<u>57,709</u>	<u>(275)</u>	<u>4,778</u>
Less: Comprehensive Loss attributable to non-controlling interest, net of tax	<u>(918)</u>	<u>—</u>	<u>—</u>
Comprehensive Income (Loss) attributable to ADTRAN Holdings, Inc., net of tax	<u>\$ 49,739</u>	<u>\$ (8,910)</u>	<u>\$ 7,156</u>

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, 2022, 2021 and 2020

	Common Shares	Common Stock	Additional Paid-In Capital	Retained Earnings	Treasury Stock	Accumulated Other Comprehensive Income (Loss)	Non- controlling interest	Total Equity
Balance as of December 31, 2019	79,652	\$ 797	\$ 274,632	\$ 806,702	\$ (685,288)	\$ (16,417)	\$ —	\$ 380,426
Net income	—	—	—	2,378	—	—	—	2,378
Other comprehensive income, net of tax	—	—	—	—	—	4,778	—	4,778
Dividend payments (\$0.09 per share)	—	—	—	(17,334)	—	—	—	(17,334)
Dividends accrued on unvested restricted stock units	—	—	—	(180)	—	—	—	(180)
Deferred compensation adjustments, net of tax	—	—	—	—	(2,806)	—	—	(2,806)
PSUs, RSUs and restricted stock vested	—	—	—	(9,753)	8,601	—	—	(1,152)
Stock-based compensation expense	—	—	6,834	—	—	—	—	6,834
Balance as of December 31, 2020	79,652	797	281,466	781,813	(679,493)	(11,639)	—	372,944
Net loss	—	—	—	(8,635)	—	—	—	(8,635)
Other comprehensive loss, net of tax	—	—	—	—	—	(275)	—	(275)
Dividend payments (\$0.09 per share)	—	—	—	(17,529)	—	—	—	(17,529)
Non-cash dividend payments (\$0.09 per share)	—	—	—	(5)	5	—	—	—
Dividends accrued on unvested restricted stock units	—	—	—	(320)	—	—	—	(320)
Deferred compensation adjustments, net of tax	—	—	—	—	(1,248)	—	—	(1,248)
Stock options exercised	—	—	—	(1,842)	8,274	—	—	6,432
PSUs, RSUs and restricted stock vested	—	—	—	(12,662)	10,915	—	—	(1,747)
Stock-based compensation expense	—	—	7,480	—	—	—	—	7,480
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 ADVA	27,995	280	577,980	—	—	—	316,415	894,675
Retirement of treasury stock	(30,330)	(303)	—	(655,761)	656,064	—	—	—
Other comprehensive loss, net of tax	—	—	—	—	—	58,627	(918)	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
ADTRAN stock-based compensation expense	—	—	26,141	—	—	—	—	26,141
Reclassification of ADVA stock options	—	—	187	—	—	—	99	286
ADVA stock options exercised	—	—	472	—	—	—	254	726
ADVA stock-based compensation expense	—	—	2,108	—	—	—	73	2,181
Balance as of December 31, 2022	78,088	\$ 781	\$ 895,834	\$ 55,338	\$ (4,125)	\$ 46,713	\$ 309,072	\$ 1,303,613

See accompanying notes to consolidated financial statements.

ADTRAN Holdings, Inc.
Consolidated Statements of Cash Flows
(In thousands)
Years ended December 31, 2022, 2021 and 2020

	2022	2021	2020
Cash flows from operating activities:			
Net (Loss) Income	\$ (8,888)	\$ (8,635)	\$ 2,378
Adjustments to reconcile net (loss) income to net cash provided by (used in) operating activities:			
Depreciation and amortization	67,553	16,084	16,627
Asset impairments	17,433	—	65
Amortization of debt issuance cost	288	—	—
Amortization of net discount on available-for-sale investments	19	108	—
Loss (gain) on investments	9,826	(5,127)	(5,802)
Net loss on disposal of property, plant and equipment	152	4	—
Stock-based compensation expense	28,322	7,480	6,834
Deferred income taxes	(62,388)	(1,784)	(1,356)
Inventory reserves	(2,363)	(5,029)	(5,398)
Other, net	—	—	216
Change in operating assets and liabilities:			
Accounts receivable, net	788	(60,864)	(7,269)
Other receivables	(20,088)	9,752	(4,732)
Inventory	(73,237)	(10,638)	(20,184)
Prepaid expenses other current assets and other assets	(7,116)	(7,146)	(5,239)
Accounts payable	28,105	53,270	4,543
Accrued expenses and other liabilities	(20,483)	10,063	5,093
Income taxes payable	(2,151)	5,470	(2,294)
Net cash (used in) provided by operating activities	(44,228)	3,008	(16,518)
Cash flows from investing activities:			
Purchases of property, plant and equipment	(17,072)	(5,669)	(6,413)
Proceeds from sales and maturities of available-for-sale investments	51,661	50,466	105,100
Purchases of available-for-sale investments	(23,899)	(35,031)	(56,767)
Proceeds from beneficial interests in securitized accounts receivable	1,126	—	—
Proceeds from disposals of property, plant and equipment	12	—	2
Insurance proceeds received	—	500	—
Acquisition of note receivable	—	—	(523)
Acquisition of business, net of cash acquired	44,003	—	—
Net cash provided by investing activities	55,831	10,266	41,399
Cash flows from financing activities:			
Tax withholdings related to stock-based compensation settlements	(4,253)	(1,860)	(1,043)
Proceeds from stock option exercises	6,904	6,431	—
Dividend payments	(22,885)	(17,529)	(17,334)
Proceeds from draw on revolving credit agreements	141,887	10,000	—
Repayment of revolving credit agreements	(48,000)	(10,000)	—
Payment of debt issuance cost	(3,015)	—	—
Repayment of bonds payable	—	—	(24,600)
Repayment of notes payable	(17,702)	—	—
Net cash provided by (used in) financing activities	52,936	(12,958)	(42,977)
Net increase (decrease) in cash and cash equivalents	64,539	316	(18,096)
Effect of exchange rate changes	(12,713)	(3,677)	4,502
Cash, cash equivalents and restricted cash, beginning of year	56,818	60,179	73,773
Cash, cash equivalents and restricted cash, end of year	\$ 108,644	\$ 56,818	\$ 60,179
Supplemental disclosure of cash financing activities			
Cash paid for interest	\$ 1,728	\$ 13	\$ 24
Cash paid for income taxes	\$ 3,832	\$ 1,780	\$ 7,609
Cash used in operating activities related to operating leases	\$ 5,229	\$ 1,892	\$ 2,632
Supplemental disclosure of non-cash investing activities			
Right-of-use assets obtained in exchange for lease obligations	\$ 3,410	\$ 1,875	\$ 324
Purchases of property, plant and equipment included in accounts payable	\$ 1,165	\$ 638	\$ 108
ADVA common shares exchanged in acquisition	\$ 565,491	\$ —	\$ —
ADVA options assumed in acquisition	\$ 12,769	\$ —	\$ —
Non-controlling interest related to ADVA	\$ 316,415	\$ —	\$ —

See accompanying notes to consolidated financial statements.

Notes to Consolidated Financial Statements

Note 1 – Nature of Business

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 Tier-1, -2 and -3 service providers, alternative service providers, such as utilities, municipalities and fiber overbuilders, cable/MSOs, SMBs and distributed enterprises. 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.

In 2022, following the business combination (the “Business Combination”) with ADVA Optical Networking SE (“ADVA”), which included the Merger, we became the sole owner of and successor to ADTRAN, Inc. and the majority shareholder of ADVA. ADTRAN, Inc. is a leading global provider of open, disaggregated networking and communications solutions that enable voice, data, video, and internet communications across any network infrastructure. Its award-winning end-to-end fiber broadband solutions portfolio spans from OLTs to in-home services and intelligent SaaS solutions. ADVA is a global provider of open networking solutions with over 25 years of experience in optical networking, carrier Ethernet access and network synchronization. ADVA has led the industry for over two decades with open and secure networking solutions that carefully balance space, power and cost. Together, we serve customers in a broad range of industries in over 100 countries.

Principles of Consolidation

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.

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 revenues 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. 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 the SARS-CoV-2 coronavirus/COVID-19 global pandemic (or variants of the SARS-CoV-2 coronavirus), supply chain constraints, inflationary pressures, the energy crisis, currency fluctuations and political tensions as of December 31, 2022 and through the date of this report. 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. Future conditions related to the magnitude and duration of the COVID-19 pandemic, as well as other factors, including supply chain constraints and inflationary pressures could result in further impacts to the Company's consolidated financial statements in future reporting periods.

Correction of Immaterial Misstatements

During the first quarter of 2020, it was determined that certain investments held in the Company’s stock for a deferred compensation plan accounted for as a Rabbi trust were incorrectly classified as long-term investments with the fair value of such investments incorrectly marked to market at each period end rather than classified as treasury stock held at historical cost. This plan has been in existence since 2011. The Company corrected this misstatement as an out-of-period adjustment in the three months ended March 31, 2020 and the twelve months ended December 31, 2020, by remeasuring the investment assets to their historical cost basis through the recording of a net investment gain of \$1.5 million in the Consolidated Statement of (Loss) Income and then correcting the classification by decreasing the long-term investment balance at its remeasured cost basis of \$2.8 million to treasury stock in the Consolidated 2020

Balance Sheet. Management has determined that this misstatement was not material to any of its previously issued financial statements and that correction of the misstatement was not material to the 2020 annual financial results on either a quantitative or qualitative basis.

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, 2022, \$100.1 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 12.

The estimated fair value of our notes payable, approximates the carrying value and is classified as Level II under the fair value hierarchy. The carrying value of our notes payable is included in Note 14.

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 deferred compensation plan assets, corporate bonds, municipal fixed-rate bonds, asset-backed bonds, mortgage/agency-backed bonds, U.S. and foreign government bonds, 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 (loss) gain. Realized gains and losses on sales of debt securities are computed under the specific identification method and are included in other income (expense). See Note 6 for additional information.

For financing receivables, the Company does not measure the allowance for credit losses for accrued interest receivables, as the uncollectable accrued interest receivable is written off by reversing any previously recorded interest income in a timely manner (as soon as these amounts are determined to be uncollectable).

Accounts Receivable

We record 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, 2022, single customers comprising more than 10% of our total accounts receivable balance included three customers, which accounted for 33.1% of our total accounts receivable. As of December 31, 2022, these three customers individually accounted for 11.4%, 11.1% and 10.6%, respectively, of our total accounts receivable. As of December 31, 2021, single customers comprising more than 10% of our total accounts receivable balance included three customers, which accounted for 59.9% of our total accounts receivable. As of December 31, 2021, these three customers individually accounted for 35.8%, 12.1% and 12.0%, respectively, of our total accounts receivable.

We regularly review 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

The Company has entered into a factoring agreement to sell certain receivables to an unrelated third-party financial institution on a non-recourse basis. These transactions are accounted for in accordance with Accounting Standards Codification ("ASC") Topic 860, *Transfers and Servicing*, and result in a reduction in accounts receivable because the agreements transfer 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 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 financial institution retains from the sale price a default reserve, up to a required balance, which are held by the financial institution in a reserve account and pledged to the Company. The financial institution 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.

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 7 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 five 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 8 for additional information.

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 11 for additional information.

Impairment of Long-Lived Assets and Intangibles

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. As a result the Company recognized impairment charges of \$17.4 million during the year ended December 31, 2022 related to capitalized implementation costs for a cloud computing arrangement. The impairment charges were determined based on actual costs incurred. There were no impairment losses for long-lived assets during the years ended December 31, 2021 and 2020, or for intangible assets recognized during the years ended December 31, 2022, 2021 or 2020.

Goodwill

Goodwill represents the excess purchase price over the fair value of net assets acquired. The carrying value of goodwill is tested for impairment in the fourth quarter of each year or more frequently if events or circumstances indicate it may be impaired. The quantitative goodwill impairment test is performed at the level of the reporting unit. The identification of our reporting units begins at the operating segment level and considers whether components one level below the operating segment levels should be identified as reporting units for purpose of testing goodwill for impairment. For goodwill impairment testing purposes, the Company determined the Company's reporting units are generally the same as its operating segments, which are identified in Note 18 to the Consolidated Financial Statements.

Our general policy is to qualitatively assess the carrying value of goodwill each reporting period for events or changes in circumstances that would more likely than not reduce the fair value of the reporting unit below its carrying amount. Related to the Business Combination with ADVA the Company recognized \$350.5 million of goodwill upon the merger on July 15, 2022. Therefore, we decided to proceed directly to the quantitative test of goodwill and forego the qualitative assessment. We estimate the fair value of our reporting units based on an income approach, whereby we calculate the fair value of a reporting unit based on the present value of estimated future cash flows. A discounted cash flow analysis requires us to make various judgmental assumptions about future sales, operating margins, growth rates and discount rates, which are based on our budgets, business plans, economic projections, anticipated future cash flows and market participants. We also estimate the fair value of our reporting units based on a peer group analysis, whereby companies in the telecommunications industry or with a comparable product and market structure are used to calculate a fair enterprise value using revenue, EBITDA and debt multiples of trading value. Based on our analysis, management concluded that there was no impairment of goodwill as of December 31, 2022. No impairment charges on goodwill were recognized during the years ended December 31, 2021 and 2020.

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 \$6.2 million and \$21.0 million as of December 31, 2022 and 2021, 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. As a result the Company recognized impairment charges of \$16.9 million during the year ended December 31, 2022 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, 2021 and 2020, no impairment charges were recognized. We depreciate capitalized implementation costs on a straight-line basis over ten years. Amortization expense was \$3.9 million and \$1.0 million for the years ended December 31, 2022 and 2021, respectively, which is recorded almost entirely in selling, general and administrative expenses in the Consolidated Statements of (Loss) Income. No amortization expense was recognized for the year ended December 31, 2020.

Liability for Warranty

Our products generally include warranties of 90 days to five years for product defects. We accrue for warranty returns at the time of product shipment based on our historical return rate and estimate of the cost to repair or replace the defective products. We engage in extensive product quality programs and processes, including actively monitoring and evaluating the quality of our component suppliers. The increasing complexity of our products will cause warranty incidences, when they arise, to be more costly. Our estimates regarding future warranty obligations may change due to product failure rates, material usage and other rework costs incurred in correcting a product failure. In addition, from time to time, specific warranty accruals may be recorded if unforeseen problems arise. Should our actual experience relative to these factors be worse than our estimates, we will be required to record additional warranty expense. Our liability for warranty returns totaled \$7.2 million and \$5.4 million as of December 31, 2022 and 2021, respectively.

Pension Benefit Plan Obligations

We maintain a defined benefit pension plan 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. Our net pension liability totaled \$10.6 million and \$11.4 million as of December 31, 2022 and 2021, respectively.

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, with renewal terms of up to five years. 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

We have 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, 2022, 2021 and 2020 was approximately \$28.3 million, \$7.5 million, and \$6.8 million, respectively. See Note 5 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 \$173.8 million, \$108.7 million and \$113.3 million for the years ended December 31, 2022, 2021 and 2020, respectively.

ADVA 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 year ended December 31, 2022, the Company recognized \$1.1 million 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.

We establish reserves to remove some or all of the tax benefit of any of our tax positions at the time we determine that the positions become uncertain. We adjust these reserves, including any impact on the related interest and penalties, as facts and circumstances change.

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 (expense). Our primary exposures to foreign currency exchange rate movements are with our German subsidiary, whose functional currency is the Euro and our Australian subsidiary, whose functional currency is the Australian dollar. Adjustments resulting from translating financial statements of international subsidiaries are recorded as a component of accumulated other comprehensive (loss) 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. Review of contracts with customers, for both direct customers and distributors, are performed and assessment made regarding principal versus agent considerations to determine primary responsibility for delivery of performance obligation, presumed inventory risk, and discretion in establishing pricing, when applicable. 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 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. Costs of obtaining a contract, if material, 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 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, are recorded in current and non-current unearned revenue.

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 Sheet. The contract asset is transferred to accounts receivable when the completed performance obligation is invoiced to the customer.

See Notes 4 and 18 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 \$1.5 million and \$0.7 million as of December 31, 2022 and 2021, respectively. Non-current deferred costs are included in other non-current assets on the accompanying Consolidated Balance Sheets and less than \$0.1 million as of December 31, 2022 and \$0.1 million as of December 31, 2021.

(Loss) Earnings per Share

(Loss) earnings per common share and (loss) earnings 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 22 for additional information.

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) Income 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.

Non-Controlling Interest

Non-controlling interest represents the equity interest in ADVA held by holders other than the Company. On July 15, 2022, upon the close of the Business Combination, the ADVA stockholders' equity ownership percentage in ADVA was approximately 36%. The Company has consolidated the financial position and results of operations of ADVA and reflected the proportionate interest held by the ADVA stockholders as non-controlling interest in the accompanying condensed consolidated balance sheet. As of December 31, 2022, the ADVA stockholders' equity ownership percentage in ADVA was approximately 34.7%.

Recent Accounting Pronouncements Not Yet Adopted

There are currently no recently issued accounting pronouncements not yet adopted which would have a material effect on the Condensed Consolidated Financial Statements.

Recently Adopted Accounting Pronouncements

In October 2021, the Financial Accounting Standards Board ("FASB") issued Accounting Standards Update ("ASU") 2021-08, Business Combinations (Topic 805) Accounting for Contract Assets and Contract Liabilities from Contracts with Customers, which would require an acquirer to recognize and measure acquired contract assets and contract liabilities in a manner consistent with how the acquiree recognized and measured them in its pre-acquisition financial statements in accordance with Topic 606, Revenue Recognition. The Company early adopted ASU 2021-08 on July 1, 2022 and the standard was applied retrospectively beginning with January 1, 2022.

Note 2 – Business Combination Agreement

ADVA Optical Networking SE

On August 30, 2021, ADTRAN and ADVA, entered into a Business Combination Agreement, pursuant to which both companies agreed to combine their respective businesses and each become subsidiaries of a new holding company, ADTRAN Holdings, Inc. (formerly known as Acorn HoldCo, Inc.) which was formed as a wholly-owned subsidiary of ADTRAN in order to consummate the transactions under the Business Combination Agreement. Under the terms of the Business Combination Agreement, on July 8, 2022, Acorn

MergeCo, Inc, a Delaware corporation and wholly-owned direct subsidiary of the Company, merged with and into ADTRAN Holdings, Inc. leaving ADTRAN Holdings, Inc. surviving the Business Combination as a wholly-owned direct subsidiary of the Company.

Additionally, pursuant to the Business Combination Agreement, on July 15, 2022, the Company made a public offer to exchange each issued and outstanding no-par value bearer share of ADVA for 0.8244 shares of Company Common Stock, par value \$0.01 per share of the Company. The Exchange Offer was settled on Exchange Offer Settlement Date, on which date the Company acquired 33,957,538 bearer shares of ADVA, or 65.43% of ADVA's outstanding bearer shares as of the Exchange Offer Settlement Date, in exchange for the issuance of an aggregate of 27,994,595 shares of Company Common Stock. Additionally, pursuant to the Business Combination Agreement, ADVA stock option holders were entitled to have their ADVA stock options assumed by ADTRAN Holdings, Inc. (applying the exchange ratio in the Business Combination Agreement), thereafter representing options to acquire stock of ADTRAN, Inc. The fair value of the ADVA stock options assumed by ADTRAN, Inc. was \$12.8 million, estimated using the Monte Carlo method.

ADTRAN, Inc. and ADVA became subsidiaries of ADTRAN Holdings, Inc. as a result of the Business Combination. ADTRAN was determined to be the accounting acquirer of ADVA based on ADTRAN shareholders' majority equity stake in the combined company, the composition of the board of directors and senior management of the combined company, among other factors. The Business Combination of ADVA has been accounted for using the acquisition method of accounting as per the provisions of Accounting Standards Codification 805, "Business Combinations" ("ASC 805"). The Business Combination Agreement used a fixed exchange ratio of Company Common Stock for ADVA shares of common stock, which resulted in a 36% equity stake for ADVA stockholders and 64% equity stake for ADTRAN stockholders in the post-closing combined company (calculated on a fully diluted basis and utilizing the tender of 65.43% of ADVA's current issued and outstanding share capital). Therefore, ADTRAN shareholders continue to hold a majority interest in the combined company after the Business Combination was completed. Additionally, the Board of Directors is comprised of six members from ADTRAN and three members from ADVA; the current ADTRAN chief executive officer acts as the chairman of the Board of Directors and the former ADVA chief executive officer as the vice chairman of the Board of Directors. Additionally, the current ADTRAN chief executive officer and ADTRAN chief financial officer hold these positions within the combined company. Based upon these and other considerations as outlined in ASC 805, ADTRAN represents the accounting acquirer.

The following table summarizes the purchase price for the ADVA business combination:

<i>(In thousands, except shares, share price and exchange ratio)</i>	Purchase Price
ADVA shares exchanged	33,957,538
Exchange ratio	0.8244
ADTRAN Holdings, Inc. shares issued	27,994,595
ADTRAN Holdings, Inc. share price on July 15, 2022	\$ 20.20
Purchase price paid for ADVA shares	\$ 565,491
Equity compensation (1)	\$ 12,769
Total purchase price	\$ 578,260

(1) Represents the portion of replacement share-based payment awards that relates to pre-combination vesting.

Assets acquired and liabilities assumed were recognized at their respective fair values as of July 15, 2022. In determining the fair value, the Company utilized various methods of the income, cost and market approaches depending on the asset or liability being fair valued. The estimation of fair value required significant judgment related to future net cash flows reflecting the risk inherent in each cash flow stream, competitive trends, market comparables and other factors. Inputs were generally determined by taking into account historical data, current and anticipated market conditions, and growth rates.

Developed technology and customer relationships were valued using the multi-period excess earnings method. Backlog was valued using the distributor method. Significant assumptions used in the discounted cash flow analysis for (i) developed technology were the revenue growth rates, long-term revenue growth rate, discount rate, and earnings before interest, taxes, depreciation and amortization ("EBITDA") margins, obsolescence factors, income tax rate, tax depreciation, and economic depreciation; (ii) customer relationships were earnings before interest and taxes ("EBIT") margins, contributory asset charges, and customer attrition rate; and (iii) backlog were EBIT margins, adjusted EBIT margins, and contributory asset charges.

The allocation of the purchase price to the assets acquired and liabilities assumed was subject to adjustment within the measurement period (up to one year from the acquisition date). The measurement period adjustments since initial preliminary estimates resulted from changes to the fair value estimates of the acquired assets and assumed liabilities based on finalizing the valuations of inventory, prepaid expenses and other current assets, property plant and equipment, intangible assets, other non-current assets and deferred tax assets and liabilities. The cumulative effect of all measurement period adjustments resulted in a decrease to recognized goodwill of \$8.7 million.

The following table summarizes the preliminary purchase price allocation for each major class of assets acquired and liabilities assumed in the acquisition of ADVA (in thousands):

(In thousands)

Total purchase price	\$	578,260
Non-controlling interest	\$	316,415
Net Assets:		
Cash and cash equivalents	\$	44,003
Accounts receivable		114,659
Other receivables		1,457
Inventory		200,331
Prepaid expenses and other current assets		28,208
Property plant and equipment		55,480
Deferred tax assets		1,759
Identifiable intangible assets		403,780
Other non-current assets		31,074
Accounts payable		(98,587)
Current unearned revenue		(26,047)
Accrued expenses and other liabilities		(59,600)
Income tax payable, net		(4,898)
Current portion of notes payable		(25,254)
Tax liabilities		(1,400)
Non-current unearned revenue		(11,498)
Pension liability		(6,820)
Other non-current liabilities		(6,094)
Non-current portion of revolving credit agreements and notes payable		(15,250)
Non-current lease obligations		(20,046)
Deferred tax liabilities		(61,040)
Total net assets acquired	\$	544,217
Goodwill	\$	350,458

The allocation of the purchase price and fair value assessment of goodwill, deferred tax assets, and deferred tax liabilities continues to be preliminary. The acquisition accounting is subject to revision once the Company receives final information. It is possible that the final assessment of fair value may differ materially from the preliminary assessment. If the final assessment differs from this preliminary assessment, the measurement period adjustments will be recorded in the period in which they are determined as if they had been completed at the acquisition date.

The preliminary fair value of the assets acquired include accounts receivable of \$114.7 million and other receivables of \$1.5 million. The unpaid principal balance under these receivables is \$118.5 million and \$1.5 million, respectively. The difference between the fair value and the unpaid principal balance primarily represents amounts expected to be uncollectible.

The fair value of the identifiable intangible assets acquired as of the acquisition date:

(In thousands)	Estimated-average useful life (in years) ⁽¹⁾	Fair value	Income Statement Amortization Classification
Developed technology	8.5	\$ 291,925	Cost of revenue - Network Solutions
Backlog	1.4	52,165	Cost of revenue - Network Solutions and Services & Support
Customer relationships	10.5	32,704	Selling, general and administrative expenses
Trade name	2.8	26,986	Selling, general and administrative expenses
Total		\$ 403,780	

⁽¹⁾ Determination of the weighted average period of the individual categories of intangible assets was based on the nature of the applicable intangible asset and the expected future cash flows to be derived from the intangible asset. Amortization of intangible assets with definite lives is recognized over the period of time the assets are expected to contribute to future cash flows.

Goodwill represents the excess of the purchase price over the fair value of the net tangible and intangible assets acquired. Based on preliminary estimates, the ADVA acquisition resulted in the recognition of goodwill of \$350.5 million, which the Company believes is attributable to the value driven by the Company's expected growth of the business, synergies, and expanded market and product opportunities. Goodwill created as a result of the ADVA acquisition is not deductible for tax purposes.

After the Business Combination, the chief operating decision maker assessed and will continue to assess the Company's performance and allocate resources to its two segments (1) Network Solutions and (2) Services & Support. Based on preliminary estimates, the goodwill resulting from the Business Combination of \$272.8 million was allocated to the Network Solutions segment, and \$77.7 million was allocated to the Services & Support segment. See Note 18 of the Notes to Consolidated Financial Statements, included in this report for more information about the Company's segments.

As of the acquisition date, the fair value of the non-controlling interest was approximately \$316.4 million and determined using a market approach. As a portion of ADVA shares will remain trading after the Business Combination, the non-controlling interest was calculated using 17,941,496 ADVA shares held by non-controlling interest multiplied by the ADVA closing share price of €17.58 (\$17.64 using the July 15, 2022 EUR to USD conversion rate of \$1.00318) on July 15, 2022.

The Company included the financial results of ADVA in its consolidated financial statements since July 15, 2022, the acquisition date. The net revenue and net loss from the ADVA business since July 15, 2022, were \$365.9 million and \$12.9 million, respectively, which are included in the Company's Consolidated Statement of Loss. The net loss attributable to non-controlling interest from the ADVA business for the year ended December 31, 2022 was \$6.9 million.

As of December 31, 2022, the Company has incurred \$26.1 million of transaction costs related to the Business Combination, of which \$14.2 million and \$11.9 million were incurred during the years ended December 31, 2022 and 2021, respectively. These transaction costs are recorded in selling, general and administrative expense in the Consolidated Statements of Loss.

Supplemental Pro Forma Information (Unaudited)

The unaudited pro forma financial information in the table below summarizes the combined results of operations for ADTRAN and ADVA as though the Business Combination had occurred on January 1, 2021. The pro forma amounts have been adjusted for differences in basis of accounting which are determined before taking into effect the impacts of purchase accounting and Business Combination accounting impacts.

The following unaudited pro forma information is presented for illustrative purposes only. It is not necessarily indicative of the results of operations of future periods, the results of operations that actually would have been realized had the entities been a single company as of January 1, 2021, or the future operating results of the combined entities. The unaudited pro forma information does not give effect to the potential impact of current financial conditions, regulatory matters or any anticipated synergies, operating efficiencies or cost savings that may be associated with the acquisition. The unaudited pro forma information also does not include any integration costs that the Company may incur related to the acquisition as part of combining the operations of the companies.

<i>(In thousands)</i>	For the Years Ended December 31,	
	<u>2022</u>	<u>2021</u>
Revenue	\$ 1,410,296	\$ 1,210,201
Net loss attributable to ADTRAN Holdings, Inc.	\$ (46,204)	\$ (91,423)

Note 3 – Cash, Cash Equivalents and Restricted Cash

The following table provides a reconciliation of cash, cash equivalents and restricted cash reported within the Consolidated Balance Sheet that sum to the total of the same such amounts shown in the Consolidated Statement of Cash Flows:

<i>(In thousands)</i>	<u>December 31, 2022</u>	<u>December 31, 2021</u>
Cash and cash equivalents	\$ 108,644	\$ 56,603
Restricted cash	—	215
Cash, cash equivalents and restricted cash	\$ 108,644	\$ 56,818

Note 4 - 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 the Company's reportable segments, revenue is also reported for the following three categories – Subscriber Solutions, Access & Aggregation Solutions and Optical Networking Solutions.

Prior to the Business Combination with ADVA on July 15, 2022, ADTRAN reported revenue across the following three categories: (1) Access & Aggregation, (2) Subscriber Solutions & Experience and (3) Traditional & Other Products. Following the Business Combination with ADVA, we have recast these revenues such that ADTRAN's former Access & Aggregation revenue is combined with a portion of the applicable ADVA solutions to create Access & Aggregation Solutions, ADTRAN's former Subscriber Solutions & Experience revenue is combined with a portion of the applicable ADVA 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 is a new revenue category added to represent a meaningful portion of ADVA's portfolio.

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, 2022:

<i>(In thousands)</i>	<u>Network Solutions</u>	<u>Services & Support</u>	<u>Total</u>
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 following table disaggregates revenue by reportable segment and revenue category for the year ended December 31, 2021:

<i>(In thousands)</i>	<u>Network Solutions</u>	<u>Services & Support</u>	<u>Total</u>
Subscriber Solutions	\$ 189,825	\$ 16,385	\$ 206,210
Access & Aggregation Solutions	309,009	47,785	356,794
Optical Networking Solutions	—	—	—
Total	\$ 498,834	\$ 64,170	\$ 563,004

The following table disaggregates revenue by reportable segment and revenue category for the year ended December 31, 2020:

<i>(In thousands)</i>	<u>Network Solutions</u>	<u>Services & Support</u>	<u>Total</u>
Subscriber Solutions	\$ 163,349	\$ 15,315	\$ 178,664
Access & Aggregation Solutions	274,666	53,180	327,846
Optical Networking Solutions	—	—	—
Total	\$ 438,015	\$ 68,495	\$ 506,510

The aggregate amount of transaction price allocated to remaining performance obligations that have not been satisfied as of December 31, 2022 and December 31, 2021 related to contractual maintenance agreements, contractual SaaS and subscription services, and hardware contracts that exceed one year in duration amounted to \$277.2 million and \$101.1 million, respectively. As of December 31, 2022, approximately 66% is expected to be recognized over the next 12 months, and the remainder recognized thereafter. The majority of the Company's remaining performance obligations at December 31, 2022 are related to contracts or orders that have an original expected duration of one year or less, for which the Company is electing to utilize the practical expedient available within the guidance, 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:

<i>(In thousands)</i>	<u>December 31, 2022</u>	<u>December 31, 2021</u>
Accounts receivable	\$ 279,435	\$ 158,742
Contract assets ⁽¹⁾	\$ 1,852	\$ 464
Unearned revenue	\$ 41,193	\$ 17,737
Non-current unearned revenue	\$ 19,239	\$ 9,271

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

The Company is party to a receivables purchase agreement with a third party financial institution (the “Factor”). As of December 31, 2022, accounts receivable totaling \$14.9 million were sold, of which \$1.2 million was retained by the Factor in the reserve account. The balance in the reserve account is included in other assets on the Consolidated Balance Sheets. As of December 31, 2022, the Company has an allowance for doubtful accounts related to factored accounts receivable totaling less than \$0.1 million. The cost of receivables purchase agreement is included in interest expense in the Consolidated Statements of Loss and totaled \$0.3 million for the year ended December 31, 2022.

Of the outstanding unearned revenue balances as of December 31, 2021, \$14.0 million was recognized as revenue during the year ended December 31, 2022, respectively. Of the outstanding unearned revenue balances as of December 31, 2020, \$11.2 million was recognized as revenue during the year ended December 31, 2021.

Note 5 – Stock-Based Compensation

The following table summarizes stock-based compensation expense related to stock options, PSUs, RSUs and restricted stock for the years ended December 31, 2022, 2021 and 2020:

<i>(In thousands)</i>	<u>2022</u>	<u>2021</u>	<u>2020</u>
Stock-based compensation expense included in cost of revenue	\$ 2,876	\$ 543	\$ 426
Selling, general and administrative expenses	20,844	4,571	4,036
Research and development expenses	4,602	2,366	2,372
Stock-based compensation expense included in operating expenses	25,446	6,937	6,408
Total stock-based compensation expense	28,322	7,480	6,834
Tax benefit for expense associated with non-qualified stock options, PSUs, RSUs and restricted stock	(5,152)	(1,849)	(1,629)
Total stock-based compensation expense, net of tax	\$ 23,170	\$ 5,631	\$ 5,205

Stock Incentive Program Descriptions

2020 Stock Incentive Plans

At the annual meeting of stockholders held on May 13, 2020, the Company's stockholders approved, upon recommendation of the Board of Directors, the adoption of the ADTRAN, Inc. 2020 Employee Stock Incentive Plan (the “2020 Employee Plan”) as well as the ADTRAN, Inc. 2020 Directors Stock Plan (the “2020 Directors Plan”), which were assumed by the Company upon consummation of the Merger. No additional awards will be granted under the Company's previous stock incentive plans, the ADTRAN, Inc. 2015 Employee Stock Incentive Plan (the “2015 Employee Plan”) or the 2010 Directors Stock Plan (the “2010 Directors Plan”) subsequent to the stockholders' approval of these new stock plans. Outstanding awards granted under the 2015 Employee Plan and the 2010 Directors Plan will remain subject to the terms of such plans, and shares underlying awards granted under such plans that are cancelled or forfeited will be available for issuance under the 2020 Employee Plan or the 2020 Directors Plan, as applicable.

Under the 2020 Employee Plan, the Company is authorized to issue 2.8 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 2020 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 2020 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 2020 Employee Plan reduce the shares authorized for issuance under the 2020 Employee Plan by one share of common stock for each share underlying the award. Forfeitures, cancellations or expirations of awards granted under the 2015 Employee Plan increase the shares authorized for issuance under the 2020 Employee Plan, with forfeitures, cancellations or expirations of RSUs and restricted stock increasing the shares authorized for issuance by 2.5 shares of common stock for each share underlying the award. Forfeitures, cancellations or expirations of stock options from the 2015 Employee Plan increase the shares authorized for issuance under the 2020 Employee Plan by one share of common stock for each share underlying the award.

Under the 2020 Directors Plan, the Company is authorized to issue 0.4 million shares of common stock through stock options, restricted stock and RSUs to non-employee directors. Stock awards issued under the 2020 Directors Plan typically will become vested in full on the first anniversary of the grant date. Stock options issued under the 2020 Directors Plan will have a ten-year contractual term. Stock options, restricted stock and RSUs granted under the 2020 Directors Plan reduce the shares authorized for issuance under the 2020 Directors Plan by one share of common stock for each share underlying the award. Forfeitures, cancellations and expirations of awards granted under the 2010 Directors Stock Plan increase the shares authorized for issuance under the 2020 Directors Plan by one share of common stock for each share underlying the award.

Previous Stock Incentive Plans

In January 2015, the Board of Directors adopted the 2015 Employee Plan, which authorized 7.7 million shares of common stock for issuance to certain employees and officers through incentive stock options and non-qualified stock options, stock appreciation rights, PSUs, RSUs and restricted stock. The 2015 Employee Plan was adopted by stockholder approval at our annual meeting of stockholders held in May 2015. PSUs, RSUs and restricted stock granted under the 2015 Plan reduce the shares authorized for issuance under the 2015 Employee Plan by 2.5 shares of common stock for each share underlying the award. Options granted under the 2015 Employee Plan 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. Expiration dates of options outstanding as of December 31, 2022 under the 2015 Employee Plan range from 2025 to 2026.

In January 2006, the Board of Directors adopted the ADTRAN, Inc. 2006 Employee Stock Incentive Plan (the “2006 Plan”), which authorized 13.0 million shares of common stock for issuance to officers and certain employees through incentive stock options and non-qualified stock options, stock appreciation rights, RSUs and restricted stock. Options granted under the 2006 Plan 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 had a ten-year contractual term. The 2006 Plan was replaced in May 2015 by the 2015 Employee Plan. Expiration dates of options outstanding as of December 31, 2022 under the 2006 Plan range from 2022 to 2024.

In May 2010, the Company’s stockholders approved the 2010 Directors Plan, under which 0.5 million shares of common stock have been reserved for issuance. This plan replaced the 2005 Directors Stock Option Plan. Under the 2010 Directors Plan, the Company may issue stock options, restricted stock and RSUs to our non-employee directors. Stock awards issued under the 2010 Directors Plan become vested in full on the first anniversary of the grant date. Options issued under the 2010 Directors Plan had a ten-year contractual term. All remaining options under the 2010 Directors Plan expired in 2019.

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, 2021 and 2022 and the changes that occurred during 2022:

	Number of shares (In thousands)	Weighted Average Grant Date Fair Value
Unvested PSUs, RSUs and restricted stock outstanding, December 31, 2021	1,930	\$ 14.11
PSUs, RSUs and restricted stock granted	645	\$ 20.56
PSUs, RSUs and restricted stock vested	(1,440)	\$ 12.81
PSUs, RSUs and restricted stock forfeited	(49)	\$ 14.22
Unvested PSUs, RSUs and restricted stock outstanding, December 31, 2022	1,086	\$ 17.54

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

	2022		2021		2020	
Estimated fair value per share	\$	24.01	\$	26.07	\$	14.43
Expected volatility		45.77%		53.27%		51.88%
Risk-free interest rate		4.28%		0.85%		0.24%
Expected dividend yield		1.76%		1.63%		2.85%

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 shareholder return against all companies in the NASDAQ Telecommunications Index at the end of a three-year performance period. Depending on the relative total shareholder 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 each of the years ended December, 2022, 2021 and 2020, the Company granted 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 vest over one-year, two-year and three-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's 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. As of December 31, 2022, there was \$1.4 million of unrecognized compensation expense related to these awards which will be recognized over the weighted average remaining service period of 1.57 years.

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, 2022, total unrecognized compensation expense related to the non-vested portion of market-based PSUs, RSUs and restricted stock was approximately \$15.8 million, which is expected to be recognized over an average remaining recognition period of 2.25 years and will be adjusted for actual forfeitures as they occur.

As of December 31, 2022, 3.3 million shares were available for issuance under shareholder-approved equity plans in connection with the grant and exercise of stock options, PSU's, RSU's or restricted stock.

Stock Options - ADTRAN Holdings, Inc.

The following table is a summary of stock options outstanding as of December 31, 2022 and 2021 and the changes that occurred during 2022:

	Number of Options (In thousands)	Weighted Average Exercise Price (Per share)	Weighted Avg. Remaining Contractual Life in Years	Aggregate Intrinsic Value (In thousands)
Stock options outstanding, December 31, 2021	1,721	\$ 19.37	2.39	\$ 6,669
ADVA stock options replaced by ADTRAN Holdings stock options ⁽¹⁾	2,094	\$ 11.12		
Stock options exercised	(519)	\$ 15.70		
Stock options forfeited	(10)	\$ 10.28		
Stock options expired	(138)	\$ 22.73		
Stock options outstanding, December 31, 2022	3,148	\$ 14.37	3.42	\$ 16,251
Stock options exercisable, December 31, 2022	1,711	\$ 15.95	1.95	\$ 7,104

⁽¹⁾ Each ADVA stock option surrendered was exchanged for 0.8244 ADTRAN Holdings stock options.

As of December 31, 2022, there was \$8.3 million of unrecognized compensation expense related to stock options which will be recognized over the remaining weighted-average period of 2.4 years.

Pursuant to the Business Combination, which closed on July 15, 2022, ADVA stock option holders were entitled to have their ADVA 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 are subject to assumed ADVA 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.

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 ADTRAN'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, 2022. The amount of aggregate intrinsic value was \$16.3 million as of December 31, 2022 and will change based on the fair market value of ADTRAN's stock. The total pre-tax intrinsic value of options exercised during the year ended December 31, 2022 was \$4.0 million.

The following table further describes our stock options outstanding as of December 31, 2022:

Range of Exercise Prices	Options Outstanding			Options Exercisable	
	Options Outstanding at December 31, 2022 (In thousands)	Weighted Avg. Remaining Contractual Life in Years	Weighted Average Exercise Price	Options Exercisable at December 31, 2022 (In thousands)	Weighted Average Exercise Price
\$6.06 – \$8.67	755	3.21	\$ 7.37	320	\$ 6.47
\$8.68 – \$13.74	833	4.65	\$ 11.45	207	\$ 9.63
\$13.75 – \$17.15	427	3.27	\$ 15.33	368	\$ 15.33
\$17.16 – \$21.36	679	3.92	\$ 19.02	369	\$ 18.97
\$21.37 – \$23.64	454	0.83	\$ 23.64	447	\$ 23.64
	3,148			1,711	

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 year ended December 31, 2022 was \$5.81 per share with the following weighted-average assumptions:

	2022
Expected volatility	45.00%
Risk-free interest rate	3.00%
Expected dividend yield	1.77%
Expected life (in years)	2.4

There were no stock options granted in during the years ended December 31, 2021 and 2020.

Stock Options - ADVA Optical Networking SE

The following table summarizes ADVA Optical Networking SE stock options outstanding as of July 15, 2022 (the Business Combination closing date) and December 31, 2022 and the changes that occurred between July 15, 2022 and December 31, 2022:

	Number of Options (In thousands)	Weighted Average Exercise Price (Per share)	Weighted Avg. Remaining Contractual Life in Years	Aggregate Intrinsic Value (In thousands)
Stock options outstanding, July 15, 2022	2,745	\$ 9.09	4.60	\$ 27,205
Stock options exercised	(102)	\$ 8.02		
ADVA stock options replaced by ADTRAN Holdings stock options ⁽¹⁾	(2,550)	\$ 9.80		
Stock options forfeited	(12)	\$ 9.57		
Stock options outstanding, December 31, 2022	81	\$ 8.58	4.00	\$ 1,222
Stock options exercisable, December 31, 2022	27	\$ 7.37	2.39	\$ 432

⁽¹⁾ Each ADVA stock option surrendered was exchanged for 0.8244 ADTRAN Holdings stock options.

As of December 31, 2022, there was \$0.1 million of unrecognized compensation expense related to stock options which will be recognized over the remaining weighted-average period of 1.17 years.

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 ADVA'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, 2022. The amount of aggregate intrinsic value was \$1.2 million as of December 31, 2022 and will change based on the fair market value of ADVA's stock. The total pre-tax intrinsic value of options exercised during the period July 15, 2022 through December 31, 2022 was \$1.6 million.

The following table further describes ADVA's stock options outstanding as of December 31, 2022:

Range of Exercise Prices	Options Outstanding			Options Exercisable	
	Options Outstanding at December 31, 2022 (In thousands)	Weighted Avg. Remaining Contractual Life in Years	Weighted Average Exercise Price	Options Exercisable at December 31, 2022 (In thousands)	Weighted Average Exercise Price
€4.98 - €7.05	35	3.52	\$ 6.97	9	\$ 5.34
€7.06 - €8.70	18	2.60	\$ 8.41	18	\$ 8.41
€8.71 - €15.68	28	5.48	\$ 10.73	—	—
	81			27	

Note 6 – Investments

Debt Securities and Other Investments

As of December 31, 2022, the following debt securities and other investments were included in short-term investments and long-term investments on the Consolidated Balance Sheet and recorded at fair value:

(In thousands)	Amortized Cost	Gross Unrealized		Fair Value
		Gains	Losses	
Corporate bonds	\$ 2,538	\$ 5	\$ (81)	\$ 2,462
Municipal fixed-rate bonds	185		(5)	180
Asset-backed bonds	818	1	(24)	795
Mortgage/Agency-backed bonds	1,853		(105)	1,748
U.S. government bonds	3,870	3	(188)	3,685
Foreign government bonds	407		(24)	383
Available-for-sale debt securities held at fair value	\$ 9,671	\$ 9	\$ (427)	\$ 9,253

As of December 31, 2021, the following debt securities and other investments were included in short-term investments and long-term investments on the Consolidated Balance Sheet and recorded at fair value:

<i>(In thousands)</i>	Amortized Cost	Gross Unrealized		Fair Value
		Gains	Losses	
Corporate bonds	\$ 10,776	\$ 6	\$ (35)	\$ 10,747
Municipal fixed-rate bonds	1,553	2	(4)	1,551
Asset-backed bonds	322	3	(3)	322
Mortgage/Agency-backed bonds	4,754	15	(33)	4,736
U.S. government bonds	12,251	12	(92)	12,171
Foreign government bonds	543	—	(4)	539
Available-for-sale debt securities held at fair value	\$ 30,199	\$ 38	\$ (171)	\$ 30,066

As of December 31, 2022, our debt securities had the following contractual maturities:

<i>(In thousands)</i>	Corporate bonds	Municipal fixed-rate bonds	Asset-backed bonds	Mortgage / Agency-backed bonds	U.S. government bonds	Foreign government bonds
Less than one year	\$ —	\$ 180	\$ —	\$ —	\$ 160	\$ —
One to two years	1,450	—	96	162	2,787	276
Two to three years	1,012	—	186	598	617	107
Three to five years	—	—	335	253	121	—
Five to ten years	—	—	—	317	—	—
More than ten years	—	—	178	418	—	—
Total	\$ 2,462	\$ 180	\$ 795	\$ 1,748	\$ 3,685	\$ 383

Actual maturities may differ from contractual maturities as some borrowers have the right to call or prepay obligations with or without call or prepayment penalties.

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, 2022, 2021 and 2020:

<i>(In thousands)</i>	For the year ended December 31,		
	2022	2021	2020
Gross realized gains on debt securities	\$ 17	\$ 241	\$ 459
Gross realized losses on debt securities	(1,211)	(159)	(58)
Total (loss) gain recognized, net	\$ (1,194)	\$ 82	\$ 401

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, 2022, 2021 and 2020.

The following table presents the breakdown of debt securities and other investments with unrealized losses as of December 31, 2022:

<i>(In thousands)</i>	Continuous Unrealized Loss Position for Less than 12 Months		Continuous Unrealized Loss Position for 12 Months or Greater		Total	
	Fair Value	Unrealized Losses	Fair Value	Unrealized Losses	Fair Value	Unrealized Losses
	Corporate bonds	\$ 1,367	\$ (39)	\$ 583	\$ (42)	\$ 1,950
Municipal fixed-rate bonds	—	—	178	(5)	180	(5)
Asset-backed bonds	524	(14)	117	(10)	641	(24)
Mortgage/Agency-backed bonds	825	(23)	844	(82)	1,668	(105)
U.S. government bonds	2,215	(106)	1,063	(82)	3,278	(188)
Foreign government bonds	—	—	383	(24)	383	(24)
Total	\$ 4,931	\$ (182)	\$ 3,168	\$ (245)	\$ 8,100	\$ (427)

The following table presents the breakdown of debt securities and other investments with unrealized losses as of December 31, 2021:

<i>(In thousands)</i>	Continuous Unrealized Loss Position for Less than 12 Months		Continuous Unrealized Loss Position for 12 Months or Greater		Total	
	Fair Value	Unrealized Losses	Fair Value	Unrealized Losses	Fair Value	Unrealized Losses
Corporate bonds	\$ 6,795	\$ (35)	\$ —	\$ —	\$ 6,795	\$ (35)
Municipal fixed-rate bonds	1,129	(4)	—	—	1,129	(4)
Asset-backed bonds	198	(3)	—	—	198	(3)
Mortgage/Agency-backed bonds	3,006	(33)	—	—	3,006	(33)
U.S. government bonds	10,552	(92)	—	—	10,552	(92)
Foreign government bonds	294	(4)	—	—	294	(4)
Total	\$ 21,974	\$ (171)	\$ —	\$ —	\$ 21,974	\$ (171)

The increase in unrealized losses during 2022 resulted from changes in market positions associated with our fixed income portfolio.

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, 2022, 2021 and 2020 were as follows:

<i>(In thousands)</i>	For the year ended December 31,		
	2022	2021	2019
Realized losses on equity securities sold	\$ (1,675)	\$ (992)	\$ (2,382)
Unrealized (losses) gains on equity securities held	(8,470)	2,671	6,831
Total (loss) gain recognized, net	\$ (10,145)	\$ 1,679	\$ 4,449

As of December 31, 2022 and 2021, 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, 2022 Using			
	Fair Value	Quoted Prices in Active Market for Identical Assets (Level 1)	Significant Other Observable Inputs (Level 2)	Significant Unobservable Inputs (Level 3)
<i>(In thousands)</i>				
Cash equivalents				
Money market funds	\$ 228	\$ 228		\$ —
Available-for-sale debt securities				
Corporate bonds	2,462		2,462	—
Municipal fixed-rate bonds	180		180	—
Asset-backed bonds	795		795	—
Mortgage/Agency-backed bonds	1,748		1,748	—
U.S. government bonds	3,685	3,685		—
Foreign government bonds	383		383	—
Marketable equity securities				
Marketable equity securities - various industries	804	804		—
Deferred compensation plan assets	22,942	22,942		—
Total	\$ 33,227	\$ 27,659	\$ 5,568	\$ —

	Fair Value Measurements as of December 31, 2021 Using			
	Fair Value	Quoted Prices in Active Market for Identical Assets (Level 1)	Significant Other Observable Inputs (Level 2)	Significant Unobservable Inputs (Level 3)
<i>(In thousands)</i>				
Cash equivalents				
Money market funds	\$ 652	\$ 652	\$ —	\$ —
Available-for-sale debt securities				
Corporate bonds	10,747	—	10,747	—
Municipal fixed-rate bonds	1,551	—	1,551	—
Asset-backed bonds	322	—	322	—
Mortgage/Agency-backed bonds	4,736	—	4,736	—
U.S. government bonds	12,171	12,171	—	—
Foreign government bonds	539	—	539	—
Marketable equity securities				
Marketable equity securities - various industries	12,606	12,606	—	—
Deferred compensation plan assets	26,935	26,935	—	—
Total	\$ 70,259	\$ 52,364	\$ 17,895	\$ —

The fair value of our Level 2 securities is calculated using a weighted average market price for each security. 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.

The fair value of Level 3 securities is calculated based on unobservable inputs. Quantitative information with respect to unobservable inputs consisted of third-party valuations performed in accordance with ASC 820 – *Fair Value Measurement*. Inputs used in preparing the third-party valuation included the following assumptions, among others: estimated discount rates and fair market yields.

Our variable rate demand notes have a structure that implies a standard expected market price. The frequent interest rate resets make it reasonable to expect the price to stay at par. These securities are priced at the expected market price.

Note 7 – Inventory

As of December 31, 2022 and 2021, inventory, net was comprised of the following:

<i>(In thousands)</i>	<u>2022</u>	<u>2021</u>
Raw materials	\$ 186,346	\$ 74,709
Work in process	12,087	2,143
Finished goods	229,098	63,039
Total Inventory, net	<u>\$ 427,531</u>	<u>\$ 139,891</u>

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. As of December 31, 2022 and 2021, our inventory reserve was \$57.0 million and \$44.6 million, respectively.

Note 8 – Property, Plant and Equipment

As of December 31, 2022 and 2021, property, plant and equipment, net was comprised of the following:

<i>(In thousands)</i>	<u>2022</u>	<u>2021</u>
Engineering and other equipment	\$ 170,785	\$ 134,771
Building	82,932	68,157
Computer hardware and software	80,455	72,274
Building and land improvements	47,861	35,578
Furniture and fixtures	22,403	19,917
Land	5,364	4,575
Total Property, Plant and Equipment	<u>409,800</u>	<u>335,272</u>
Less: accumulated depreciation	(299,101)	(279,506)
Total Property, Plant and Equipment, net	<u>\$ 110,699</u>	<u>\$ 55,766</u>

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. 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 year ended December 31, 2021, no impairment charges were recognized. During the year ended December 31, 2020, the Company recognized impairment charges of \$0.1 million.

Depreciation expense was \$20.9 million, \$12.0 million and \$12.2 million for the years ended December 31, 2022, 2021 and 2020, respectively, which is recorded in cost of revenue, selling, general and administrative expenses and research and development expenses in the Consolidated Statements of (Loss) Income.

Note 9 – 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, 2022, our operating leases had remaining lease terms of one month to 119 months, some of which included options to extend the leases for up to five years, and some of which included options to terminate the leases within three months. Supplemental balance sheet information related to operating leases is as follows:

<i>(In thousands)</i>	Classification	December 31, 2022	December 31, 2021
Assets			
Operating lease assets	Other non-current assets	\$ 30,340	\$ 4,922
Total lease asset		\$ 30,340	\$ 4,922
Liabilities			
Current operating lease liability	Accrued expenses and other liabilities	\$ 7,596	\$ 1,730
Non-current operating lease liability	Other non-current liabilities	22,807	3,269
Total lease liability		\$ 30,403	\$ 4,999

Lease expense related to short-term leases was less than \$0.1 million for the twelve months ended December 31, 2022, 2021 and 2020, and is included in cost of revenue, selling, general and administrative expenses and research and development expenses in the Consolidated Statements of (Loss) Income. 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 \$0.6 million, \$0.5 million and \$0.7 million for the twelve months ended December 31, 2022, 2021 and 2020, respectively.

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

<i>(In thousands)</i>	For the Year Ended December 31,		
	2022	2021	2020
Cost of revenue	\$ 110	\$ 51	\$ 113
Research and development expenses	942	1,071	1,121
Selling, general and administrative expenses	3,961	883	1,311
Total operating lease expense	\$ 5,013	\$ 2,005	\$ 2,545

As of December 31, 2022, operating lease liabilities included on the Consolidated Balance Sheet by future maturity were as follows:

<i>(In thousands)</i>	Amount
2023	8,992
2024	8,076
2025	6,740
2026	3,825
2027	2,865
Thereafter	4,478
Total lease payments	34,976
Less: Interest	(4,573)
Present value of lease liabilities	\$ 30,403

Future operating lease payments include \$4.4 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:

Weighted average remaining lease term (years)	As of December 31,	
	2022	2021
Operating leases with USD functional currency	7.9	1.8
Operating leases with Euro functional currency	4.2	3.5
Weighted average discount rate		
Operating leases with USD functional currency	3.77%	3.49%
Operating leases with Euro functional currency	3.70%	1.22%

Note 10 – Goodwill

The changes in the carrying amount of goodwill for the year ended December 31, 2022 are as follows:

<i>(In thousands)</i>	<u>Network Solutions</u>	<u>Services & Support</u>	<u>Total</u>
As of December 31, 2021	\$ 6,570	\$ 398	\$ 6,968
Goodwill from Business Combination with ADVA	272,797	77,661	350,458
Foreign currency translation adjustments	18,913	5,385	24,298
As of December 31, 2022	\$ 298,280	\$ 83,444	\$ 381,724

Our general policy is to qualitatively assess the carrying value of goodwill each reporting period for events or changes in circumstances that would more likely than not reduce the fair value of the reporting unit below its carrying amount. Related to the Business Combination with ADVA the Company recognized \$350.5 million of goodwill upon the merger on July 15, 2022. Therefore, we decided to proceed directly to the quantitative test of goodwill and forego the qualitative assessment. We estimate the fair value of our reporting units based on an income approach, whereby we calculate the fair value of a reporting unit based on the present value of estimated future cash flows. A discounted cash flow analysis requires us to make various judgmental assumptions about future sales, operating margins, growth rates and discount rates, which are based on our budgets, business plans, economic projections, anticipated future cash flows and market participants. We also estimate the fair value of our reporting units based on a peer group analysis, whereby companies in the telecommunications industry or with a comparable product and market structure are used to calculate a fair enterprise value using revenue, EBITDA and debt multiples of trading value. Based on our analysis, management concluded that there was no impairment of goodwill as of December 31, 2022. No impairment charges on goodwill were recognized during the years ended December 31, 2021 and 2020.

Note 11 – Intangible Assets

Intangible assets as of December 31, 2022 and 2021, consisted of the following:

<i>(In thousands)</i>	Weighted Average Useful Life (in years)	<u>2022</u>			<u>2021</u>		
		Gross Value	Accumulated Amortization	Net Value	Gross Value	Accumulated Amortization	Net Value
Customer relationships	10.9	\$ 55,517	\$ (12,772)	\$ 42,745	\$ 20,796	\$ (9,906)	\$ 10,890
Backlog	1.6	55,782	(22,725)	33,057	—	—	—
Developed technology	8.5	320,364	(21,856)	298,508	8,200	(3,683)	4,517
Licensed technology	9.0	5,900	(3,141)	2,759	5,900	(2,486)	3,414
Licensing agreements	8.5	560	(298)	262	560	(225)	335
Patents	7.3	500	(431)	69	500	(363)	137
Trade names	3.0	29,066	(5,255)	23,811	210	(210)	—
Total		\$ 467,689	\$ (66,478)	\$ 401,211	\$ 36,166	\$ (16,873)	\$ 19,293

As part of the purchase price allocation related to the Business Combination with ADVA, the Company recognized \$403.8 million of intangible assets on July 15, 2022. Intangible assets are reviewed for impairment whenever events and circumstances indicate impairment may have occurred. The Company assessed impairment triggers related to intangible assets during each financial period in 2022, 2021 and 2020. As a result, no quantitative impairment test of long-lived assets was performed as of December 31, 2022, 2021 and 2020, and no impairment losses of intangible assets were recorded during the years ended December 31, 2022, 2021 and 2020.

Amortization expense was \$47.3 million, \$4.1 million and \$4.4 million for the years ended December 31, 2022, 2021 and 2020, respectively, and was included in cost of revenue, selling, general and administrative expenses and research and development expenses in the Consolidated Statements of (Loss) Income.

As of December 31, 2022, estimated future amortization expense of intangible assets was as follows:

<i>(In thousands)</i>	<u>Amount</u>
2023	\$ 82,080
2024	57,545
2025	46,095
2026	42,851
2027	41,491
Thereafter	131,149
Total	\$ 401,211

Note 12 - 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 (expense) in the Consolidated Statements of Income. 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, 2022, the Company had 47 forward rate contracts outstanding.

Foreign Currency Hedging Agreement

On November 3, 2022, the Company entered into a Euro/U.S. dollar cross-currency swap arrangement (the "Swap") with Wells Fargo Bank, N.A. (the "Hedge Counterparty"). The Swap, which is 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, enable the Company to convert a portion of its Euro denominated payment obligations under the proposed DPLTA into U.S. Dollars. Under the Swap, the Company will exchange an aggregate notional amount of \$160.0 million U.S. dollars for Euros at a daily fixed forward rate ranging from \$0.98286 to \$1.03290. The aggregate amount of \$160.0 million will be divided into eight quarterly tranches of \$20.0 million. The Company, at its sole discretion, may exchange all or part of each tranche on any given day within the applicable quarter; provided, however, that it must exchange the full tranche by the end of such quarter. The Swap may be accelerated or terminated early for a number of reasons, including but not limited to (i) non-payment by the Company or the Hedge Counterparty, (ii) breach of representation or warranty or covenant by either party or (iii) insolvency or bankruptcy of either party.

The fair values of the Company's derivative instruments recorded in the Condensed Consolidated Balance Sheet as of December 31, 2022 were as follows:

<i>(In thousands)</i>	Balance Sheet Location	December 31, 2022	December 31, 2021
Derivatives Not Designated as Hedging Instruments (Level 2):			
Foreign exchange contracts – derivative assets	Other receivables	\$ 11,992	\$ —
Foreign exchange contracts – derivative liabilities	Accounts payable	\$ (633)	\$ —
Total derivatives		\$ 11,359	\$ —

The change in the fair values of the Company's derivative instruments recorded in the Condensed Consolidated Statements of Income during the years ended December 31, 2022, 2021 and 2020 were as follows:

<i>(In thousands)</i>	Income Statement Location	2022	2021	2020
Derivatives Not Designated as Hedging Instruments:				
Foreign exchange contracts	Other income (expense), net	\$ 10,793	\$ —	\$ —

Note 13 – Revolving Credit Agreements

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

<i>(In thousands)</i>	As of December 31,	
	2022	2021
Wells Fargo credit agreement	\$ 60,000	\$ —
Nord/LB revolving line of credit	16,091	—
Syndicated credit agreement working capital line of credit	10,727	—
DZ bank revolving line of credit	9,118	—
Wells Fargo revolving credit agreement	—	—
Cadence revolving credit agreement	—	—
Total revolving credit agreements	\$ 95,936	\$ —

As of December 31, 2022, the weighted average interest rate on our revolving credit agreements was 4.12%.

Wells Fargo Credit Agreement

On July 18, 2022, ADTRAN Holdings, Inc. and ADTRAN, Inc., as the borrower, 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”). The Credit Agreement allows for borrowings of up to \$100.0 million in aggregate principal amount, subject to being increased to up to \$400.0 million in aggregate principal amount upon the Company or Borrower’s execution of a DPLTA with ADVA or a parent of ADVA, among other conditions (the “Senior Credit Facilities Increase”). The DPLTA 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 ADVA (Jena). See Note 24 of the Notes to Consolidated Financial Statements for further information.

The Credit Agreement replaced the Cadence Revolving Credit Agreement and the Wells Fargo Revolving Credit Agreement. In connection with the entry into the Credit Agreement, all outstanding borrowings under such credit agreements have been repaid and the agreements terminated.

As of December 31, 2022, ADTRAN, Inc.’s borrowings under the revolving line of credit were \$60.0 million in tranches that mature during the first quarter of 2023 and can either be repaid or borrowed again for a one month, three month or six month period. In addition, we may issue up to \$25.0 million in letters of credit against our \$100.0 million dollar total facility. As of December 31, 2022, we had a total of \$21.3 million in letters of credit with ADTRAN, Inc. outstanding against our eligible borrowings, leaving a net amount of \$18.7 million available for future borrowings. In February 2023, the borrowings under the Credit Agreement were paid down by \$7.5 million, leaving, \$180.0 million of borrowings as of February 28, 2023. After considering our outstanding letters of credit, this leaves the Company approximately \$198.7 million available for future borrowings as of February 28, 2023. 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.

All U.S. borrowings under the Credit Agreement (other than swingline loans, which will bear interest at the Base Rate (as defined below)) will bear interest, at the Company’s option, at a rate per annum equal to (A)(i) 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%, (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%, plus (ii) the applicable rate, ranging from 0.5% to 1.25% (the “Base Rate”), or (B) the sum of the Adjusted Term SOFR (as defined in the Credit Agreement) plus the applicable rate, ranging from 1.4% to 2.15%, provided that such sum is subject to a 0.0% floor (such loans utilizing this interest rate, “SOFR Loans”). All EU borrowings under the Credit Agreement (other than swingline loans) will bear interest at a rate per annum equal to the sum of the Euro Interbank Offered Rate as administered by the European Money Markets Institute (or a comparable or successor administrator approved by the Administrative Agent) plus the applicable rate, ranging from 1.5% to 2.25%, provided that such sum is subject to a 0.0% floor (such loans utilizing this interest rate, “EURIBOR Loans”). The applicable rate is based on the consolidated net leverage ratio of the Company and its subsidiaries as determined pursuant to the terms of the Credit Agreement. Default interest is 2.00% per annum in excess of the rate otherwise applicable in the case of any overdue principal or any other overdue amount.

In addition to paying interest on outstanding principal under the Credit Agreement, the Company is required to pay a commitment fee to the lenders under the Credit Agreement in respect of unutilized revolving loan commitments and an additional commitment ticking fee at a rate of 0.25% on the commitment amounts of each lender until the earliest of (i) the date of the Senior Credit Facilities Increase, (ii) the Company's voluntary termination of the credit facility commitment, and (iii) December 31, 2023. 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 participations in letters of credit at the then applicable rate for SOFR Loans.

The Credit Agreement permits the Company to prepay any or all of the outstanding loans or to reduce the commitments under the Credit Agreement without incurring premiums or penalties (except breakage costs with respect to SOFR Loans and EURIBOR Loans). The Credit Agreement 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, pay dividends or other payments on capital stock, make restricted payments, engage in mergers or consolidations, engage in transactions with affiliates, modify its organizational documents, and enter into certain restrictive agreements. It also contains customary events of default (subject to customary cure periods and materiality thresholds). Furthermore, the Credit Agreement requires that the consolidated total net leverage ratio (as defined in the Credit Agreement) of the Company and its subsidiaries tested on the last day of each fiscal quarter not exceed 3.25 to 1.0 through September 30, 2024 and 2.75 to 1.00 from December 31, 2024 and thereafter, subject to certain exceptions. The Credit Agreement also requires that the consolidated interest coverage ratio (as defined in the Credit Agreement) of the Company and its subsidiaries tested on the last day of each fiscal quarter not fall below 3.00 to 1.00. As of December 31, 2022, the Company was in compliance with all material covenants. The Credit Agreement matures in July 2027 but provides the Company with an option to request extensions subject to customary conditions.

Finally, pursuant to a Collateral Agreement, dated as of July 18, 2022, among the Company, ADTRAN, Inc. and the Administrative Agent, ADTRAN, Inc.'s obligations under the Credit Agreement are secured by substantially all of the assets of ADTRAN, Inc. and the Company. In addition, the Company has guaranteed ADTRAN, Inc.'s obligations under the Credit Agreement pursuant to a Guaranty Agreement, dated as of July 18, 2022, by ADTRAN, Inc. and the Company in favor of the Administrative Agent.

Nord/LB Revolving Line of Credit

On August 8, 2022, ADVA entered into a \$16.1 million revolving line of credit with Norddeutsche Landesbank - Girozentrale (Nord/LB) that bears interest of Euro Short Term Rate plus 1.4% and which matures in August 2023. During the term of the loan, ADVA is obligated to maintain an adjusted net debt to cover ratio that is equal to or less than 2.75. As of December 31, 2022, The Company was in compliance with the adjusted net debt to cover ratio. As of December 31, 2022, ADVA's borrowings under the revolving line of credit were \$16.1 million, with no amounts available for future borrowings. On January 31, 2023, the Company increased its borrowings under the Wells Fargo Credit Agreement. A portion of the proceeds from the borrowings were used to retire the outstanding borrowings under the Nord/LB revolving line of credit.

Syndicated Credit Agreement Working Capital Line of Credit

In September 2018, ADVA 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. The interest rate for the working capital line of credit is adjusted periodically based on a defined leverage ratio and is currently EURIBOR plus 1.35% as of December 31, 2022. The working capital line of credit matures in September 2023. As of December 31, 2022, borrowings under the working capital line of credit totaled \$10.7 million, with no amounts available for future borrowings. On January 31, 2023, the Company increased its borrowings under the Wells Fargo Credit Agreement. A portion of the proceeds from the borrowings were used to retire the outstanding borrowings under the syndicated credit agreement working capital line of credit.

DZ Bank Money Market Facility

As of December 31, 2022, ADVA's borrowings under the revolving line of credit totaled \$9.1 million, with no amounts available for future borrowings. The interest rate is currently a rate of 2.8%, which resets monthly based on renewal of the loan.

Prior Wells Fargo Revolving Credit Agreement

On April 1, 2022, ADTRAN, Inc. entered into a Credit Agreement and related Revolving Line of Credit Note (together, the "Prior Wells Revolving Credit Agreement") in favor of Wells Fargo Bank, National Association, as lender (the "Wells Lender"). The Wells Revolving Credit Agreement provided the Company with a \$25.0 million secured revolving credit facility. During the year ended December 31, 2022, the Company made draws totaling \$10.0 million under the Prior Wells Revolving Credit Agreement all of which had been repaid as of December 31, 2022. The Wells Fargo Credit Agreement replaced the Prior Wells Fargo Revolving Credit Agreement and all outstanding borrowings have been repaid and the prior agreement was terminated.

Prior Cadence Revolving Credit Agreement

On May 19, 2022, ADTRAN, Inc., as borrower, modified its Revolving Credit and Security Agreement and related Promissory Note (together, the “Cadence Revolving Credit Agreement”) with Cadence Bank, N.A., as lender (the “Cadence Lender”). The modified Prior Cadence Revolving Credit Agreement provided the Company with a \$25.0 million secured revolving credit facility. During the year ended December 31, 2022, the Company made draws totaling \$18.0 million under the Prior Cadence Revolving Credit Agreement all of which had been repaid as of December 31, 2022. The Wells Fargo Credit Agreement replaced the Prior Cadence Revolving Credit Agreement and all outstanding borrowings have been repaid and the prior agreement was terminated.

Note 14 – Notes Payable

The carrying amounts of the Company's notes payable in its Condensed Consolidated Balance Sheets were as follows:

<i>(In thousands)</i>	Fair Value as of December 31, 2022	Carrying Value as of December 31, 2022	Carrying Value as of December 31, 2021
Syndicated credit agreement note payable	\$ 24,598	\$ 24,598	\$ —
Deutsche Bank term loan	—	—	—
Total Notes Payable	\$ 24,598	\$ 24,598	\$ —

Syndicated Credit Agreement Note Payable

In September 2018, ADVA entered into a syndicated credit agreement with Bayerische Landesbank and Deutsche Bank AG Branch German Business to borrow \$63.7 million. As of December 31, 2022, the amount outstanding under the note payable is \$24.6 million. The interest rate for the note payable is adjusted periodically based on a defined leverage ratio and is currently 2.49% as of December 31, 2022. The note payable matures in September 2023.

Deutsche Bank Term Loan

In October 2019, ADVA entered into a \$9.8 million term loan with Deutsche Bank that bears interest of EURIBOR plus 1.1%. The term loan matured in September 2022 and was repaid as of December 31, 2022.

Note 15 – Income Taxes

The components of income tax expense (benefit) for the years ended December 31, 2022, 2021 and 2020 are as follows:

<i>(In thousands)</i>	2022	2021	2020
Current			
Federal	\$ 4,572	\$ 11	\$ (10,574)
State	88	(63)	(329)
International	(4,347)	4,166	3,635
Total Current	313	4,114	(7,268)
Deferred			
Federal	(47,429)	—	—
State	(6,776)	—	—
International	(8,183)	(1,784)	(1,356)
Total Deferred	(62,388)	(1,784)	(1,356)
Total Income Tax (Benefit) Expense	\$ (62,075)	\$ 2,330	\$ (8,624)

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

	2022	2021	2020
Tax provision computed at the federal statutory rate	21.00%	21.00%	21.00%
State income tax provision, net of federal benefit	2.60	13.33	11.10
Federal research credits	6.74	53.77	57.63
Foreign taxes	6.29	(4.69)	(17.83)
Tax-exempt income	0.21	3.75	1.93
Change in valuation allowance	63.92	(75.26)	44.79
Non-deductible transaction costs	(2.74)	(39.48)	—
Foreign tax credits	(0.40)	0.14	17.90
Stock-based compensation	(2.09)	10.74	(23.36)
Withholding taxes	0.03	0.14	(20.83)
Alabama law change	—	(25.39)	—
Impact of CARES Act	—	—	45.65
Return to accrual	0.24	9.48	—
Global intangible low-taxed income ("GILTI")	(8.08)	(4.29)	(0.49)
Other, net	(0.24)	(0.19)	0.56
Effective Tax Rate	87.48%	(36.95)%	138.05%

(Loss) income before expense (benefit) for income taxes for the years ended December 31, 2022, 2021 and 2020 is as follows:

<i>(In thousands)</i>	2022	2021	2020
U.S. entities	\$ (33,720)	\$ (14,982)	\$ (12,833)
International entities	(37,243)	8,677	6,587
Total	\$ (70,963)	\$ (6,305)	\$ (6,246)

(Loss) income before expense (benefit) for income taxes for international entities reflects (loss) income 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, 2022 and 2021 consist of the following:

<i>(In thousands)</i>	2022	2021
Deferred tax assets:		
Inventory	\$ 5,818	\$ 9,538
Accrued expenses	7,865	3,851
Deferred compensation	5,792	7,027
Stock-based compensation	1,373	1,469
Uncertain tax positions related to state taxes and related interest	102	124
Pensions	5,952	6,061
Foreign losses	4,744	2,862
State losses and credit carry-forwards	3,516	5,914
Federal loss and research carry-forwards	64,995	21,606
Lease liabilities	4,093	1,471
Capitalized research and development expenditures	31,248	9,349
Investments	160	—
Valuation allowance	(5,201)	(50,564)
Total Deferred Tax Assets	130,457	18,708
Deferred tax liabilities:		
Property, plant and equipment	(8,982)	(3,590)
Intellectual property	(108,671)	(3,230)
Right of use lease assets	(6,594)	(1,459)
Investments	—	(1,350)
Total Deferred Tax Liabilities	(124,247)	(9,629)
Net Deferred Tax Assets	\$ 6,210	\$ 9,079

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 February 12, 2021, the Alabama Business Tax Competitiveness Act (the "Act") was signed into law. As a result of the Act, we recognized an expense of \$1.6 million in the three months ended March 31, 2021 related to the revaluation of our deferred tax assets, which was offset by changes in our valuation allowance previously recorded against our domestic deferred tax assets.

During the three months ended September 30, 2021, Management decided to pursue a claim for refund related to the revocation of our IRC Section 59(e) election that was made on our originally filed 2018 U.S. federal tax return. The Company filed a related carryback claim of net operating losses generated in 2018 to prior years as allowed under the CARES Act that was passed in 2020. An IRS Section 59(e) election is generally non-revocable except in cases for which IRS Commissioner’s approval is given. Approval is granted only in rare and unusual circumstances. We filed a private letter ruling (“PLR”) request to revoke our election. During the three months ended December 31, 2021, a response to our PLR was published denying our request to revoke the previously made 59(e). As a result of these filings, and Management’s position to pursue them through appeals, we have established a receivable in the amount of \$15.2 million and a deferred tax asset related to additional research and development credit carryforward in the amount of \$1.8 million that would be available if our revocation request is successful, offset with an uncertain tax liability of \$17.0 million.

As of December 31, 2022 and 2021, 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 expense of \$2.0 million and \$1.6 million in 2022 and 2021, 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 its 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 recognized in accordance with ASC 740, *Income Taxes*. Our assessment of the realizability of our deferred tax assets includes the evaluation of evidence, some of which requires significant judgment, including historical operating results, the evaluation of a three-year cumulative income position, future taxable income projections and tax planning strategies. Should management’s conclusion change in the future and additional valuation allowance or a partial or full release of the valuation allowance become necessary, it could have a material effect on our consolidated financial statements. During the fourth quarter of 2022, after considering all quantitative and qualitative evidence, including our cumulative income position, historical operating performance and future income projections, we have determined that the positive evidence overcame the negative evidence and have concluded that it is more likely than not that a substantial portion of our U.S. federal and certain other state deferred tax assets were realizable. As a result we have released the majority of our valuation allowance against those assets.

As of December 31, 2022 and 2021, the Company had gross deferred tax assets totaling \$11.4 million offset by a valuation allowance totaling \$5.2 million and gross deferred tax assets totaling \$59.6 million offset by a valuation allowance of \$50.6 million, respectively. Of the current valuation allowance, \$3.2 million was established against our domestic deferred tax assets and the remaining \$2.0 million is related to foreign net operating loss and research and development credit carryforwards where we lacked sufficient activity to realize those deferred tax assets. The change in our valuation allowance for the year ending December 31, 2022 was a decrease of \$45.4 million. The change in the valuation allowance was primarily related to the previously mentioned release of the valuation allowance in the fourth quarter of 2022. The large increase during the year in our international deferred tax liabilities was primarily related to purchase price accounting, partially offset with acquired deferred tax assets as a result of the ADVA acquisition, that was completed in the third quarter of 2022.

Supplemental balance sheet information related to deferred tax assets (liabilities) as of December 31, 2022 and 2021 were as follows:

<i>(In thousands)</i>	December 31, 2022		
	Deferred Tax Assets (Liabilities)	Valuation Allowance	Deferred Tax Assets (Liabilities), net
Domestic	\$ 61,726	\$ (3,177)	\$ 58,549
International	(50,315)	(2,024)	(52,339)
Total	\$ 11,411	\$ (5,201)	\$ 6,210

<i>(In thousands)</i>	December 31, 2021		
	Deferred Tax Assets	Valuation Allowance	Deferred Tax Assets, net
Domestic	\$ 48,265	\$ (48,265)	\$ —
International	11,378	(2,299)	9,079
Total	\$ 59,643	\$ (50,564)	\$ 9,079

As of December 31, 2022 and 2021, 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 \$104.5 million and \$39.7 million, respectively. As of December 31, 2022, \$21.8 million of these deferred tax assets will expire at various times between 2023 and 2038. The remaining deferred tax assets will either amortize through 2038 or carryforward indefinitely.

As of December 31, 2022 and 2021, respectively, our cash and cash equivalents were \$108.6 million and \$56.6 million and short-term investments were \$0.3 million and \$0.4 million, which provided available short-term liquidity of \$108.9 million and 57.0 million. Of these amounts, our foreign subsidiaries held cash of \$86.3 million and \$47.7 million, respectively, representing approximately 79% and 84% 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 and \$0.7 million as of December 31, 2022 and 2021, respectively. 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 2022, 2021 and 2020, 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, 2022, 2021 and 2020 were as follows:

<i>(In thousands)</i>	<u>2022</u>	<u>2021</u>	<u>2020</u>
Balance at beginning of period	\$ 17,836	\$ 1,078	\$ 1,487
Increases for tax position related to:			
Prior years	—	17,025	4
Current year	123	136	165
Decreases for tax positions related to:			
Prior years	(13)	(27)	—
Expiration of applicable statute of limitations	(61)	(376)	(578)
Balance at end of period	\$ 17,885	\$ 17,836	\$ 1,078

As of December 31, 2022, 2021 and 2020, our total liability for unrecognized tax benefits was \$17.9 million, \$17.8 million and \$1.1 million, respectively, of which \$17.9 million, \$17.8 million and \$1.0 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, 2022, 2021 and 2020, the balances of accrued interest and penalties were \$0.1 million, \$0.2 million and \$0.3 million, respectively.

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, unless a resolution is reached regarding the appeal of our PLR denial noted above. 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 2018.

Note 16 – Employee Benefit Plans

Pension Benefit Plan

We maintain a defined benefit pension plan covering employees in certain foreign countries.

In connection with the Business Combination, we acquired \$29.6 million of additional obligations and \$22.3 million of assets related to postemployment benefit plans for certain groups of employees at our new operations outside of the U.S. Plans vary depending on the legal, economic, and tax environments of the respective country. For defined benefit plans, accruals for pensions and similar commitments have been included in the results for this year. The new defined benefit plans are for employees in Switzerland, Italy, Israel and India:

- 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, 2022 and 2021, were as follows:

<i>(In thousands)</i>	2022	2021
Change in projected benefit obligation:		
Projected benefit obligation at beginning of period	\$ 73,779 ⁽¹⁾	\$ 50,927
Service cost	1,426	1,229
Interest cost	1,168	339
Actuarial gain - experience	(2,039)	(750)
Actuarial gain - assumptions	(11,128)	(3,327)
Benefit payments	(1,400)	(756)
Effects of foreign currency exchange rate changes	(2,462)	(3,498)
Projected benefit obligation at end of period	59,344	44,164
Change in plan assets:		
Fair value of plan assets at beginning of period	55,084 ⁽¹⁾	32,263
Actual (loss) gain on plan assets	(4,372)	2,943
Contributions	382	—
Effects of foreign currency exchange rate changes	(2,374)	(2,444)
Fair value of plan assets at end of period	48,720	32,762
Unfunded status at end of period	\$ (10,624)	\$ (11,402)

- (1) In connection with the Business Combination, we acquired \$29.6 million of additional projected benefit obligations and \$22.3 million of plan assets whose beginning of period measurement date is July 15, 2022.

The accumulated benefit obligation was \$56.8 million and \$44.2 million as of December 31, 2022 and 2021, respectively. The decrease in the accumulated benefit obligation, projected benefit obligation and the actuarial loss was primarily attributable to an increase in the discount rate during 2022.

The net amounts recognized in the Consolidated Balance Sheets for the unfunded pension liability as of December 31, 2022 and 2021 were as follows:

<i>(In thousands)</i>	2022	2021
Current liability	\$ —	\$ —
Pension liability	10,624	11,402
Total	\$ 10,624	\$ 11,402

The components of net periodic pension cost, other than the service cost component, are included in other income (expense), net in the Consolidated Statements of (Loss) Income. The components of net periodic pension cost and amounts recognized in other comprehensive (loss) income for the years ended December 31, 2022, 2021 and 2020 were as follows:

<i>(In thousands)</i>	2022	2021	2020
Net periodic benefit cost:			
Service cost	\$ 1,426	\$ 1,229	\$ 1,270
Interest cost	1,168	339	444
Expected return on plan assets	(2,129)	(1,842)	(1,679)
Amortization of actuarial losses	355	1,088	970
Net periodic benefit cost	820	814	1,005
Other changes in plan assets and benefit obligations recognized in other comprehensive (loss) income:			
Net actuarial (gain) loss	(6,549)	(4,984)	1,784
Amortization of actuarial losses	(113)	(825)	(1,212)
Amount recognized in other comprehensive (loss) income	(6,662)	(5,809)	572
Total recognized in net periodic benefit cost and other comprehensive (loss) income	\$ (5,842)	\$ (4,995)	\$ 1,577

The amounts recognized in accumulated other comprehensive (loss) income as of December 31, 2022 and 2021 were as follows:

<i>(In thousands)</i>	<u>2022</u>	<u>2021</u>
Net actuarial loss	\$ (1,073)	\$ (7,736)

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 plans 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, 2022, 2021 and 2020 were as follows:

	<u>2022</u>	<u>2021</u>	<u>2020</u>
Discount rate	3.24%	1.16%	1.00%
Rate of compensation increase	2.17%	2.00%	2.00%
Expected long-term rates of return	4.65%	5.90%	5.90%

The weighted-average assumptions that were used to determine the benefit obligation as of December 31, 2022 and 2021:

	<u>2022</u>	<u>2021</u>	<u>2020</u>
Discount rate	3.10%	1.16%	0.69%
Rate of compensation increase	2.17%	2.00%	2.00%

Actuarial gains and losses are recorded in accumulated other comprehensive (loss) 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 \$1.8 million in contributions to the pension plans in 2023

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

<i>(In thousands)</i>	
2023	\$ 2,377
2024	2,303
2025	3,331
2026	3,092
2027	3,710
2028 - 2032	18,287
Total	\$ 33,100

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:

<i>(In thousands)</i>	Fair Value Measurements at December 31, 2022 Using			
	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	\$ 1,423	\$ 1,423	\$ —	\$ —
Available-for-sale securities				
Bond funds:				
Corporate bonds	13,256	13,256	—	—
Government bonds	5,490	5,490	—	—
Equity funds:				
Global equity	15,452	15,452	—	—
Balanced fund	5,190	5,190	—	—
Emerging markets	1,707	1,707	—	—
Large cap value	194	194	—	—
Global real estate fund	6,008	6,008	—	—
Available-for-sale securities	47,297	47,297	—	—
Total	\$ 48,720	\$ 48,720	\$ —	\$ —

	Fair Value Measurements at December 31, 2021 Using			
	Fair Value	Quoted Prices in Active Markets for Identical Assets (Level 1)	Significant Other Observable Inputs (Level 2)	Significant Unobservable Inputs (Level 3)
<i>(In thousands)</i>				
Cash and cash equivalents	\$ 801	\$ 801	\$ —	\$ —
Available-for-sale securities				
Bond funds:				
Corporate bonds	7,528	7,528	—	—
Government bonds	5,721	5,721	—	—
Equity funds:				
Global equity	12,170	12,170	—	—
Balanced fund	2,919	2,919	—	—
Emerging markets	2,259	2,259	—	—
Large cap value	235	235	—	—
Global real estate fund	1,129	1,129	—	—
Available-for-sale securities	31,961	31,961	—	—
Total	\$ 32,762	\$ 32,762	\$ —	\$ —

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 Plan

We maintain the ADTRAN, Inc. 401(k) Retirement Plan (the “Savings Plan”) for the benefit of eligible employees. The Savings Plan is 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 Plan allows employees to save for retirement by contributing part of their compensation to the plan on a tax-deferred basis. The Savings Plan also requires us to contribute a “safe harbor” amount each year. 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. In calculating our matching contribution, compensation up to the statutory maximum under the Code is used (\$305,000 for 2022). All matching contributions under the Savings Plan vest immediately. Employer contribution expense and plan administration costs for the Savings Plan amounted to approximately \$4.1 million, \$3.9 million and \$4.0 million in 2022, 2021 and 2020, respectively.

Deferred Compensation Plans

We maintain four deferred compensation programs for certain executive management employees and our Board of Directors.

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.

For our Board of Directors, we maintain the ADTRAN, Inc. Deferred Compensation Program for Directors. This program allows our Board of Directors to defer all or a portion of monetary remuneration paid to the Director, including, but not limited to, meeting fees and annual retainers. We also maintain the ADTRAN, Inc. Equity Deferral Program for Directors. Under this plan, participants may elect to defer all or a portion of their vested restricted stock awards. 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 director.

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, 2022 and 2021 were as follows:

<i>(In thousands)</i>	2022	2021
Fair Value of Plan Assets		
Long-term investments	\$ 22,943	\$ 26,935
Total Fair Value of Plan Assets	\$ 22,943	\$ 26,935
Amounts Payable to Plan Participants		
Deferred compensation liability	\$ 26,668	\$ 31,383
Total Amounts Payable to Plan Participants	\$ 26,668	\$ 31,383

The Trust held \$3.7 million and \$4.1 million of common stock in the Company as of December 31, 2022 and 2021, respectively. 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 2022, 2021 and 2020 Consolidated Statements of (Loss) Income. Changes in the fair value of the plan assets held by the Trust have been included in other income (expense) in the accompanying 2022, 2021 and 2020 Consolidated Statements of (Loss) Income. Changes in the fair value of the deferred compensation liability are included as selling, general and administrative expense in the accompanying 2022, 2021 and 2020 Consolidated Statements of (Loss) Income. Based on the changes in the total fair value of the Trust's assets, the Company recorded deferred compensation income in 2022, 2021 and 2020 of \$6.3 million, \$0.9 million and \$4.3 million, respectively.

Retiree Medical Coverage

Medical, dental and prescription drug coverage is provided to certain spouses and former spouses of current and former officers on the same terms as provided to our active officers for up to 30 years. As of December 31, 2022 and 2021, this liability totaled \$0.2 million and \$0.3 million, respectively.

Note 17 – Equity

The following table presents changes in accumulated other comprehensive (loss) income, net of tax, by components of accumulated other comprehensive (loss) income for the years ended December 31, 2022, 2021 and 2020:

<i>(In thousands)</i>	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, 2019	\$ (284)	\$ (9,226)	\$ (7,292)	\$ 385	\$ (16,417)
Other comprehensive (loss) income before reclassifications	749	(1,231)	4,857	—	4,375
Amounts reclassified from accumulated other comprehensive (loss) income	(433)	836	—	—	403
Balance as of December 31, 2020	32	(9,621)	(2,435)	385	(11,639)
Other comprehensive (loss) income before reclassifications	(705)	3,439	(3,699)	—	(965)
Amounts reclassified from accumulated other comprehensive (loss) income	121	569	—	—	690
Balance as of December 31, 2021	(552)	(5,613)	(6,134)	385	(11,914)
Other comprehensive (loss) income before reclassifications	(41)	4,519	53,396	—	57,874
Amounts reclassified from accumulated other comprehensive (loss) income	(243)	78	—	—	(165)
Net current period other comprehensive (loss) income	(284)	4,597	53,396	—	57,709
Less: Comprehensive Loss attributable to non-controlling interest, net of tax	—	—	(918)	—	(918)
Balance as of December 31, 2022	\$ (836)	\$ (1,016)	\$ 48,180	\$ 385	\$ 46,713

- (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 (loss) income for the years ended December 31, 2022, 2021 and 2020:

(In thousands)

Details about Accumulated Other Comprehensive (Loss) Income Components	For the year ended December 31,			Affected Line Item in the Statement Where Net (Loss) Income Is Presented
	2022	2021	2020	
Unrealized (loss) gains on available-for-sale securities:				
Net realized gain (loss) on sales of securities	\$ 328	\$ (164)	\$ 585	Net investment gain
Defined benefit plan adjustments – actuarial losses	(113)	(825)	(1,212)	⁽¹⁾
Total reclassifications for the period, before tax	215	(989)	(627)	
Tax (benefit) expense	(50)	299	224	
Total reclassifications for the period, net of tax	\$ 165	\$ (690)	\$ (403)	

(1) Included in the computation of net periodic pension cost. See Note 16 for additional information.

The following tables present the tax effects related to the change in each component of other comprehensive (loss) income for the years ended December 31, 2022, 2021 and 2020:

(In thousands)	2022		
	Before-Tax Amount	Tax (Expense) Benefit	Net-of-Tax Amount
Unrealized gains (losses) on available-for-sale securities	\$ (55)	\$ 14	\$ (41)
Reclassification adjustment for amounts related to available-for-sale investments included in net income (loss)	(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 (Loss) Income	\$ 59,675	\$ (1,966)	\$ 57,709

(In thousands)	2021		
	Before-Tax Amount	Tax (Expense) Benefit	Net-of-Tax Amount
Unrealized gains (losses) on available-for-sale securities	\$ (953)	\$ 248	\$ (705)
Reclassification adjustment for amounts related to available-for-sale investments included in net income (loss)	164	(43)	121
Defined benefit plan adjustments	4,984	(1,545)	3,439
Reclassification adjustment for amounts related to defined benefit plan adjustments included in net income (loss)	825	(256)	569
Foreign currency translation adjustment	(3,699)	—	(3,699)
Total Other Comprehensive (Loss) Income	\$ 1,321	\$ (1,596)	\$ (275)

(In thousands)	2020		
	Before-Tax Amount	Tax (Expense) Benefit	Net-of-Tax Amount
Unrealized gains (losses) on available-for-sale securities	\$ 1,012	\$ (263)	\$ 749
Reclassification adjustment for amounts related to available-for-sale investments included in net (loss) income	(585)	152	(433)
Defined benefit plan adjustments	(1,784)	553	(1,231)
Reclassification adjustment for amounts related to defined benefit plan adjustments included in net (loss) income	1,212	(376)	836
Foreign currency translation adjustment	4,857	—	4,857
Total Other Comprehensive (Loss) Income	\$ 4,712	\$ 66	\$ 4,778

Note 18 – Segment Information and Major Customers

The chief operating decision maker 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 (loss) gain, other income, net and income tax benefit (expense) 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.

The following table presents information about revenue and gross profit of our reportable segments for each of the years ended December 31, 2022, 2021 and 2020:

<i>(In thousands)</i>	2022		2021		2020	
	Revenue	Gross Profit	Revenue	Gross Profit	Revenue	Gross Profit
Network Solutions	\$ 916,793	\$ 269,688	\$ 498,834	\$ 190,993	\$ 438,015	\$ 193,789
Services & Support	108,743	57,564	64,170	27,384	68,495	23,762
Total	\$ 1,025,536	\$ 327,252	\$ 563,004	\$ 218,377	\$ 506,510	\$ 217,551

For the years ended December 31, 2022, 2021 and 2020, \$3.2 million, \$1.2 million and \$1.4 million, respectively, of depreciation expense was included in gross profit for our Network Solutions segment. For the years ended December 31, 2022, 2021 and 2020, \$10 thousand, \$14 thousand and \$32 thousand, respectively, of depreciation expense was included in gross profit for our Services & Support segment.

Revenue by Category

In addition to its reportable segments, revenue is also reported for the following three categories – Subscriber Solutions, Access & Aggregation Solutions, and Optical Networking Solutions.

Prior to the Business Combination with ADVA on July 15, 2022, ADTRAN reported revenue across the following three categories: (1) Access & Aggregation, (2) Subscriber Solutions & Experience and (3) Traditional & Other Products. Following the Business Combination with ADVA, the Company has recast these revenues such that ADTRAN's former Access & Aggregation revenue is combined with a portion of the applicable ADVA solutions to create Access & Aggregation Solutions, ADTRAN's former Subscriber Solutions & Experience revenue is combined with a portion of the applicable ADVA 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 is a new revenue category added to represent a meaningful portion of ADVA's portfolio.

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 tables disaggregate our revenue by category for the years ended December 31, 2022, 2021 and 2020:

<i>(In thousands)</i>	2022		
	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

<i>(In thousands)</i>	2021		
	Network Solutions	Services & Support	Total
Subscriber Solutions	\$ 189,825	\$ 16,385	\$ 206,210
Access & Aggregation Solutions	309,009	47,785	356,794
Optical Networking Solutions	—	—	—
Total	\$ 498,834	\$ 64,170	\$ 563,004

<i>(In thousands)</i>	2020		
	Network Solutions	Services & Support	Total
Subscriber Solutions	\$ 163,349	\$ 15,315	\$ 178,664
Access & Aggregation Solutions	274,666	53,180	327,846
Optical Networking Solutions	—	—	—
Total	\$ 438,015	\$ 68,495	\$ 506,510

Additional Information

The following table presents revenue information by geographic area for the years ended December 31, 2022, 2021 and 2020:

<i>(In thousands)</i>	2022	2021	2020
United States	\$ 517,433	\$ 374,600	\$ 352,079
United Kingdom	189,685	56,355	13,799
Germany	146,797	65,229	74,882
Other international	171,621	66,820	65,750
Total	\$ 1,025,536	\$ 563,004	\$ 506,510

Customers comprising more than 10% of revenue can change from year to year. Single customers comprising more than 10% of revenue in 2022 included one customer, at 10.4%, which was a service provider and was included in both our Network Solutions and Services & Support segments. Single customers comprising more than 10% of revenue in 2021 included one customer at 18% and was included in both our Network Solutions and Services & Support segments. Single customers comprising more than 10% of revenue in 2020 included three customers at 15%, 12% and 10% 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 33%, 38% and 34% of total revenue in 2022, 2021 and 2020, respectively.

As of December 31, 2022, property, plant and equipment, net totaled \$110.7 million, which included \$56.2 million held in the U.S. and \$54.5 million held outside the U.S. As of December 31, 2021, property, plant and equipment, net totaled \$55.8 million, which included \$53.0 million held in the U.S. and \$2.8 million held outside the U.S. Property, plant and equipment, net is reported on a Company-wide, functional basis only.

Note 19 – Liability for Warranty Returns

The liability for warranty obligations totaled \$7.2 million and \$5.4 million as of December 31, 2022 and 2021, 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, 2022, 2021 and 2020 is as follows:

<i>(In thousands)</i>	Year Ended December 31,		
	2022	2021	2020
Balance at beginning of period	\$ 5,403	\$ 7,146	\$ 8,394
Plus: ADVA acquisition	3,756	—	—
Plus: Amounts charged to cost and expenses	3,104	855	1,538
Plus: Foreign currency translation adjustments	334	—	—
Less: Deductions	(5,401)	(2,598)	(2,786)
Balance at end of period	\$ 7,196	\$ 5,403	\$ 7,146

Note 20 – 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. At this time, the Company is unable to predict the outcome of or estimate the possible loss or range of loss, if any, associated with such legal matters.

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, 2022 and December 31, 2021, the Company had commitments related to these bonds totaling \$22.0 million and \$22.9 million, respectively, which expire at various dates through April 2031. 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 Commitments

The Company purchases components from a variety of suppliers and use contract manufacturers to provide manufacturing services for our products. Our inventory purchase commitments are for short-term product manufacturing requirements as well as for commitments to suppliers to secure manufacturing capacity. Certain of our inventory purchase commitments 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, 2022, purchase commitments totaled \$552.4 million.

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, 2022 and 2021, the Company's net outstanding accounts receivable balance was \$279.4 million and \$158.7 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 less than \$0.1 million were recorded for the year ended December 31, 2022, related to accounts receivable. No credit losses were recorded for the years ended December 31, 2021 and 2020 related to accounts receivable. The Company's allowance for credit losses related to accounts receivable was less than \$0.1 as of December 31, 2022. The Company had no allowance for credit losses related to accounts receivable as of December 31, 2021.

Contract Assets

The Company records contract assets when it has recognized revenue but has not yet billed the customer. As of December 31, 2022 and 2021, the Company's outstanding contract asset balance was \$1.9 million and \$0.5 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 year ended December 31, 2022 and 2021 related to contract assets.

Off-Balance Sheet Arrangements

The Company did not have any off-balance sheet arrangements as of December 31, 2022, 2021 or January 1, 2021.

Available-for-Sale Debt Securities

As of December 31, 2022 and 2021 the Company's available-for-sale debt securities totaled \$9.3 million and \$30.1 million, respectively. These securities were analyzed at the individual investment level, by Committee on Uniform Securities Identification Procedures ("CUSIP"), to limit credit losses, if applicable, to reflect only the amount by which the fair value of the security was less than its amortized cost. The Company noted that, as of December 31, 2022 and, 2021, there was no intent to sell any of its available-for-sale debt securities before maturity, and, therefore, the Company assessed the need for an allowance for each of its available-for-sale debt securities in which the fair value was less than its amortized cost as of December 31, 2022 and 2021. Accrued interest receivable on available-for-sale debt securities, which is included in other receivables on the Consolidated Balance Sheets as of December 31, 2022 and 2021, which totaled less than \$0.1 million and was excluded from the estimate of credit losses for both periods based on the Company's accounting policy election. Income generated from available-for-sale debt securities was recorded as interest and dividend income in the Consolidated Statements of (Loss) Income.

The Company had 99 positions in available-for-sale debt securities that were in an unrealized loss position as of December 31, 2022. See Note 6 for additional information.

For those available-for-sale debt securities whose fair value was less than its amortized cost basis, the Company analyzed additional criteria such as adverse conditions specifically related to the security, an industry or geographic area, failure of the issuer of the security to make scheduled interest or principal payments, if applicable, and any changes to the rating of the security by a rating agency to determine if a credit loss existed. The Company used information provided by its investment manager to determine if any scheduled interest or principal payments had not been received and used a third party to determine if any changes to credit ratings had occurred. Principal and interest payments are considered past due when payment has not been received based on scheduled terms of each debt security. The Company ceases to accrue interest on debt securities on a case by case basis. As of December 31, 2022, the Company noted that all principal and interest payments had been received as scheduled and that there had been no changes in credit ratings year-over-year or period-over-period that warranted further review.

No allowance for credit losses was recorded for the years ended December 31, 2022 and 2021 related to the Company's available-for-sale debt securities.

Note 22 – (Loss) Earnings per Share

The calculations of basic and diluted (loss) earnings per share for the years ended December 31, 2022, 2021 and 2020 are as follows:

<i>(In thousands, except for per share amounts)</i>	2022	2021	2020
Numerator			
Net (Loss) Income attributable to ADTRAN Holdings, Inc.	\$ (2,037)	\$ (8,635)	\$ 2,378
Denominator			
Weighted average number of shares – basic	62,346	48,582	47,996
Effect of dilutive securities:			
PSUs, RSUs and restricted stock	—	—	292
Weighted average number of shares – diluted	<u>62,346</u>	<u>48,582</u>	<u>48,288</u>
(Loss) earnings per share attributable to ADTRAN Holdings, Inc. – basic	\$ (0.03)	\$ (0.18)	\$ 0.05
(Loss) earnings per share attributable to ADTRAN Holdings, Inc. – diluted	\$ (0.03)	\$ (0.18)	\$ 0.05

For each of the years ended December 31, 2022, 2021 and 2020, less than 0.1 million, 0.1 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) earnings per share due to their anti-dilutive effect.

For the year ended December 31, 2022, 2021 and 2020, 0.2 million, 0.3 million and 3.6 million stock options, respectively, were outstanding but were not included in the computation of diluted (loss) earnings 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 23 – Restructuring

During the fourth quarter of 2022, the Company initiated a multi-year integration program designed to optimize the assets, business processes, and information technology systems of the Company in relation to the Business Combination with ADVA. The integration program is expected to maximize cost synergies by realizing operation scale, combining sales channels, streamlining corporate and general and administrative functions and combining sourcing and production costs.

During the second half of 2019, the Company initiated a restructuring plan to realign its expense structure with the reduction in revenue experienced in recent years and overall Company objectives. As part of this restructuring plan, the Company announced plans to reduce its overall operating expenses, both in the U.S. and internationally. This plan was completed and all amounts paid in 2021.

In February 2019, the Company announced the restructuring of a certain portion of its workforce predominantly in Germany, which included the closure of the Company’s office location in Munich, Germany accompanied by relocation or severance benefits for the affected employees. Voluntary early retirement was offered to certain other employees and was announced in March 2019 and again in August 2020. This plan was completed in 2021 and all amounts paid in 2022.

A reconciliation of the beginning and ending restructuring liability, which is included in accrued wages and benefits in the Consolidated Balance Sheets as of December 31, 2022 and 2021, is as follows:

<i>(In thousands)</i>	2022	2021
Balance at beginning of period	\$ 1,514	\$ 4,186
Plus: Amounts charged to cost and expense	1,629	411
Less: Amounts paid	(2,984)	(3,083)
Balance at end of period	<u>\$ 159</u>	<u>\$ 1,514</u>

Restructuring expenses included in the Consolidated Statements of (Loss) Income are for the years ended December 31, 2022, 2021 and 2020:

<i>(In thousands)</i>	2022	2021	2020
Network solutions - cost of revenue	\$ 8	\$ 13	\$ 220
Services & support - cost of revenue	—	3	235
Cost of revenue	<u>\$ 8</u>	<u>\$ 16</u>	<u>\$ 455</u>
Selling, general and administrative expenses	117	221	1,832
Research and development expenses	1,504	174	3,942
Total restructuring expenses	<u>\$ 1,629</u>	<u>\$ 411</u>	<u>\$ 6,229</u>

The following table represents the components of restructuring expense by geographic area for the years ended December 31, 2022, 2021 and 2020:

<i>(In thousands)</i>	2022	2021	2020
United States	\$ 2	\$ 289	\$ 2,234
International	1,627	122	3,995
Total restructuring expenses	<u>\$ 1,629</u>	<u>\$ 411</u>	<u>\$ 6,229</u>

Note 24 – Subsequent Events

Dividend approval

On February 20, 2023, the Company announced that its Board of Directors declared a quarterly cash dividend of \$0.09 per common share to be paid to the Company's stockholders of record at the close of business on March 7, 2023. The payment date will be March 21, 2023 in the aggregate amount of approximately \$7.0 million.

Effectiveness of the Domination and Profit and Loss Transfer Agreement

The DPLTA between the Company, as the controlling company, and ADVA Optical Networking 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 ADVA (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 ADVA, (ii) ADVA 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 ADVA. The obligation of ADVA to transfer its annual profit to the Company applies for the first time to the profit generated in the ADVA fiscal year 2023. The obligation of the Company to absorb ADVA's annual net loss applies for the first time to the loss generated in the ADVA fiscal year 2023.

Expansion of Wells Fargo Line of Credit & Payoff of ADVA Loans.

Upon the DPLTA becoming effective on January 16, 2023, the available total borrowings under the Wells Fargo Credit Agreement increased from \$100 million to \$400 million. On January 31, 2023, the Company increased its borrowings under the Credit Agreement from \$60.0 million to \$187.5 million. In February 2023, the borrowings under the Credit Agreement were paid down by \$7.5 million, leaving \$180.0 million of borrowings as of February 28, 2023. After considering our outstanding letters of credit, this leaves the Company approximately \$198.7 million available for future borrowings as of February 28, 2023. The Company used approximately \$51.4 million of the proceeds from the borrowings under the Credit Agreement to retire the outstanding borrowings under ADVA's syndicated credit agreement note payable, syndicated credit agreement working capital line of credit and the Nord/LB revolving line of credit. ADVA's \$9.1 million of borrowings under their revolving line of credit with DZ bank remains outstanding.

Integration Bonus Plan

On March 1, 2023, the Compensation Committee of the Board of Directors of the Company established an "Integration Bonus Plan" consisting of a combination of performance-based performance stock units ("PSUs") and cash bonus award amounts (together with the PSUs, the "Integration Awards"). Under the Integration Bonus Plan, certain key employees of the Company, including the Company's named executive officers as disclosed in the most recent proxy statement filed by the Company with the SEC (the "Participants"), are eligible to earn the Integration Awards over a performance period beginning upon the date of the grant and ending on December 31, 2024 based on the achievement of cost savings targets related to the Business Combination. *See Item 9B. Other Information of this report for addition information.*

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 provide reasonable assurance 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. Because of the inherent limitations to the effectiveness of any system of disclosure controls and procedures, no evaluation of disclosure controls and procedures can provide absolute assurance that all control issues, if any, with a company have been prevented or detected on a timely basis. Even disclosure controls and procedures determined to be effective can only provide reasonable assurance that their objectives are achieved.

As of the end of the period covered by this report, an evaluation was carried out by management, including our Chief Executive Officer and our Chief Financial Officer, of the effectiveness of our disclosure controls and procedures, as such term is defined under Rule 13a-15(e) promulgated under the Exchange Act. Based on that evaluation, which excluded the impact of the acquisition of a controlling equity stake in ADVA discussed below, our Chief Executive Officer and our Chief Financial Officer concluded that our disclosure controls and procedures were effective at the reasonable assurance level as of December 31, 2022.

Management’s Report on Internal Control over Financial Reporting

Management of ADTRAN Holdings, Inc. is responsible for establishing and maintaining adequate internal control over financial reporting as defined in Rule 13a-15(f) under the Securities Exchange Act of 1934, as amended. ADTRAN’s internal control over financial reporting is designed to provide reasonable assurance regarding the reliability of financial reporting and the preparation of financial statements for external purposes in accordance with generally accepted accounting principles. 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, 2022. 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)*.

As permitted by SEC guidance, we currently exclude ADVA in our evaluation of internal control over financial reporting and related disclosure controls and procedures for the first year after the Business Combination. See “Changes in Internal Control over Financial Reporting” for additional discussion.

Based on our assessment and those criteria, management has concluded that ADTRAN maintained effective internal control over financial reporting as of December 31, 2022.

The effectiveness of the Company’s internal control over financial reporting as of December 31, 2022 has been audited by PricewaterhouseCoopers LLP, an independent registered public accounting firm, as stated in their report which appears in Item 8.

Auditor Attestation Report on Internal Control over Financial Reporting

The attestation report of our registered public accounting firm on our internal control over financial reporting is included in Part II, Item 8, “Financial Statements and Supplementary Data,” of this report.

Changes in Internal Control over Financial Reporting.

On July 15, 2022, the Company acquired 33,957,538 bearer shares of ADVA, or 65.43% of ADVA’s outstanding bearer shares as of such date, as further described in Note 2 of the Notes to the Condensed Consolidated Financial Statements. At December 31, 2022, ADVA’s assets represented approximately 41.4% of our consolidated assets. For the year ended December 31, 2022, ADVA’s revenues represented approximately 35.7% of our consolidated revenues and loss before income taxes represented approximately 43.8% of our consolidated loss before income taxes. As permitted by SEC guidance, we currently exclude ADVA in our evaluation of internal control over financial reporting and related disclosure controls and procedures for the first year after the Business Combination. However, we are in the process of extending our oversight and monitoring processes that support our internal control over financial reporting and disclosure controls and procedures to include ADVA’s operations. There were no other changes in the Company’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

On March 1, 2023, the Compensation Committee of the Board of Directors of the Company established an “Integration Bonus Plan” consisting of a combination of performance-based performance stock units (“PSUs”) and cash bonus award amounts (together with the PSUs, the “Integration Awards”). Under the Integration Bonus Plan, certain key employees of the Company, including the Company’s named executive officers as disclosed in the most recent proxy statement filed by the Company with the SEC (the “Participants”), are eligible to earn the Integration Awards over a performance period beginning upon the date of the grant, March 1, 2023, and ending on December 31, 2024 based on the achievement of cost savings targets related to the Business Combination during such period. The Compensation Committee chose the performance measure of “Company Synergy Achievement” in order to incentivize the Participants to drive cost savings and expected synergies following the closing of the Business Combination, and it approved a target level of synergies against which the Company’s non-GAAP expenses will be measured. For purposes of measuring performance, the Company’s GAAP expenses will be adjusted for restructuring expenses; acquisition-related expenses, amortizations and adjustments; stock-based compensation expense; amortization of actuarial pension losses and the impact of equity market changes on deferred compensation expenses; non-operating income; and any other exclusions adopted by the Company.

If the Company Synergy Achievement over the performance period reaches the performance levels noted below, the Participants will be entitled to a corresponding number of shares of the Company’s common stock under the PSUs:

- If Company Synergy Achievement is less than the threshold amount, the Participants will not earn any shares under the performance-based PSUs.
- If Company Synergy Achievement is greater than or equal to the threshold amount but less than the target amount, the Participants will earn shares under the performance-based PSUs equal to 33% of their base salary (as of the date of grant).
- If the Company Synergy Achievement is greater than or equal to the target amount, the Participants will earn shares under the performance-based PSUs equal to 66% of their base salary.

If the threshold level of Company Synergy Achievement is reached, the Participants are also eligible to receive a cash award up to 66% of their base salary (as of the date of grant) based on the percentage of individual objectives related to cost savings achieved by each Participant, as determined by the Compensation Committee. If the target level of Company Synergy Achievement is achieved and all of the individual objectives are achieved, the Participants will earn a maximum amount under the Integration Bonus Plan equal to 132% of their base salary, as reflected below:

Named Executive Officer	Base Salary (as of March 1, 2023)	Value of Threshold PSU Award (33% of Base Salary)	Value of Target PSU Award (66% of Base Salary)	Target Cash Award (66% of Base Salary)	Max Total Value of Integration Bonus Award
Thomas R. Stanton	\$ 1,000,000	\$ 330,000	\$ 660,000	\$ 660,000	\$ 1,320,000
Michael K. Foliano (1)	\$ —	\$ —	\$ —	\$ —	\$ —
James D. Wilson, Jr.	\$ 405,072	\$ 133,674	\$ 267,348	\$ 267,348	\$ 534,696
Ronald D. Centis	\$ 349,398	\$ 115,301	\$ 230,603	\$ 230,603	\$ 461,206
Raymond Harris	\$ 313,611	\$ 103,492	\$ 206,983	\$ 206,983	\$ 413,966

(1) Mr. Foliano did not receive an integration bonus award due to his target award for 2023 under the Variable Incentive Compensation Plan being increased from 60% of base salary to 80% of base salary and due to a one-time bonus earned at the end of 2022 related to the Business Combination.

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 – Code of Business Conduct and Ethics." 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.

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 2022 Annual Meeting of Stockholders (the "2022 Proxy Statement") to be filed with the SEC pursuant to Regulation 14A.

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 2022 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

Securities Authorized for Issuance Under Equity Compensation Plans

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, 2022, which includes the 2020 Employee Stock Plan and the 2020 Directors Stock Plan (the "Plans"). Each of the Plans has been approved by our stockholders.

Plan Category	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)(1)
Equity compensation plans approved by stockholders	4,234,225	\$ 9.06	3,311,439 ⁽²⁾
Equity compensation plans not approved by stockholders	—	\$ —	—
Total	4,234,225	\$ 9.06	3,311,439 ⁽²⁾

(1) Excludes shares of ADTRAN common stock issuable upon the exercise of stock options originally granted under ADVA's Stock Option Rights Program 2011 (the "ADVA Option Plan") and which were assumed by ADTRAN in connection with the consummation of the Business Combination (the "Assumed Options"). As of December 31, 2022, 1,964,083 Assumed Options remained outstanding. The Assumed Options have a weighted-average exercise price of \$11.21.

(2) Represents 3,030,263 shares of common stock available for future issuance pursuant to the 2020 Employee Stock Plan (assuming target payout of outstanding performance share awards) and 281,176 shares of common stock available for future issuance pursuant to the 2020 Directors Stock Plan. Certain shares underlying awards that are forfeited, cancelled or terminated under the Plans will again be available for issuance under the 2020 Employee Stock Plan or the 2020 Directors Stock Plan, as applicable and as described in Note 5 of Notes to Consolidated Financial Statements included in Part II, Item 8 of this report.

The other information required by this Item is incorporated by reference pursuant to General Instruction G(3) of Form 10-K from the 2022 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 2022 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 2022 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, 2022 and 2021

Consolidated Statements of (Loss) Income for the years ended December 31, 2022, 2021 and 2020

Consolidated Statements of Comprehensive (Loss) Income for the years ended December 31, 2022, 2021 and 2020

Consolidated Statements of Changes in Equity for the years ended December 31, 2022, 2021 and 2020

Consolidated Statements of Cash Flows for the years ended December 31, 2022, 2021 and 2020

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.

<u>Exhibit Number</u>	<u>Description</u>
2.1	Business Combination Agreement, dated August 30, 2021, by and among ADTRAN, Inc., Acorn HoldCo, Inc., Acorn MergeCo, Inc. and ADVA Optical Networking SE (incorporated by reference to Exhibit 2.1 to ADTRAN's Form 8-K filed August 30, 2021)
2.2	Irrevocable Undertaking, dated August 30, 2021, by and among Acorn HoldCo, Inc., EGORA Holding GmbH and Egora Investments GmbH (incorporated by reference to Exhibit 2.2 to ADTRAN's Form 8-K filed August 30, 2021)
3.1	Amended and Restated Certificate of Incorporation of ADTRAN, Inc. (incorporated by reference to Exhibit 3.1 to ADTRAN's Form 8-K filed July 8, 2022)
3.2	Amended and Restated Bylaws of ADTRAN Holdings, Inc. (incorporated by reference to Exhibit 3.2 to ADTRAN's Form 8-K filed July 8, 2022).
4.1	Description of Securities (incorporated by reference to Exhibit 4.1 to ADTRAN's Form 10-K filed February 25, 2020).
10.1	Management Contracts and Compensatory Plans: <ul style="list-style-type: none">(a) ADTRAN, Inc. Variable Incentive Compensation Plan (incorporated by reference to Exhibit 10.1 to the Company's Form 8-K filed May 9, 2011).(b) Form of Notice Letter under the ADTRAN, Inc. Variable Incentive Compensation Plan (incorporated by reference to Exhibit 10.3(b) to ADTRAN's Form 10-K filed February 25, 2020).(c) ADTRAN, 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).(d) First Amendment to the ADTRAN, 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).

- (e) 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).
- (f) 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).
- (g) Summary of Non-Employee Director Compensation (incorporated by reference to Exhibit 10.3(k) to the Company's 2006 Form 10-K filed February 28, 2007).
- (h) ADTRAN, Inc. 2010 Directors Stock Plan (incorporated by reference to Exhibit 4.3 to ADTRAN's Form S-8 filed July 30, 2010).
- (i) Form of Stock Option Award Agreement under the ADTRAN, Inc. 2010 Directors Stock Plan (incorporated by reference to Exhibit 10.3(k) to the Company's Form 10-K filed February 25, 2020).
- (j) Form of Restricted Stock Award Agreement under the ADTRAN, Inc. 2010 Directors Stock Plan (incorporated by reference to Exhibit 10.3(l) to the Company's Form 10-K filed February 25, 2020).
- (k) ADTRAN, Inc. 2015 Employee Stock Incentive Plan (incorporated by reference to Exhibit 10.1 to the Company's Form 8-K filed May 15, 2015).
- (l) Form of Performance Shares Agreement under the ADTRAN, Inc. 2015 Employee Stock Incentive Plan (incorporated by reference to Exhibit 4.5 to the Company's Form S-8 filed December 21, 2016).
- (m) Form of Restricted Stock Unit Agreement under the ADTRAN, Inc. 2015 Employee Stock Incentive Plan (incorporated by reference to Exhibit 10.1 to the Company's Form 8-K filed November 16, 2016).
- (n) Form of Option Award Agreement under the ADTRAN, 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).
- (o) ADTRAN, 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).
- (p) ADTRAN, 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).
- (q) ADTRAN, 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).
- (r) ADTRAN, 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).
- (s) Form of Clawback Agreement, entered into between ADTRAN, Inc. and each executive officer of ADTRAN, Inc. (incorporated by reference to Exhibit 10.3(x) to the Company's Form 10-K filed February 25, 2020).
- (t)* Amended and Restated ADTRAN Holdings, Inc. 2020 Employee Stock Incentive Plan.
- (u)* Amended and Restated ADTRAN Holdings, Inc. 2020 Directors Stock Plan
- (v) Form of Notice Letter with respect to RSU and PSU awards under the ADTRAN, 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).
- (w) 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)
- (x) Form of Notice Letter with respect to restricted stock awards under the ADTRAN, Inc. 2020 Directors Stock Incentive Plan (incorporated by reference to Exhibit 10.3(af) to the Company's Form 10-K filed February 26, 2021).
- (y) Form of Market-Based Performance Stock Unit Agreement under the ADTRAN, Inc. 2020 Employee Stock Incentive Plan (incorporated by reference to Exhibit 10.1 to the Company's Form 10-Q filed May 6, 2021)
- (z) Form of Restricted Stock Unit Agreement under the ADTRAN, Inc. 2020 Employee Stock Incentive Plan (incorporated by reference to Exhibit 10.2 to the Company's Form 10-Q filed May 6, 2021)

- (aa) Form of Performance Shares Agreement (and Notice Letter) under the ADTRAN, Inc. 2020 Employee Stock Incentive Plan (incorporated by reference to Exhibit 10.3 to the Company's Form 10-Q filed May 6, 2021)
 - (ab) Form of Performance Shares Agreement under the ADTRAN, Inc. 2015 Employee Stock Incentive Plan (incorporated by reference to Exhibit 10.4 to the Company's Form 10-Q filed May 6, 2021)
 - (ac) Amended and Restated Variable Incentive Compensation Plan (incorporated by reference to Exhibit 10.1 to the Company's Form 8-K filed on January 26, 2023)
 - (ad) Form of VICC Award Letter for Quarterly Bonus Program (incorporated by reference to Exhibit 10.1 to the Company's Form 8-K filed on January 26, 2023)
 - (ae) 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)
 - (af) Settlement Agreement, dated August 4, 2022, by and between ADVA Optical Networking SE and Brian Protiva (incorporated by reference to Exhibit 10.1 to the Company's Form 8-K filed September 30, 2022)
 - (ag)* Form of 2022 Integration Award Agreement for ADTRAN Holdings, Inc.
- 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 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)
- 10.4 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)
- 10.5 Domination and Profit and Loss Transfer Agreement between ADTRAN Holdings, Inc. and ADVA Optical Networking SE, dated November 30, 2022 (incorporated by reference to Exhibit 10.1 to the Company's Form 8-K filed December 5, 2022)
- 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.
- 101 The following financial statements from the Company's Annual Report on Form 10-K for the year ended December 31, 2021, formatted in inline eXtensible Business Reporting Language (iXBRL): (i) Consolidated Balance Sheets, (ii) Consolidated Statements of (Loss) Income, (iii) Consolidated Statements of Comprehensive 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

(P) Indicates a paper filing with the SEC.

+ 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.

† Confidential treatment has been requested as to certain portions of this document. Each such portion, which has been omitted therein and replaced with an asterisk (*), has been filed separately with the Securities and Exchange Commission.

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 March 1, 2023.

**ADTRAN Holdings, Inc.
(Registrant)**

By: /s/ Michael Foliano
Michael Foliano
Senior Vice President of Finance and
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 1, 2023.

<u>Signature</u>	<u>Title</u>
<u>/s/ Thomas R. Stanton</u> Thomas R. Stanton	Chief Executive Officer and Chairman of the Board (Principal Executive Officer)
<u>/s/ Michael Foliano</u> Michael Foliano	Senior Vice President of Finance and Chief Financial Officer (Principal Financial Officer and Principal Accounting Officer)
<u>/s/ Johanna Hey*</u> Johanna Hey	Director
<u>/s/ H. Fenwick Huss*</u> H. Fenwick Huss	Director
<u>/s/ Gregory McCray*</u> Gregory McCray	Director
<u>/s/ Balan Nair*</u> Balan Nair	Director
<u>/s/ Brian Protiva*</u> Brian Protiva	Director
<u>/s/ Jacqueline H. Rice*</u> Jacqueline H. Rice	Director
<u>/s/ Nikos Theodosopoulos*</u> Nikos Theodosopoulos	Director
<u>/s/ Kathryn A. Walker*</u> Kathryn A. Walker	Director

*By: /s/ Michael Foliano
Michael Foliano as Attorney in Fact

ADTRAN Holdings, Inc.
SCHEDULE II
VALUATION AND QUALIFYING ACCOUNTS

<i>(In thousands)</i>	<u>Balance at Beginning of Period</u>	<u>Charged to Costs & Expenses</u>	<u>Deductions</u>	<u>Balance at End of Period</u>
<i>Year ended December 31, 2022</i>				
Allowance for Credit Losses	\$ —	49	—	\$ 49
Deferred Tax Asset Valuation Allowance	\$ 50,564	—	45,363	\$ 5,201
<i>Year ended December 31, 2021</i>				
Allowance for Credit Losses	\$ 38	(38)	—	\$ —
Deferred Tax Asset Valuation Allowance	\$ 45,818	6,347	1,601	\$ 50,564
<i>Year ended December 31, 2020</i>				
Allowance for Credit Losses	\$ 38	—	—	\$ 38
Deferred Tax Asset Valuation Allowance	\$ 48,616	5,120	7,918	\$ 45,818

ADTRAN HOLDINGS, INC.
2023 INTEGRATION AWARD AGREEMENT

This 2023 Integration Award Agreement (this “Agreement”) sets forth the specified terms of a grant of a special integration award (the “Integration Award”) in connection with the business combination (the “Business Combination”) between ADTRAN Holdings, Inc. (the “Company”) and ADVA Optical Networking SE. Specifically, the applicable grantee (the “Participant”) named in the Morgan Stanley StockPlan Connect (the “Portal”) is eligible to earn an Integration Award with a maximum total value set forth in the Portal, which is comprised of (i) the opportunity to earn up to 66% of the Participant’s base salary in Performance Stock Units (“PSUs”), with such PSUs being issued pursuant to the ADTRAN Holdings, Inc. 2020 Employee Stock Incentive Plan (the “Plan”), and (ii) the opportunity to earn up to 66% of the Participant’s base salary in cash (the “Cash Award”). All capitalized terms used but not defined herein shall have the meanings ascribed to such terms in the Plan.

Performance Period: The period beginning on the date of grant set forth in the Portal (the “Date of Grant”) and ending on December 31, 2024 (the “Performance Period”).

Calculation of Earned Integration Award: The Participant is eligible to earn the Integration Award based on the Company’s achievement of cost savings targets related to the Business Combination (the “Performance Goal”) during the Performance Period. See Exhibit A attached hereto.

Payment and Issuance of Earned Integration Award: Except in connection with a Separation from Service prior to the end of the Performance Period, in which case the timing of payment and issuance of any earned Integration Award shall be governed by the Plan, the Company will pay the Cash Award, if any, and issue one share of the Company’s Common Stock for every earned PSU, if any, to the Participant as soon as administratively practicable following the date that the Compensation Committee certifies the level of achievement of the Performance Goal in accordance with Exhibit A (and in any event within two and one-half (2 ½) months following the end of the Performance Period); 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 1933 Act and causing such registration statement to become effective) with respect to such shares of Common Stock before the delivery 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.

Dividend Credits: The Participant shall receive dividend credits upon the Company’s payment of cash dividends for its Common Stock during the Performance Period 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 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.

Separation from Service: In the event the Participant incurs a Separation from Service for any reason prior to the end of the Performance Period, the treatment of the Integration Award shall be governed by the terms of the Plan.

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 be forwarded 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 granted above are subject to all restrictions, terms and conditions set forth in the Plan. In the event of any inconsistency between this Agreement and the Plan, the provisions of the Plan shall govern. 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.

If there are any questions regarding this Agreement or the Integration Award, please refer to the Plan or contact Joia Thompson at _____.

ADTRAN Holdings, Inc.

EXHIBIT A

Calculation of Earned Integration Award

The calculation of the earned Integration Award, if any, will be determined based on the Company's achievement of cost savings targets related to the Business Combination ("Company Synergy Achievement") during the Performance Period. Company Synergy Achievement is calculated, using the Company's audited financial results, as the Company's non-GAAP expenses, adjusted for restructuring expenses; acquisition-related expenses, amortizations, and adjustments; stock-based compensation expense; amortization of actuarial pension losses and the impact of equity market changes on deferred compensation expenses; non-operating income; and any other non-GAAP exclusions adopted by the Company. Company Synergy Achievement will be compared to the Company's projected cost savings due to the Business Combination over the Performance Period (the "Synergy Budget Target"). If necessary, the Synergy Budget Target will be updated by the Company's Finance department during the Performance Period in the case of organizational changes, M&A activity, and other modifications to the organization and business. The final performance of the Company Synergy Achievement compared to the Synergy Budget Target will be audited and approved by the Company's Internal Audit department.

Calculation of Earned PSUs

The Participant is eligible to earn a percentage of Base Salary (as defined below) in PSUs based on the chart below:

Company Synergy Achievement	Earned PSUs as % of Base Salary
[]	0%
[]	33%
[]	66%

"Base Salary" is determined as of the Date of Grant but may be adjusted for certain individuals with changing responsibilities due to the Business Combination.

Note that \$[] is considered the "threshold" level of Company Synergy Achievement, and such level must be achieved for any PSUs to be issued, and \$[] is considered the "target" level of Company Synergy Achievement. The number of PSUs issued will be based on the Fair Market Value of the Common Stock, as defined in Section 2.18(a) of the Plan, on the date that the Compensation Committee certifies the level of Company Synergy Achievement.

Calculation of Earned Cash Award

If the threshold level of Company Synergy Achievement is reached, the Participant is also eligible to earn between 0% and 66% of base salary (as of the Date of Grant) based on the percentage of individual objectives related to cost savings achieved by the Participant, as determined by the Compensation Committee. For the sale of clarity, if the target level of Company Synergy Achievement is achieved and all the individual objectives are achieved, the Participant will earn the maximum Integration Award equal to 132% of the Participant's Base Salary.

Example Calculations

Company Synergy Achievement	Earned PSUs as % of Base Salary	Individual Objectives Achievement	Earned Cash Award as % of Base Salary
\$[]M	0%	100%	0%
\$[]M	33%	50%	33%
\$[]M	33%	100%	66%
\$[]M	66%	100%	66%

Exhibit 10.1(t)

ADTRAN HOLDINGS, INC.

2020 EMPLOYEE STOCK INCENTIVE PLAN

*Originally effective May 13, 2020
Amended and Restated Effective July 8, 2022*

ADTRAN HOLDINGS, INC.
AMENDED AND RESTATED
2020 EMPLOYEE STOCK INCENTIVE PLAN

ARTICLE I
PLAN INFORMATION

1.1 Background. ADTRAN, Inc. (the “*ADTRAN, Inc.*”), predecessor to ADTRAN Holdings, Inc. (the “*Company*”), initially adopted this equity incentive plan for the benefit of its employees to replace certain Prior Plans; provided, however, that notwithstanding that replacement, the Prior Plans shall remain in effect with respect to outstanding awards as long as the awards thereunder are outstanding. This plan was assumed by the Company, as the successor to ADTRAN, Inc., at the closing of the Merger for the benefit of the Company’s employees and was amended and restated effective July 8, 2022. This plan shall be known as the ADTRAN Holdings, Inc. 2020 Employee Stock Incentive Plan (as amended and restated, the “*Plan*”).

1.2 General Purpose. The purpose of the Plan is to further the growth and development of the Company by offering employees and key service providers and advisors of the Company and its Subsidiaries the opportunity to own a proprietary interest in the Company. The Company intends that the Plan will provide such individuals with an added incentive to continue in the employ and/or service, promote the growth, efficiency and profitability, and help to attract outstanding individuals to the service, of the Company and its Subsidiaries.

1.3 Types of Awards Available Under the Plan. The Plan permits Awards of Stock Options, Stock Appreciation Rights (“*SARs*”), Restricted Stock, and Restricted Stock Units (“*RSUs*”). The types of Stock Options permitted under the Plan are incentive stock options (“*ISOs*”) and nonqualified stock options (“*NQSOs*”).

1.4 Intended Tax Effects of Awards. The Company intends that ISOs granted under the Plan qualify as incentive stock options under Code Section 422. Restricted Stock Awards are subject to taxation under Code Section 83. Nonqualified Stock Options and Stock Appreciation Rights are subject to taxation when the Nonqualified Stock Option or Stock Appreciation Right is exercised. Restricted Stock Units are subject to taxation when the underlying shares of Common Stock are issued to the Participant.

1.5 Effective Date of the Plan. The Plan became effective on the date of its approval by the stockholders of ADTRAN, Inc. on May 13, 2020 (the “*Effective Date*”) in accordance with applicable law (including, without limitation, approvals required under Rule 16b-3 and Code Section 422).

1.6 Term. Unless earlier terminated by the Board pursuant to the provisions of Article IX hereof, the Plan shall remain in effect until the tenth (10th) anniversary of the Effective Date; provided, however, that notwithstanding its termination, the Plan shall remain in effect with respect to outstanding Awards as long as any Awards are outstanding.

1.7 Operation, Administration and Definitions. The operation and administration of the Plan are subject to the provisions of this Plan document. Capitalized terms used in the Plan are defined in Article II below or may be defined within the Plan.

1.8 Legal Compliance. The Plan is intended to comply with (a) the requirements for ISOs under Code Section 422, (b) Code Section 409A, to the extent any Awards are treated as nonqualified deferred compensation under Code Section 409A, and (c) the exemption of Awards under the provisions of Rule 16b-3.

ARTICLE II PLAN DEFINITIONS

The following words and phrases as used in this Plan shall have the meanings set forth in this Article unless a different meaning is clearly required by the context:

2.1 “**Affiliate**” means an entity that, directly or indirectly, controls, is controlled by, or is under common control with the Company, within the meaning of Rule 12b-2 of the Exchange Act.

2.2 “**Award**” means any award or benefit granted to Participant under the Plan, including, without limitation, the grant of Stock Options, Stock Appreciation Rights, Restricted Stock and/or Restricted Stock Units.

2.3 “**Award Agreement**” means the written (or electronic) agreement issued by the Company to the Participant that sets forth the terms and provisions of the Award granted under the Plan.

2.4 “**Base Value**” means the per share base price of a Stock Appreciation Right.

2.5 “**Beneficiary**” means, with respect to a Participant, the person(s) to whom the Participant’s Award shall be transferred upon the Participant’s death, determined as set forth in Section 10.1.

2.6 “**Board**” or “**Board of Directors**” means the Board of Directors of the Company.

2.7 “**Cause**” means, as defined in such Participant’s employment, severance or similar agreement (if any) with the Company or an Affiliate if such an agreement exists as of the Participant’s Separation from Service and contains a definition of cause (or a like term) or, if no such agreement exists or such agreement does not contain a definition of cause (or a like term), then Cause means:

- (a) willful and continued failure to substantially perform his duties with the Company or any Affiliate within ten (10) business days after a written demand for substantial performance is delivered to the Participant which identifies the manner in which the Company or such Affiliate believes that the Participant has not substantially performed his duties;
- (b) unlawful or willful misconduct which is economically injurious to the Company or to any Affiliate;
- (c) commission of, or a plea of guilty or *nolo contendere* to, a felony charge (other than a traffic violation);
- (d) habitual drug or alcohol abuse that impairs the Participant’s ability to perform the essential duties of his position;
- (e) an act of embezzlement or fraud;
- (f) competition with the business of the Company or an Affiliate, either directly or indirectly; or
- (g) a breach of any provision of any employment, confidentiality, intellectual property or non-competition agreement with the Company or an Affiliate, and to the extent curable, such breach is not cured by the Participant within ten (10) business days after a written notice is delivered to the Participant.

2.8 “*Change of Control*” means the occurrence of any of the following events on or after the Effective Date of this Plan:

- (a) Change in Ownership. A change in the ownership of the Company occurs on the date that any one person, or more than one person acting as a group, acquires ownership of stock of the Company that, together with stock held by such person or group, constitutes more than fifty percent (50%) of the total fair market value or total voting power of the stock of the Company. However, if any one person or more than one person acting as a group, is considered to own more than fifty percent (50%) of the total fair market value or total voting power of the stock of the Company, the acquisition of additional stock by the same person or persons is not considered to cause a change in the ownership of the Company or to cause a change in the effective control of the Company (within the meaning of subsection (b) below). An increase in the percentage of stock owned by any one person, or persons acting as a group, as a result of a transaction in which the Company acquires its stock in exchange for property, will be treated as an acquisition of stock for purposes of this Section. This applies only when there is a transfer of stock of the Company (or issuance of stock of the Company) and stock in the Company remains outstanding after the transaction.
- (b) Change in Effective Control. A change in the effective control of the Company occurs on the date that either: (1) any one person, or more than one person acting as a group, acquires (or has acquired during the twelve (12) month period ending on the date of the most recent acquisition by such person or persons) ownership of stock of the Company possessing thirty-five percent (35%) or more of the total voting power of the stock of the Company; or (2) a majority of members of the Board is replaced during any twelve (12) month period by directors whose appointment or election is not endorsed by a majority of the members of the Board prior to the date of the appointment or election. A change in effective control may occur in any transaction in which either of the two corporations involved in the transaction has a Change of Control; or
- (c) Change in Ownership of a Substantial Portion of Assets. A change in the ownership of a substantial portion of the Company’s assets shall occur on the date that any one person, or more than one person acting as a group, acquires (or has acquired during the twelve (12) month period ending on the date of the most recent acquisition by such person or persons) assets from the Company that have a total gross fair market value equal to or more than forty percent (40%) of the total gross fair market value of all of the assets of the Company immediately prior to such acquisition or acquisitions. For this purpose, gross fair market value means the value of the assets of the Company, or the value of the assets being disposed of, determined without regard to any liabilities associated with such assets.

Notwithstanding the foregoing, if it is determined that an Award hereunder is subject to Code Section 409A, the Company will not be deemed to have undergone a Change of Control unless the Company is deemed to have undergone a “change in ownership,” a “change in effective control,” or a “change in the ownership of a substantial portion of the assets,” within the meaning of Code Section 409A.

2.9 “*Code*” means the Internal Revenue Code of 1986, as amended. A reference to any provision of the Code includes any regulations and formal guidance issued thereunder and any reference to any successor provision of the Code.

2.10 “*Committee*” means the committee appointed by the Board pursuant to Section 3.2 hereof to administer and interpret the Plan in accordance with Article III. The Committee shall (a) consist of two or more individuals each of whom shall be, to the extent required by Rule 16b-3, a “non-employee director” as defined in Rule 16b-3, and (b) satisfy the applicable requirements of any stock exchange or national market system on which the Common Stock may then be listed.

2.11 “**Common Stock**” means the common stock of the Company, par value \$0.01 per share.

2.12 “**Company**” means ADTRAN Holdings, Inc., a Delaware corporation, and any successor thereto.

2.13 “**Disability**” means a Participant is unable to engage in any substantial gainful activity by reason of any medically-determinable physical or mental impairment which can be expected to result in death or which has lasted or can be expected to last for a continuous period of not less than twelve (12) months. A Participant shall be considered disabled only if he furnishes such proof of Disability as the Committee may reasonably require from time to time.

2.14 “**Effective Date**” means the effective date of this Plan, subject to shareholder approval as provided in Section 1.5.

2.15 “**Employee**” means any common law employee of the Company or a Subsidiary who is actively employed at the time the Award is made.

2.16 “**Exchange Act**” means the Securities Exchange Act of 1934, as amended.

2.17 “**Exercise Price**” means the purchase price of the shares of Common Stock underlying a Stock Option.

2.18 “**Fair Market Value**” of a share of Common Stock as of a date of determination means the following:

- (a) Stock Listed and Shares Traded. If the Common Stock is listed and traded on a national securities exchange (as such term is defined by the Exchange Act) or on the NASDAQ National Market System on the date of determination, the Fair Market Value per share shall be the closing price of a share of the Common Stock on said national securities exchange or NASDAQ National Market System on the business day immediately preceding the date of determination. If the Common Stock is traded in the over-the-counter market, the Fair Market Value per share shall be the closing price of a share on the business day immediately preceding the date of determination.
- (b) Stock Listed But No Shares Traded. If the Common Stock is listed on a national securities exchange or on the NASDAQ National Market System but no shares of the Common Stock are traded on the date of determination but there were shares traded on dates within a reasonable period before the date of determination, the Fair Market Value shall be the closing price of a share of the Common Stock on the most recent date before the date of determination. If the Common Stock is regularly traded in the over-the-counter market but no shares of the Common Stock are traded on the date of determination (or if records of such trades are unavailable or burdensome to obtain) but there were shares traded on dates within a reasonable period before the date of determination, the Fair Market Value shall be the average of the closing bid and asked prices of a share of the Common Stock on the most recent date before the date of determination on which trading occurred.
- (c) Stock Not Listed. If the Common Stock is not listed on a national securities exchange or on the NASDAQ National Market System and is not regularly traded in the over-the-counter market, then the Committee shall determine the Fair Market Value of the Common Stock in a manner consistent with the requirements of Code Section 409A, and in the case of an ISO, in compliance with Code Section 422.

In any event, the determination of Fair Market Value should be consistent with the requirements of Code Section 409A and in the case of an ISO, in compliance with Code Section 422. The Committee’s determination

of Fair Market Value, which shall be made pursuant to the foregoing provisions, shall be final and binding for all purposes of this Plan.

2.19 “**Family Member**” means a person who is a spouse, former spouse, child, stepchild, grandchild, parent, stepparent, grandparent, niece, nephew, mother-in-law, father-in-law, son-in-law, daughter-in-law, brother, sister, brother-in-law, or sister-in-law, including adoptive relationships, of the Participant, any person sharing the Participant’s household (other than a tenant or employee), a trust in which any one or more of these persons have more than fifty percent (50%) of the beneficial interest, a foundation in which any one or more of these persons (or the Participant) control the management of assets, and any other entity in which one or more of these persons (or the Participant) own more than fifty percent (50%) of the voting interests.

2.20 “**Incentive Stock Option**” or “**ISO**” means an option to purchase shares of Common Stock that is granted under Article VI hereof, designated as an incentive stock option, and intended to meet the requirements of Code Section 422.

2.21 “**Merger**” means the merger on July 8, 2022 of Acorn MergeCo, Inc., a Delaware corporation and then wholly-owned direct subsidiary of the Company (“Merger Sub”), with and into ADTRAN, Inc., with ADTRAN, Inc. surviving the merger as a wholly-owned direct subsidiary of the Company, pursuant to that certain Business Combination Agreement, dated as of August 30, 2021, by and among the Company, ADTRAN, Inc., ADVA Optical Networking SE and Merger Sub.

2.22 “**Nonqualified Stock Option**” or “**NQSO**” means an option to purchase shares of Common Stock that is granted under Article VI hereof and not an incentive stock option within the meaning of Code Section 422.

2.23 “**Officer**” means “officer” as defined in Rule 16a-1(f) under Section 16(a) of the Exchange Act.

2.24 “**Participant**” means an individual who has been selected to receive an Award, or with respect to whom an Award is outstanding, under the Plan.

2.25 “**Performance Measures**” means any one or more of the criteria or measurements by which specific performance goals may be established and performance may be measured, as determined by the Committee, in its discretion. Performance Measures may include any one or more of the following: (a) earnings before all or any taxes (“EBT”); (b) earnings before all or any of interest expense, taxes, depreciation and amortization (“EBITDA”); (c) earnings before all or any of interest expense, taxes, depreciation, amortization and rent (“EBITDAR”); (d) earnings before all or any of interest expense and taxes (“EBIT”); (e) net earnings; (f) net income; (g) operating income or margin; (h) earnings per share; (i) growth; (j) return on shareholders’ equity; (k) capital expenditures; (l) expenses and expense ratio management; (m) return on investment; (n) improvements in capital structure; (o) profitability of an identifiable business unit or product; (p) profit margins; (q) stock price; (r) market share; (s) revenues; (t) costs; (u) cash flow; (v) working capital; (w) return on assets; (x) economic value added; (y) industry indices; (z) peer group performance; (aa) regulatory ratings; (bb) asset quality; (cc) gross or net profit; (dd) net sales; (ee) total shareholder return; (ff) sales (net or gross) measured by product line, territory, customers or other category; (gg) earnings from continuing operations; (hh) net worth; (ii) levels of expense, cost or liability by category, operating unit or any other delineation; (jj) non-GAAP operating income; (kk) adjusted EBIT, and (ll) any other criteria or measurement approved by the Committee. Performance Measures may relate to the Company and/or one or more of its Affiliates, one or more of its divisions or units or any combination of the foregoing, on a consolidated or nonconsolidated basis, and may be applied on an absolute basis or be relative to one or more peer group companies or indices, or any combination thereof, all as the Committee determines.

2.26 “**Plan**” means this ADTRAN Holdings, Inc. 2020 Employee Stock Incentive Plan, as amended and restated.

2.27 “**Prior Plans**” means the:

- (a) ADTRAN, Inc. 1986 Employee Incentive Stock Option Plan (expired on February 14, 1996);
- (b) ADTRAN, Inc. 1996 Employees Incentive Stock Option Plan (expired on February 14, 2006);
- (c) ADTRAN, Inc. 2006 Employee Stock Incentive Plan (expired on January 23, 2016); and
- (d) ADTRAN, Inc. 2015 Employee Stock Incentive Plan (terminated upon the Effective Date of this Plan).

2.28 “**Restricted Stock**” means an Award of Common Stock that is subject to such conditions, restrictions and contingencies as the Committee determines, including the satisfaction of specified Performance Measures.

2.29 “**Restricted Stock Unit**” or “**RSU**” means an Award of a unit representing one share of Common Stock that, upon satisfaction of certain conditions, restrictions and contingencies as the Committee determines, including the satisfaction of specified Performance Measures shall result in the issuance of one share of Common Stock.

2.30 “**Retirement**” means the date of a Participant’s Separation from Service with the Company and all of its Affiliates at any time after (a) attaining age sixty-five (65) or (b) completing twenty-five (25) years of service for the Company, any Affiliate and any predecessor of the Company or Affiliate.

2.31 “**Rule 16b-3**” means Rule 16b-3 under Section 16(b) of the Exchange Act, as then in effect or any successor provision.

2.32 “**Securities Act**” means the Securities Act of 1933, as amended.

2.33 “**Separation from Service**” means a termination of employment or service by a Participant with the Company and its Affiliates; provided, that if any Award that is treated as nonqualified deferred compensation (within the meaning of Code Section 409A), or any dividend or dividend credit thereon, is to be paid or distributed upon a Separation from Service, then a Separation from Service shall not occur unless it qualifies as a “separation from service” within the meaning of Code Section 409A. Unless otherwise stated in the applicable Award Agreement, a Participant’s change in position, duties or status (*e.g.*, from employee to consultant, consultant to director, employee to director) shall not result in interrupted or terminated employment or service, so long as such Participant continues to provide services to the Company or an Affiliate and a “separation from service” under Code Section 409A is not deemed to have occurred. The determination of whether an authorized leave of absence or absence for military or government service or for any other reason shall constitute a Separation from Service for purposes of any Award granted under the Plan shall be determined by the Committee and, if applicable, in accordance with Code Section 409A, which determination shall be final and conclusive.

2.34 “**Stock Appreciation Right**” or “**SAR**” means an Award representing a Participant’s right to receive payment in the form of cash or Common Stock in an amount equal to the excess of the Fair Market Value of the exercised shares of Common Stock subject to such SAR (or portion thereof) over their Base Value.

2.35 “*Stock Option*” means an ISO or NQSO, as applicable, granted to an Employee or service provider under the Plan.

2.36 “*Subsidiary*” means any “subsidiary corporation” of the Company within the meaning of Code Section 424(f).

2.37 “*Ten Percent Shareholder*” means an individual who owns more than ten percent (10%) of the total combined voting power of all classes of outstanding stock of the Company, its parent (as defined in Code Section 424(e)), or any of its Subsidiaries. In determining stock ownership, the attribution rules of Code Section 424(d) shall apply.

ARTICLE III PLAN ADMINISTRATION

3.1 General Administration. The Plan shall be administered and interpreted by the Committee (as designated pursuant to Section 3.2). Subject to the express provisions of the Plan, the Committee shall have authority to interpret the Plan, to prescribe, amend and rescind rules and regulations relating to the Plan, to determine the terms and provisions of the Award Agreements by which Awards shall be evidenced (which shall not be inconsistent with the terms of the Plan), and to make all other determinations necessary or advisable for the administration of the Plan, all of which determinations shall be final, binding and conclusive on all persons.

3.2 Appointment of Committee. The Board shall appoint the Committee from among its non-employee members to serve at the pleasure of the Board. The Board from time to time may remove members from, or add members to, the Committee and shall fill all vacancies thereon.

3.3 Organization. The Committee may select one of its members as its chairman and shall hold its meetings at such times and at such places as it shall deem advisable. A majority of the Committee shall constitute a quorum, and such majority shall determine its actions. The Committee shall keep minutes of its proceedings and shall report the same to the Board at least annually.

3.4 Individuals Eligible for Awards. The individuals eligible to receive Awards shall be (a) active Employees of the Company or its Subsidiaries, including Employees who are also members of the Board and (b) key service providers and advisors of the Company. Only Employees of the Company or any Subsidiary shall be eligible to receive ISOs.

3.5 Powers of Committee. The Committee may make one or more Awards under the Plan. The Committee shall decide which eligible Employees and service providers shall receive an Award and when to grant an Award, the type of Award that it shall grant and the number of shares of Common Stock covered by the Award, subject to the terms of the Plan. The Committee shall also decide the terms, conditions, performance criteria, restrictions and other provisions of the Award. The Committee shall act by a majority of its then members, at a meeting of the Committee or by unanimous written consent. The Committee shall keep adequate records concerning the Plan and the Committee’s proceedings and acts in such form and detail as the Committee may decide.

3.6 Delegation by Committee. Unless prohibited by applicable law or the applicable rules of a stock exchange, the Committee may allocate all or some of its responsibilities and powers to any one or more of its members. The Committee also may delegate some or all of its administrative duties and powers to any employee or Officer of the Company or its Affiliates. The Committee hereby delegates to the Company’s Chief Executive Officer (a) the authority to grant Awards under the Plan to service providers and Employees who are not officers of the Company or any Affiliate, provided that any such Award shall be governed by the form of Award Agreement most recently approved by the Committee for use in making Awards under the Plan and the Chief Executive Officer shall report any such grants to the Committee at its next meeting; and (b) in the event a

Participant Separates from Service, the power to accelerate the exercisability or vesting of any outstanding Award held by the Participant, or to permit any such Award to continue to vest in accordance with its original vesting schedule. The Committee hereby delegates to the Company's Corporate Secretary the authority to document any and all Awards made by the Committee and/or the Chief Executive Officer under the Plan by execution of the appropriate Award Agreements. The Committee may revoke any such allocation or delegation at any time.

3.7 Information to be Furnished to Committee. In order for the Committee to discharge its duties, it may require the Company, its Affiliates, Participants and other persons entitled to benefits under the Plan to provide it with certain data and information.

3.8 Deferral Arrangement. The Committee may permit or require the deferral of payment of any Award, subject to such rules and procedures as it may establish and in accordance with Code Section 409A. Unless otherwise provided in an Award Agreement, any such deferral will not include provisions for the payment or crediting of interest or dividend equivalents.

3.9 Indemnification. In addition to such other rights of indemnification that apply to them as members of the Board or a committee thereof, the Company shall indemnify the members of the Committee (and any designees of the Committee, as permitted under Section 3.6), to the extent permitted by applicable law, against reasonable expenses (including, without limitation, attorney's fees) actually and necessarily incurred in connection with the defense of any action, suit or proceeding, or in connection with any appeal, to which they or any of them may be a party by reason of any action taken or failure to act under or in connection with the Plan or any Award awarded hereunder, and against all amounts paid by them in settlement thereof (provided such settlement is approved to the extent required by and in the manner provided by the Articles of Incorporation or the Bylaws of the Company relating to indemnification of the members of the Board) or paid by them in satisfaction of a judgment in any such action, suit or proceeding, except in relation to such matters as to which it is adjudged in such action, suit or proceeding that such Committee member or members (or their designees) did not act in good faith and in a manner reasonably believed to be in or not opposed to the best interests of the Company.

ARTICLE IV STOCK SUBJECT TO THE PLAN

4.1 Common Stock Subject to Awards. Common Stock subject to Awards and other provisions of the Plan shall consist of the following: (a) authorized but unissued shares of Common Stock; (b) authorized and issued shares of Common Stock held by the Company in its treasury which have been reacquired by the Company; and (c) shares of Common Stock purchased by the Company in the open market.

4.2 Authorized Shares. Subject to adjustment in accordance with the provisions of Section 4.3, the maximum number of shares of Common Stock that may be issued under the Plan for Awards shall equal two million seven hundred seventy two thousand (2,772,000) shares of Common Stock (subject to increase in connection with awards previously granted under the Prior Plans as provided in Section 4.2(b)), all of which may be issued as ISOs under the Plan, and adjusted as follows:

- (a) Each Award of Stock Options, Restricted Stock or Restricted Stock Units granted under this Plan will reduce the number of authorized shares available under the Plan by one (1) share of Common Stock for each share underlying such Award.
- (b) Shares of Common Stock underlying an Award under this Plan or Prior Plans that is cancelled, terminated, expires without exercise, is forfeited, or lapses, for any reason shall again be available for issuance pursuant to Awards under this Plan (in the case of Restricted Stock or RSUs granted under the 2015 Employee Stock Incentive Plan, at the 2.5 share multiple provided by such Prior Plan).
- (c) Notwithstanding anything to the contrary herein, the following shares shall not again become available for issuance under the Plan: (1) shares of Common Stock withheld by, or otherwise remitted to, the Company as full or partial payment of the Exercise Price to the Company upon exercise of Stock Options granted under the Plan; (2) shares of Common Stock reserved for issuance under the Plan upon the grant of SARs to the extent the number of reserved shares exceeds the number of shares actually issued upon exercise of the SARs; and (3) shares of Common Stock withheld by, or otherwise remitted to, the Company to satisfy a Participant's tax withholding obligations upon the lapse of restrictions on Restricted Stock or RSUs or upon the exercise of Stock Options or SARs or upon any other payment or issuance under the Plan.

The Committee shall establish appropriate methods for determining the number of shares available for issuance under the Plan and the number of shares that have been actually issued under the Plan at any time. In no event shall fractional shares of Common Stock be issued under the Plan.

4.3 Effects of Changes in Capitalization.

- (a) Changes to Common Stock. If the number of outstanding shares of Common Stock is increased or decreased or the shares of Common Stock are changed into or exchanged for a different number or kind of shares or other securities of the Company on account of any recapitalization, reclassification, stock split, reverse split, combination of shares, exchange of shares, stock dividend or other distribution payable in capital stock, or other increase or decrease in such shares effected without receipt of consideration by the Company occurring after the Effective Date ("**Equity Restructuring**"), the number and kinds of shares for which Awards may be granted under the Plan, the Exercise Price and/or the Base Value shall be adjusted proportionately and accordingly by the Committee; provided, that any such adjustment shall comply with Code Sections 409A and 424, if applicable. In addition, the number and kind of shares of Common Stock for which Awards are outstanding shall be adjusted proportionately and accordingly so that the proportionate interest of the Participant immediately following such event shall, to the extent

practicable, be the same as immediately before such event. The conversion of any convertible securities of the Company shall not be treated as an increase in shares effected without receipt of consideration.

- (b) Change of Control and Other Corporate Transactions. In the event of a merger, consolidation, reorganization, extraordinary dividend, tender offer for Common Stock, Change of Control or other change in capital structure of the Company that is not an Equity Restructuring under subsection (a) above, the Committee may (but is not required to) make such adjustments with respect to Common Stock that may be issued pursuant to Awards and the number and/or Exercise Price or Base Value of outstanding Awards and take such other action as it deems necessary or appropriate, including, without limitation, and subject to the requirements of Code Sections 409A and 424, if applicable:
- (1) making appropriate provision for the continuation of an Award by substituting on an equitable basis for the shares of Common Stock then subject to such Award either the consideration payable with respect to the outstanding shares of Common Stock in connection with the Change of Control or securities of any successor or acquiring entity;
 - (2) upon reasonable prior written notice to the Participant, providing that: (i) the Stock Options and/or SARs held by such Participant, to the extent then exercisable, must be exercised within a specified number of days after the date of such notice, at the end of which period the Stock Options and/or SARs shall terminate without payment, and/or (ii) a grant of Restricted Stock and/or RSUs Stock must be accepted (to the extent then subject to acceptance) within a specified number of days after the date of such notice, at the end of which period the offer of the Restricted Stock and/or RSUs shall terminate;
 - (3) terminating an Award, whether vested or unvested, in exchange for a payment equal to (i) for Restricted Stock and RSUs, the Fair Market Value of the shares of Common Stock subject to the Award or (ii) for Stock Options and SARs, the excess of the Fair Market Value of the shares of Common Stock subject to the Award over the Exercise Price or Base Value, as applicable;
 - (4) providing that an Award shall become (as applicable) fully vested and exercisable, and any vesting period or restrictions shall lapse, immediately prior to the Change of Control; and/or
 - (5) with respect to an Award subject to Performance Measures, providing that any incomplete performance periods shall end on the date of such Change of Control (or other corporate transaction described in this subsection (b)), and the Committee shall cause the Award to be settled based upon the higher of: (i) the Participant's actual attainment of performance goals for the performance period through the date of the Change of Control (or other corporate transaction described in this subsection (b)) or (ii) the performance target award.

Notwithstanding anything to the contrary, an Award having an Exercise Price or Base Value equal to or greater than the Fair Market Value of the consideration to be paid per share of Common Stock in the Change of Control may be canceled without payment of consideration to the applicable Participant.

- (c) Limits on Adjustments. Any issuance by the Company of stock of any class other than the Common Stock, or securities convertible into shares of stock of any class, shall not affect, and no adjustment by reason thereof shall be made with respect to, the number or price of shares of the Common Stock subject to any Award, except as specifically provided otherwise in this Plan. The

grant of Awards under the Plan shall not affect in any way the right or authority of the Company to make adjustments, reclassifications, reorganizations or changes of its capital or business structure or to merge, consolidate or dissolve, or to liquidate, sell or transfer all or any part of its business or assets. No fractional shares or other securities shall be issued pursuant to any such adjustment, and any fractions resulting from any such adjustment shall be eliminated in each case by rounding downward to the nearest whole share with no cash payment due therefor. If the Company issues any rights to subscribe for additional shares pro rata to holders of outstanding shares of the class or classes of stock then set aside for the Plan, then each Participant shall be entitled to the same rights on the same basis as holders of outstanding shares with respect to such portion of the Participant's Award as is exercised on or prior to the record date for determining shareholders entitled to receive or exercise such rights. All adjustments the Committee makes under this Plan shall be final and conclusive.

ARTICLE V RULES APPLICABLE TO AWARDS

5.1 Maximum Annual Limits on Awards. Subject to adjustment as provided in Section 4.3, the number of shares of Common Stock underlying Awards granted to a Participant in any calendar year shall not exceed 500,000 shares of Common Stock.

5.2 Transferability.

(a) Except as provided in subsection (b) below: (1) no Award shall be assignable or transferable by the Participant except by transfer to a Beneficiary upon the death of the Participant, and any purported transfer (other than as excepted above) shall be null and void. After the death of a Participant and upon the death of the Participant's Beneficiary, an Award shall be transferable only by will or the laws of descent and distribution; (2) Awards shall be exercisable during the Participant's lifetime only by the Participant (or a legal representative if the Participant becomes incapacitated); and (3) nothing contained in this Section 5.2 shall preclude a Participant from transferring shares of Restricted Stock that have vested, or shares of Common Stock that are issued in settlement of a Stock Option, SAR or RSUs, subject to the remaining provisions of this Plan and applicable law.

(b) A Participant may transfer not for value any Award other than an ISO to any Family Member of the Participant using such form and subject to such additional administrative procedures as approved by the Committee from time to time; provided, however, that any such Award shall remain subject to all vesting, forfeiture, and other restrictions provided herein and in the Award Agreement to the same extent as if it had not been transferred. For purposes of this subsection (b), a "not for value" transfer is a transfer which is (1) a gift, (2) a transfer under a domestic relations order in settlement of marital property rights; or (3) a transfer to an entity in which more than fifty percent (50%) of the voting interests are owned by Family Members (or the Participant) in exchange for an interest in that entity. Subsequent transfers of transferred Awards are prohibited except to Family Members of the Participant in accordance with this subsection (b) or by will or the laws of descent and distribution.

5.3 Accelerated Exercisability and Vesting. The Committee (or the Company's Chief Executive Officer, in the case of Awards granted to employees and service providers who are not Officers) shall always have the discretionary power to accelerate the exercisability or vesting of, any Award granted under the Plan, or to permit the continued vesting of any such Award according to its original vesting schedule, notwithstanding the

Participant's Separation from Service for any reason. Unless otherwise determined by the Committee and set forth in the applicable Award Agreement, in the event of one of the following events, any outstanding Awards shall immediately become fully exercisable or vested: (1) the Participant's death; (2) the Participant's Separation from Service due to Disability; or (3) a Change of Control of the Company; provided, however, if an outstanding Award of Restricted Stock or RSUs remains subject to any performance-based vesting schedule, then upon one of the above events, a proportion of the shares subject to such Award shall become vested and nonforfeitable, equal to the proportion of the time completed through the date of the applicable event to the performance measurement period for the Award, with target performance level deemed to be achieved as of the date of the applicable event, and in the event the Restricted Stock or RSU Award was originally scheduled without a designated target performance level (e.g., a single performance level or minimum and maximum performance levels), then the performance level that, if met, would have resulted in the least number of shares becoming vested shall be treated as the target level.

5.4 Separation From Service. Unless the Committee decides otherwise, all Awards (or portions thereof) that remain unexercisable or unvested upon the Participant's Separation from Service for any reason other than the events listed in Section 5.3 shall be forfeited by the Participant immediately upon the date of such Separation from Service.

5.5 Waiver of Restrictions. The Committee (or the Company's CEO, as provided in Section 5.3 above) may elect, in its sole discretion, to waive any or all restrictions with respect to any Award under the Plan.

5.6 No Repricing of Awards. Except as provided in Section 4.3, the Committee shall not amend any Stock Option or SAR to reduce its Exercise Price or Base Value, and shall not issue to any Participant a new Award in exchange for the surrender and cancellation of any other Award, if such new Award has an Exercise Price or Base Value (as applicable) lower than that of the Award for which it is exchanged, or take any other action that would have the effect of reducing the Exercise Price or Base Value of a Stock Option or SAR.

ARTICLE VI STOCK OPTIONS

6.1 Grant of Stock Options. The Committee may grant Stock Options for shares of Common Stock in such amounts as it may determine and subject to the provisions of the Plan. A Stock Option shall constitute an ISO only if the Participant is an Employee and the Stock Option is specifically designated as an Incentive Stock Option in the applicable Award Agreement.

6.2 Award Agreement. An Award of a Stock Option shall be evidenced by an Award Agreement that specifies the following terms and any additional terms and conditions determined by the Committee and not inconsistent with the Plan: (a) the name of the Participant; (b) the total number of shares of Common Stock to which the Stock Option pertains; (c) the Exercise Price of the Stock Option; (d) the date as of which the Committee granted the Stock Option; (e) the type of Stock Option granted; (f) the requirements for the Stock Option to become exercisable, such as continuous service, time-based schedule, period and goals for Performance Measures to be satisfied, additional consideration, etc.; (g) the expiration date of the Stock Option; and (h) the Beneficiary of the Participant.

6.3 Exercise Price. The per share Exercise Price of a Stock Option shall not be less than 100% of the Fair Market Value of a share of Common Stock as of the date of grant (or, in the case of an ISO granted to a Ten Percent Shareholder, 110% of the Fair Market Value of a share of Common Stock as of the date of grant).

6.4 Exercisability.

- (a) General Schedule. Subject to paragraph (b) below, each Stock Option shall become exercisable 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%

Once a portion of a Stock Option is exercisable, that portion continues to be exercisable until the Stock Option expires (as described in Section 6.5). Fractional shares shall be disregarded for exercise.

- (b) Other Vesting Requirements. The Committee may specify another vesting schedule in the Award Agreement, whether time-based or performance-based and with any other conditions, restrictions and contingencies as it determines, in its sole discretion, *provided* that such schedule may not result in vesting of any portion of the Stock Option before the one (1) year anniversary of its date of grant, except in the event of the Participant's death or Disability or pursuant to Committee action taken in connection with a Change of Control as described in Section 4.3(b). The Committee may designate a single goal criterion or multiple goal criteria for performance measurement purposes. Notwithstanding the foregoing, the Committee (or the CEO pursuant to the delegation described in Section 3.6) may in its discretion in connection with a Participant's Separation from Service, accelerate the vesting of any Stock Option held by the Participant or permit the continued vesting of such Award on the vesting schedule set forth in the Participant's Award Agreement. Other than as provided in the preceding sentences, if a Participant Separates from Service, his or her rights to all non-vested Stock Options shall cease immediately.

6.5 Expiration Date.

- (a) Expiration Date. The expiration date of any Stock Option shall be the earliest to occur of the following:
- (1) Maximum Term. The date ten (10) years from the date of grant of the Stock Option (or for an ISO granted to a Ten Percent Shareholder, five (5) years from the date of grant);
 - (2) Termination for Cause. The date of the Participant's Separation from Service for Cause with the Company and all Affiliates;
 - (3) Separation from Service due to Death, Disability or Retirement. The one-year anniversary of the Participant's Separation from Service with the Company and all Affiliates due to death, Disability or Retirement, or such shorter period as determined by the Committee and set forth in the Award Agreement; and
 - (4) Separation from Service. The date that is three (3) months following the date of the Participant's Separation from Service with the Company and all Affiliates for any reason

other than those specified elsewhere in this Section 6.5(a), or such shorter period as determined by the Committee and set forth in the Award Agreement.

Notwithstanding the foregoing, the Committee may, in its discretion, in connection with a Participant's Separation from Service, permit an Award to remain exercisable for the full exercise period set forth in the Award Agreement or the maximum term as described in Section 6.5(a)(1) above so long as such extension does not violate Code Section 409A or other applicable laws.

- (b) Expiration Date Following Change of Control. Notwithstanding the provisions of Section 6.5(a) above and unless the Committee specifies otherwise in the Award Agreement, at any time following a Change of Control of the Company, in the event a Participant incurs a Separation from Service with the Company and its Affiliates for any reason other than: (1) due to death or Disability, (2) for Cause or (3) due to a voluntary resignation, the term of all Stock Options held by such Participant shall be extended to their maximum term as described in Section 6.5(a)(1) above.

6.6 Minimum Exercise Amount. Unless the Committee specifies otherwise in the Award Agreement, a Participant may exercise a Stock Option for less than the full number of shares of Common Stock subject to the Stock Option. However, each exercise may not be made for less than 100 shares or, if less, the total remaining shares subject to the Stock Option. The Committee may in its discretion specify other Stock Option terms, including restrictions on frequency of exercise and periods during which Stock Options may not be exercised.

6.7 Payment of Exercise Price. The Participant must pay the full Exercise Price for shares of Common Stock purchased upon the exercise of any Stock Option, and all applicable withholding taxes, at the time of such exercise by one of the following forms of payment:

- (a) cash or cash equivalents acceptable to the Company;
- (b) delivery (on a form acceptable to the Committee) of an irrevocable direction to a licensed securities broker acceptable to the Company to sell shares of Common Stock and to deliver all or part of the sales proceeds to the Company in payment of the Exercise Price;
- (c) delivery of shares of Common Stock already owned by the Participant (and for which the Participant has good title free and clear of any liens and encumbrances) having a Fair Market Value on the date of surrender equal to the aggregate Exercise Price and taxes due;
- (d) with the Committee's approval, having the Company withhold shares of Common Stock that otherwise would be acquired on exercise having a Fair Market Value equal to the aggregate Exercise Price; or
- (e) any combination of the above forms or any other form of payment permitted by the Committee.

6.8 Rights as a Shareholder. A Participant shall first have rights as a shareholder of the Company with respect to shares of Common Stock covered by a Stock Option (including rights to dividends and voting) only when the Participant has paid the Exercise Price and applicable withholding taxes in full and the shares actually have been issued to the Participant. No dividend equivalents shall be payable with respect to unexercised Stock Options or unissued shares.

6.9 Limitations on ISOs.

- (a) An Award shall qualify as an ISO only to the extent that the aggregate Fair Market Value (determined at the time the Stock Option is granted) of the shares of Common Stock with respect to which all ISOs held by such Participant become exercisable for the first time during any calendar year (under the Plan, the Prior Plans, and all other plans of the Company, its parent (as defined in Code Section 424(e)) or a Subsidiary) does not exceed \$100,000. This \$100,000 limitation shall be applied by taking ISOs into account in the order in which they were granted. Any portion of an ISO in excess of such \$100,000 limitation will be treated as a NQSO.
- (b) If any Participant shall make any disposition of shares of Common Stock delivered pursuant to the exercise of an ISO that is a disqualifying disposition, such Participant shall notify the Company of such disposition within ten (10) business days thereof. A disqualifying disposition is any disposition (including any sale) of Common Stock acquired upon exercise of an ISO before the later of (1) two (2) years after the grant date of the ISO or (2) one (1) year after the date the Participant acquired the Common Stock by exercising the ISO.
- (c) If all or part of an ISO is not exercised within (1) three (3) months after the date of the Participant's Separation from Service for any reason except due to death or Disability, or (2) within one (1) year following the Participant's Separation from Service due to death or Disability, but remains exercisable, the unexercised portion thereof shall automatically be treated as a NQSO for the remainder of the term of the Stock Option.

ARTICLE VII STOCK APPRECIATION RIGHTS

7.1 Grant of SARs. The Committee may grant Stock Appreciation Rights to Participants in such amounts as it may determine and subject to the provisions of the Plan.

7.2 SAR Award Agreement. An Award of SARs shall be evidenced by an Award Agreement that specifies the following terms and any additional terms and conditions determined by the Committee and not inconsistent with the Plan: (a) the name of the Participant; (b) the total number of shares of Common Stock to which the SAR pertains; (c) the Base Value of the SAR; (d) the date as of which the Committee granted the SAR; (e) the type of SAR granted; (f) the requirements for the SAR to become exercisable, such as continuous service, time-based schedule, period and goals for Performance Measures to be satisfied, additional consideration, etc.; (g) the expiration date of the SAR; and (h) the Beneficiary of the Participant.

7.3 Base Value. The per share Base Value of each SAR shall not be less than 100% of the Fair Market Value of a share of Common Stock as of the date of grant.

7.4 Exercisability.

- (a) General Schedule. Subject to paragraph (b) below, each SAR shall become exercisable 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%

Once a portion of a SAR is exercisable, that portion continues to be exercisable until the SAR expires (as described in Section 7.5). Fractional shares shall be disregarded for exercise.

- (b) Other Vesting Requirements. The Committee may specify another vesting schedule in the Award Agreement, whether time-based or performance-based and with any other conditions, restrictions and contingencies as it determines, in its sole discretion, *provided* that such schedule may not result in vesting of any portion of the SAR before the one (1) year anniversary of its date of grant, except in the event of the Participant's death or Disability or pursuant to Committee action taken in connection with a Change of Control as described in Section 4.3(b) above. The Committee may designate a single goal criterion or multiple goal criteria for performance measurement purposes. Notwithstanding the foregoing, the Committee (or the CEO pursuant to the delegation described in Section 3.6) may in its discretion in connection with a Participant's Separation from Service, accelerate the vesting of any SAR held by the Participant or permit the continued vesting of such Award on the vesting schedule set forth in the Participant's Award Agreement. Other than as provided in the preceding sentences, if a Participant Separates from Service, his or her rights to all non-vested SARs shall cease immediately.

7.5 Expiration Date.

- (a) Expiration Date. The expiration date of any SAR shall be the earliest to occur of the following:
- (1) Maximum Term. The date ten (10) years from the date of grant of the SAR;
 - (2) Separation from Service for Cause. The date of the Participant's Separation from Service for Cause with the Company and all Affiliates;
 - (3) Separation from Service due to Death, Disability or Retirement. The one-year anniversary of the Participant's Separation from Service with the Company and all Affiliates due to death, Disability or Retirement, or such shorter period as determined by the Committee and set forth in the SAR Agreement; and
 - (4) Separation from Service. The date that is three (3) months following the date of the Participant's Separation from Service with the Company and all Affiliates for any reason other than those specified elsewhere in this Section 7.5(a), or such shorter period as determined by the Committee and set forth in the SAR Agreement.

Notwithstanding the foregoing, the Committee may, in its discretion, in connection with a Participant's Separation from Service, permit an Award to remain exercisable for its full original period of exercise or the maximum term as described in Section 7.5(a)(1) above so long as such extension does not violate Code Section 409A or other applicable laws.

- (b) Expiration Date Following Change of Control. Notwithstanding the provisions of Section 7.5(a) above and unless the Committee specifies otherwise in the Award Agreement, at any time following a Change of Control of the Company, in the event a Participant incurs a Separation from Service with the Company and its Affiliates for any reason other than: (1) due to death or Disability, (2) for Cause, or (3) due to a voluntary resignation, the term of all SARs held by such Participant shall be extended to their maximum term as described in Section 7.5(a)(1) above.

7.6 Minimum SAR Exercise Amount. Unless the Committee specifies otherwise in the SAR Agreement, a Participant may exercise a SAR for less than the full number of shares of Common Stock subject to the SAR. However, each exercise may not be made for less than 100 shares or, if less, the total remaining shares subject to the SAR. The Committee may in its discretion specify other SAR terms, including restrictions on a frequency of exercise and periods during which SARs may not be exercised.

7.7 Exercise of SARs. SARs may be exercised upon the terms and conditions determined by the Committee, in its sole discretion.

7.8 Payment of SAR Amount. Upon exercise of a SAR, a Participant shall be entitled to receive payment from the Company equal to an amount determined by multiplying: (a) the difference between the Fair Market Value of a share of Common Stock on the date of exercise over the Base Value of the applicable SAR; by (b) the number of shares of Common Stock with respect to which the SAR is being exercised.

The payment for SAR exercise may be made in cash, shares of Common Stock or in some combination thereof at the sole discretion of the Committee. The form of payment shall be specified in the Award Agreement pertaining to the grant of the SAR.

7.9 Rights as a Shareholder. To the extent that a Stock Appreciation Right Award is payable (in whole or in part) in the form of shares of Common Stock, a Participant shall first have rights as a shareholder of the Company with respect to shares of Common Stock covered by the Stock Appreciation Right (including rights to dividends and voting) only when the Participant has exercised the SAR pursuant to the terms and conditions of the Award and the shares actually have been issued to the Participant. No dividend equivalents shall be payable with respect to unexercised SARs or unissued shares.

ARTICLE VIII RESTRICTED STOCK AND RESTRICTED STOCK UNITS

8.1 Grants of Restricted Stock and Restricted Stock Units. The Committee may grant shares of Common Stock as Restricted Stock or may grant Restricted Stock Units to Participants in such amounts as it may determine and subject to the provisions of the Plan.

8.2 Restricted Stock and Award Agreement. An Award of Restricted Stock or Restricted Stock Units shall be evidenced by an Award Agreement that specifies the following terms: (a) the name of the Participant; (b) the total number of shares of Common Stock to which the Award of Restricted Stock or Restricted Stock Units pertain; (c) the date as of which the Committee awarded the Restricted Stock or the Restricted Stock Unit; (d) the manner in which the Restricted Stock or Restricted Stock Units will become vested, nonforfeitable and transferable and a description of any restrictions applicable to the Restricted Stock or the Restricted Stock Units; (e) for RSUs, when RSUs will be settled after they vest; and (f) the Beneficiary of the Participant.

8.3 Vesting.

- (a) General Schedule. Subject to paragraph (b) below, each Award of Restricted Stock or Restricted Stock Units 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%

- (b) Other Vesting Requirements. The Committee may specify another vesting schedule in the Award Agreement, whether time-based or performance-based and with any other conditions, restrictions and contingencies as it determines, in its sole discretion, *provided* that such schedule may not result in vesting of any portion of the Award of Restricted Stock or Restricted Stock Units before the one (1) year anniversary of its date of grant, except in the event of the Participant's death or Disability or pursuant to Committee action taken in connection with a Change of Control as described in Section 4.3(b) above. The Committee may designate a single goal criterion or multiple goal criteria for performance measurement purposes. Notwithstanding the foregoing, the Committee (or the CEO pursuant to the delegation described in Section 3.6) may in its discretion in connection with a Participant's Separation from Service, accelerate the vesting of any Award of Restricted Stock or Restricted Stock Units held by the Participant or permit the continued vesting of such Award of Restricted Stock or Restricted Stock Units on the vesting schedule set forth in the Participant's Award Agreement; *provided, however*, that any such extension must comply with Code Section 409A and the Delay Period (as defined in Section 10.16) for specified employees. Other than as provided in the preceding sentences, if a Participant Separates from Service, his or her rights to all Restricted Stock or Restricted Stock Units that have not yet vested shall cease immediately.

8.4 Delivery of Restricted Stock.

- (a) Issuance. The Company shall issue the shares of Restricted Stock within a reasonable period of time after approval of the Restricted Stock Award; provided, that 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 before the issuance thereof, then the date of delivery of the shares shall be extended for the period necessary to take such action. As long as any restrictions apply to the Restricted Stock, the shares of Restricted Stock shall be held by the Committee in uncertificated form in a restricted account.

- (b) Legend. Unless the certificate representing shares of the Restricted Stock is deposited with a custodian (as described in this Section), each certificate shall bear the following legend (in addition to any other legend required by law):

“The transferability of this certificate and the shares represented hereby are subject to the restrictions, terms and conditions (including forfeiture and restrictions against transfer) contained in the ADTRAN Holdings, Inc. 2020 Employee Stock Incentive Plan and an Award Agreement dated _____, _____, between _____ and ADTRAN Holdings, Inc. The Plan and the Award Agreement are on file in the office of the Corporate Secretary of ADTRAN Holdings, Inc.”

Such legend shall be removed or canceled from any certificate evidencing shares of Restricted Stock as of the date that such shares become nonforfeitable.

- (c) Deposit with Custodian. As an alternative to delivering a stock certificate to the Participant, the Committee may deposit or transfer such shares electronically to a custodian designated by the Committee. The Committee shall cause the custodian to issue a receipt for the shares to the Participant for any Restricted Stock so deposited. The custodian shall hold the shares and deliver the same to the Participant in whose name the Restricted Stock evidenced thereby are registered only after such shares become nonforfeitable.

8.5 Settlement of RSUs. Except as otherwise provided in the Award Agreement and in accordance with Code Section 409A, RSUs shall generally be settled in shares of Common Stock immediately following the date they vest; provided that the Committee may specify in the applicable Award Agreement that settlement shall be in cash or in a combination of Common Stock and cash.

8.6 Shareholder Rights for Restricted Stock. Upon issuance of shares of Restricted Stock, the Participant shall have immediate rights of ownership in the shares of Restricted Stock, including the right to vote the shares and the right to receive dividends with respect to the shares, notwithstanding any outstanding restrictions on the Restricted Stock. With respect to dividends, the Committee may apply any restrictions that it determines, in its sole discretion, to dividends paid on shares of Common Stock which are still subject to vesting, and such dividends shall be paid to the Participant when the underlying shares of Restricted Stock with respect to such dividends vest.

8.7 Shareholder Rights for RSUs; Dividend Credits. Unless otherwise designated by the Committee in the Award Agreement, the Participant shall have no shareholder rights with respect to the shares of Common Stock subject to the RSU, including any voting and dividend rights, until actual shares of Common Stock are issued upon settlement of such RSU Award. However, the Committee may designate that the unvested portion of an RSU Award is eligible for dividend credits, in which case such dividend credits shall be paid when such underlying shares of Common Stock subject to the RSU Award are issued to the Participant.

ARTICLE IX AMENDMENT AND TERMINATION OF PLAN AND PLAN AWARDS

9.1 Amendment and Termination By the Board. Subject to Section 9.2 below, the Board shall have the power at any time to add to, amend, modify or repeal any of the provisions of the Plan, to suspend the operation of the entire Plan or any of its provisions for any period or to terminate the Plan in whole or in part. In the event of any such action, to the extent it determines necessary to administer the Plan, the Committee shall prepare written procedures which, when approved by the Board, shall govern the administration of the Plan resulting from such addition, amendment, modification, repeal, suspension or termination. No Award Agreement may be amended to reprice or constructively reprice any Award.

9.2 Restrictions on Amendment and Termination. Notwithstanding the provisions of Section 9.1 above, the following restrictions shall apply to the Board's authority under Section 9.1 above:

- (a) Prohibition Against Adverse Effects on Outstanding Awards. No addition, amendment, modification, repeal, suspension or termination shall adversely affect, in any way, the rights of a Participant who has an outstanding Award without the consent of such Participant. The Committee shall not amend any Award Agreement that it previously has authorized under the Plan that adversely affects the Participant's rights or benefits under an Award without the written (or electronic) consent of the Participant holding such Award.
- (b) Shareholder Approval Required for Certain Modifications. No modification or amendment of the Plan may be made without the prior approval of the shareholders of the Company if (1) such modification or amendment would cause the applicable portions of the Plan to fail to qualify as an ISO plan pursuant to Code Section 422, (2) such modification or amendment would materially increase the benefits accruing to Participants under the Plan, (3) such modification or amendment would materially increase the number of securities which may be issued under the Plan, (4) such modification or amendment would materially modify the requirements as to eligibility for participation in the Plan or (5) such approval is necessary with respect to tax, securities or other applicable laws or the applicable rules or regulations of any stock exchange or the NASDAQ National Market System. Clauses (2), (3) and (4) of the preceding sentence shall be interpreted in accordance with the provisions of paragraph (b)(2) of Rule 16b-3. Shareholder approval shall be made by a majority of the votes cast at a duly held meeting at which a quorum representing a majority of all outstanding voting stock is, either in person or by proxy, present and voting, or by the written consent in lieu of a meeting of the holders of a majority of the outstanding voting stock or such greater number of shares of voting stock as may be required by the Company's articles or certificate of incorporation and bylaws and by applicable law; provided, however, that for modifications described in clauses (2), (3) and (4) above, such shareholder approval, whether by vote or by written consent in lieu of a meeting, must be solicited substantially in accordance with the rules and regulations in effect under Section 14(a) of the Exchange Act as required by paragraph (b)(2) of Rule 16b-3.

ARTICLE X PLAN OPERATION

10.1 *Beneficiary.* Upon a Participant's death, the Participant's Beneficiary shall be determined as follows:

- (a) *Designation of Beneficiary.* A Participant's Beneficiary shall be the person who is last designated in writing by the Participant as such Participant's Beneficiary hereunder. A Participant shall designate his or her original Beneficiary in writing (on paper or electronically) on the form provided by the Committee. Any subsequent modification of the Participant's Beneficiary shall be on the form provided by the Committee. A designation of Beneficiary shall be effective when the properly completed form is received *and* accepted by the Committee (or its designee), as determined in the Committee's (or its delegate's) sole discretion.
- (b) *No Designated Beneficiary.* If no Beneficiary has been validly designated by a Participant, or the Beneficiary designated by the Participant is no longer living or in existence at the time of the Participant's death, then the Participant's Beneficiary shall be deemed to be the Participant's legal spouse under applicable state law, or if none, the Participant's estate.

- (c) *Designation of Multiple Beneficiaries.* A Participant may, consistent with subsection (a) above, designate more than one person as a Beneficiary if, for each such Beneficiary, the Participant also designates a percentage of the Participant's Award to be transferred to such Beneficiary upon the Participant's death. Unless otherwise specified by the Participant, any designation by the Participant of multiple Beneficiaries shall be interpreted as a designation by the Participant that each such Beneficiary (to the extent such Beneficiary is alive or in existence as of the Participant's date of death) should be entitled to an equal percentage of the Participant's Award. Each Beneficiary shall have complete and non-joint rights with respect to the portion of a Participant's Award to be transferred to such Beneficiary upon the Participant's death.
- (d) *Contingent Beneficiaries.* A Participant may designate one or more contingent Beneficiaries to receive all or a portion of the Participant's Award in the event that all of the Participant's original Beneficiaries should predecease the Participant. In the event that one or more original Beneficiaries predeceases the Participant, then the remaining original Beneficiaries specified above shall be entitled to the share of such deceased Beneficiary in direct proportion to their designated shares.

10.2 Compliance with Other Laws and Regulations.

- (a) The Company shall not be required to sell or issue any shares of Common Stock under any Award if the sale or issuance of such shares would constitute a violation by the Participant or the Company of any provision of any law or regulation of any governmental authority, including without limitation any federal or state securities laws or regulations. If at any time the Company shall determine, in its discretion, that the listing, registration or qualification of any shares subject to an Award upon any securities exchange or under any governmental regulatory body is necessary or desirable as a condition of, or in connection with, the issuance or purchase of shares hereunder, no shares of Common Stock may be issued or sold to the Participant exercising a Stock Option or SAR unless such listing, registration, qualification, consent or approval shall have been effected or obtained free of any conditions not acceptable to the Company, and any delay caused thereby shall in no way affect the date of termination of the Award.
- (b) In connection with the Securities Act, upon the exercise of any Option or SAR or the delivery of any shares of Common Stock underlying an Award, unless a registration statement under the Securities Act is in effect with respect to the shares of Common Stock covered by such Award, the Company shall not be required to sell or issue such shares unless the Committee has received evidence satisfactory to it that the Participant or any other individual exercising a Stock Option may acquire such shares pursuant to an exemption from registration under the Securities Act.
- (c) The Company may, but shall in no event be obligated to, register any securities covered hereby pursuant to the Securities Act. The Company shall not be obligated to take any affirmative action in order to cause the exercise of a Stock Option or the issuance of shares of Common Stock pursuant to the Plan to comply with any law or regulation of any governmental authority. As to any jurisdiction that expressly imposes the requirement that a Stock Option or SAR shall not be exercisable until the shares of Common Stock covered by such Stock Option or SAR are registered or are exempt from registration, the exercise of such Stock Option or SAR (under circumstances in which the laws of such jurisdiction apply) shall be deemed conditioned upon the effectiveness of such registration or the availability of such an exemption.
- (d) The Company may require a Participant to submit evidence that the Participant is acquiring shares of Common Stock for investment purposes.

10.3 Rule 16b-3. During any time when the Company has a class of equity security registered under Section 12 of the Exchange Act, it is the intent of the Company that Awards and the vesting, exercise and settlement thereof qualify for the exemption provided by Rule 16b-3 under the Exchange Act. To the extent that any provision of the Plan or action by the Board or Committee does not comply with the requirements of Rule 16b-3, it shall be deemed inoperative to the extent permitted by law and deemed advisable by the Board, and shall not affect the validity of the Plan. In the event that Rule 16b-3 is revised or replaced, the Board may exercise its discretion to modify this Plan in any respect necessary to satisfy the requirements of, or to take advantage of any features of, the revised exemption or its replacement.

10.4 Tax Withholding. The Company and its Affiliates shall have the power and the right to deduct or withhold from amounts (including withholding any shares of Common Stock that otherwise would be issued on exercise or following the vesting of an Award) to the Participant by the Company or such Affiliate, or require a Participant to remit to the Company or such Affiliate as a condition of any Award, an amount (in cash or in kind, subject to the approval of the Company) sufficient to satisfy the minimum Federal, state and local taxes, domestic or foreign, required by law or regulation to be withheld with respect to any taxable event arising as a result of the Plan. Notwithstanding the above, in the case of Stock Options and SARs, such tax withholding shall be accomplished as set forth in Sections 6.7 and 7.7.

10.5 Limitation of Implied Rights. No provision in the Plan or in any Award Agreement shall be construed to confer upon any individual the right to remain in the employ or service of the Company or any Affiliate, or to interfere in any way with any contractual or other right or authority of the Company or any Affiliate either to increase or decrease the compensation or other payments to any individual at any time, or to terminate any employment or other relationship between any individual and the Company or any Affiliate.

10.6 No Trust or Fund Created. Neither a Participant nor any other person shall, by reason of the Plan or any Award, acquire any right in or title to any assets, funds or property, other than the Common Stock of the Company or an Affiliate, including, without limitation, any specific funds, assets, or other property which the Company or its Affiliates, in its sole discretion, may set aside in anticipation of a liability under the Plan. A Participant shall have only a contractual right to the Common Stock underlying Awards granted under the Plan, unsecured by any assets of the Company or an Affiliate. Nothing contained in the Plan shall constitute a guarantee that the assets of the Company or its Affiliates shall be sufficient to pay any benefits to any person.

10.7 Nonexclusively of the Plan. Neither the adoption of the Plan nor the submission of the Plan to the Company's shareholders for approval shall be construed as creating any limitations upon the right and authority of the Board to adopt such other incentive compensation arrangements (which arrangements may be applicable either generally to a class or classes of individuals or specifically to a particular individual or particular individuals).

10.8 Conditions of Participation in the Plan. When the Committee makes an Award, it may require a Participant to execute (on paper or electronically) an Award Agreement in a form specified by the Committee, agreeing to the terms and conditions of the Award and to such additional terms and conditions, not inconsistent with the terms and conditions of the Plan, as the Committee may, in its sole discretion, prescribe. If there is a conflict between any provision of an Award Agreement and the Plan, the Plan shall control.

10.9 Notices; Evidence. In order for a Participant or other individual to give notice or other communication to the Committee, the notice or other communication shall be in the form specified by the Committee and delivered to the location designated by the Committee in its sole discretion. Anyone required to give evidence under the Plan may give such evidence by certificate, affidavit, document or other information which the person acting on the evidence considers pertinent, reliable and signed, made or presented (on paper or electronically) by the proper party or parties.

10.10 Gender and Number. Words in any gender shall include any other gender, words in the singular shall include the plural and the plural shall include the singular.

10.11 Headings. The headings in this Plan are for convenience of reference. Headings are not a part of the Plan and shall not be considered in the construction hereof.

10.12 Legal References. Any reference in this Plan to a provision of law which is later revised, modified, finalized or redesignated, shall automatically be considered a reference to such revised, modified, finalized or redesignated provision of law.

10.13 No Rights to Perform Services. Nothing contained in the Plan, or any modification thereof, shall be construed to give any individual any rights to perform services for the Company or any of its Affiliates.

10.14 Unfunded Arrangement. The Plan shall not be funded, and except for reserving a sufficient number of authorized shares to the extent required by law to meet the requirements of the Plan, the Company shall not be required to establish any special or separate fund or to make any other segregation of assets to assure the payment of any grant under the Plan.

10.15 Clawback/Recovery. Subject to Code Section 409A, all Awards granted under the Plan will be subject to clawback, recovery, or recoupment, as determined by the Committee in its sole discretion, including but not limited to a reacquisition right with respect to previously granted Restricted Stock or other cash or property, (a) as provided in the Company's forfeiture policy implemented by the Company from time to time and applicable to all Officers and directors of the Company on the same terms and conditions, including without limitation, any such policy adopted to comply with the requirements of applicable law or the rules and regulations of any stock exchange applicable to the Company, (b) as is required by the Dodd-Frank Wall Street Reform and Consumer Protection Act, or other applicable law, (c) as provided in the applicable Award Agreement, and/or (d) to the extent that the Committee determines that the Participant has been involved in the altering, inflating, and/or inappropriate manipulation of performance/financial results or any other infraction of recognized ethical business standards, or that the Participant has willfully engaged in any activity injurious to the Company, or the Participant's Separation from Service with the Company or its Affiliates is for Cause. No recovery of compensation under this Section will be an event giving rise to a right to resign for "good reason" or "constructive termination" (or similar term) under any agreement with the Company or any of its Affiliates.

10.16 Code Section 409A. Although the Company does not guarantee to a Participant any particular tax treatment of an Award, Awards are intended to comply with, or be exempt from, the requirements of Code Section 409A, to the extent it applies. The Plan and each Award Agreement will be construed and interpreted in accordance with such intent, except as otherwise determined in the sole discretion of the Committee. In no event whatsoever shall the Company or any of its Affiliates be liable for any additional tax, interest or penalties that may be imposed on a Participant pursuant to or as a result of Code Section 409A or for any damages for failing to qualify for an exemption from, or comply with, Code Section 409A. If the Participant is deemed on a Separation from Service to be a "specified employee" within the meaning of Code Section 409A(a)(2)(B), then with regard to any Award that is considered nonqualified deferred compensation under Code Section 409A payable on account of a Separation from Service, such Award shall be paid at the date which is the earlier of (A) the expiration of the six (6) month period measured from the date of such a Separation from Service of the Participant, and (B) the date of the Participant's death (the "**Delay Period**"). Upon the expiration of the Delay Period, all payments delayed pursuant to this Section (whether they would have otherwise been payable in a single sum or in installments in the absence of such delay) shall be paid to the Participant in a lump sum and any remaining payments due under the Award shall be paid in accordance with the normal payment dates specified for them in the Plan or the applicable Award Agreement.

10.17 International Awards. The Committee may adopt special guidelines and provisions for Awards with respect to Participants who are employed or reside in any country other than the United States in order to comply with the applicable laws of such other country.

10.18 Governing Law. The Plan is governed by and shall be construed in accordance with the laws of the State of Alabama, without regard to any choice of law principles thereof or of any other jurisdiction.

ADOPTED BY THE BOARD OF DIRECTORS ON MARCH 6, 2020,
EFFECTIVE AS OF MAY 13, 2020,
AMENDED AND RESTATED EFFECTIVE JULY 8, 2022

ADTRAN HOLDINGS, INC.

2020 DIRECTORS STOCK PLAN

*Originally effective May 13, 2020
Amended and Restated Effective January 24, 2023*

ADTRAN HOLDINGS, INC.
AMENDED AND RESTATED 2020
DIRECTORS STOCK PLAN

ARTICLE I
Purpose

1.1 *Background.* ADTRAN, Inc. (“**ADTRAN, Inc.**”), predecessor to ADTRAN Holdings, Inc. (the “**Company**”), initially adopted this equity incentive plan for the benefit of its directors to replace certain Prior Plans that have expired; provided, however, that notwithstanding that replacement, the Prior Plans shall remain in effect with respect to outstanding awards so long as any awards thereunder are outstanding. This plan was assumed by the Company, as the successor to ADTRAN, Inc., at the closing of the Merger on July 8, 2022 for the benefit of the Company’s directors and was amended and restated effective January 24, 2023. This plan shall be known as the ADTRAN Holdings, Inc. 2020 Directors Stock Plan (as amended and restated, the “**Plan**”).

1.2 *General Purpose.* The purpose of this Plan is to further the growth and development of the Company by encouraging Directors who are not employees of the Company to obtain a proprietary interest in the Company by owning its stock. The Company intends that the Plan will provide such Persons with an added incentive to continue to serve as Directors and will stimulate their efforts in promoting the growth, efficiency and profitability of the Company. The Company also intends that the Plan will afford the Company a means of attracting individuals of outstanding quality to service on the Board.

1.3 *Type of Awards Available Under the Plan.* The Plan permits Awards of stock Options, Restricted Stock and Restricted Stock Units (“**RSUs**”). The type of stock Options permitted under the Plan are nonqualified stock options (“**NQSOs**”).

1.4 *Intended Tax Effects of Awards.* The Company intends that Restricted Stock Awards granted under the Plan are subject to taxation under Code Section 83. NQSOs are subject to taxation when the NQSO is exercised. Restricted Stock Units are subject to taxation when the underlying shares of Common Stock are issued to the Participant.

1.5 *Effective Date of the Plan.* The Plan became effective on the date of its approval by the stockholders of ADTRAN, Inc. on May 13, 2020 (the “**Effective Date**”) in accordance with applicable law (including, without limitation, approvals required under Rule 16b-3).

1.6 *Term.* Unless earlier terminated by the Board pursuant to the provisions of Article IX hereof, the Plan shall remain in effect until the tenth (10th) anniversary of the Effective Date; provided, however, that notwithstanding its termination, the Plan shall remain in effect with respect to outstanding Awards as long as any Awards are outstanding.

1.7 *Operation, Administration and Definitions.* The operation and administration of the Plan are subject to the provisions of this Plan document. Capitalized terms used in the Plan are defined in Article II below or may be defined within the Plan.

1.8 *Legal Compliance.* The Plan is intended to comply with (a) Code Section 409A, to the extent any Awards are treated as nonqualified deferred compensation under Code Section 409A, and (b) the exemption of Awards under the provisions of Rule 16b-3.

ARTICLE II Definitions

The following words and phrases as used in this Plan shall have the meanings set forth in this Article unless a different meaning is clearly required by the context:

2.1 “**Affiliate**” means an entity that, directly or indirectly, controls, is controlled by, or is under common control with the Company, within the meaning of Rule 12b-2 of the Exchange Act.

2.2 “**Award**” means any Option, Restricted Stock, or Restricted Stock Unit granted to a Participant under the Plan.

2.3 “**Award Agreement**” means the written (or electronic) agreement issued by the Company to the Participant that sets forth the terms and provisions of an Award granted under the Plan.

2.4 “**Beneficiary**” means, with respect to a Participant, the Person(s) to whom the Participant’s Award shall be transferred upon the Participant’s death, determined as set forth in Section 10.1.

2.5 “**Board**” means the Board of Directors of the Company.

2.6 “**Cause**” means an act or acts by a Person involving personal dishonesty, incompetence, willful misconduct, moral turpitude, intentional failure to perform stated duties, willful violation of any law, rule or regulation (other than traffic violations or similar offenses), the use for profit or disclosure to unauthorized Persons of confidential information or trade secrets of the Company or its subsidiaries, the breach of any contract with or material written policy of the Company or its subsidiaries, the unlawful trading in the securities of the Company or of another corporation based on information gained as a result of the performance of services for the Company or its subsidiaries, a felony conviction, or the failure to contest prosecution for a felony, embezzlement, fraud, deceit or civil rights violations, any of which acts negatively impact the Company or any of its subsidiaries or cause the Company or any of its subsidiaries liability or loss, as determined by the Committee in its sole discretion.

2.7 “**Change of Control**” means the occurrence of any of the following events on or after the Effective Date of this Plan:

- (a) *Change in Ownership.* A change in the ownership of the Company occurs on the date that any one Person, or more than one Person acting as a group, acquires ownership of stock of the Company that, together with stock held by such Person or group, constitutes more than fifty percent (50%) of the total fair market value or total voting power of the stock of the Company. However, if any one Person or more than one Person acting as a group, is considered to own more than fifty percent (50%) of the total fair market value or total voting power of the stock of the Company, the acquisition of additional stock by the same Person or Persons is not considered to cause a change in the ownership of the Company or to cause a change in the effective control of the Company (within the meaning of subsection (b) below). An increase in the percentage of stock owned by any one Person, or Persons acting as a group, as a result of a transaction in which the Company acquires its stock in exchange for property, will be treated as an acquisition of stock for purposes of this Section. This applies only when there is a transfer of stock of the Company (or issuance of stock of the Company) and stock in the Company remains outstanding after the transaction.
- (b) *Change in Effective Control.* A change in the effective control of the Company occurs on the date that either: (1) any one Person, or more than one Person acting as a group, acquires (or has acquired during the 12-month period ending on the date of the most recent acquisition by such Person or Persons) ownership of stock of the Company possessing thirty-five percent (35%) or more of the

total voting power of the stock of the Company; or (2) a majority of members of the Board is replaced during any 12-month period by directors whose appointment or election is not endorsed by a majority of the members of the Board prior to the date of the appointment or election. A change in effective control may occur in any transaction in which either of the two corporations involved in the transaction has a Change of Control; or

- (c) *Change in Ownership of a Substantial Portion of Assets.* A change in the ownership of a substantial portion of the Company's assets shall occur on the date that any one Person, or more than one Person acting as a group, acquires (or has acquired during the 12-month period ending on the date of the most recent acquisition by such Person or Persons) assets from the Company that have a total gross fair market value equal to or more than forty percent (40%) of the total gross fair market value of all of the assets of the Company immediately prior to such acquisition or acquisitions. For this purpose, gross fair market value means the value of the assets of the Company, or the value of the assets being disposed of, determined without regard to any liabilities associated with such assets.

Notwithstanding the foregoing, if it is determined that an Award hereunder is subject to Code Section 409A, the Company will not be deemed to have undergone a Change of Control unless the Company is deemed to have undergone a "change in ownership," a "change in effective control," or a "change in the ownership of a substantial portion of the assets," within the meaning of Code Section 409A.

2.8 "**Code**" means the Internal Revenue Code of 1986, as amended. A reference to any provision of the Code includes any regulations and formal guidance issued thereunder and any reference to any successor provision of the Code.

2.9 "**Committee**" means the committee appointed by the Board pursuant to Section 3.2 hereof to administer and interpret the Plan in accordance with Article III. The Committee shall (a) consist of two or more individuals each of whom shall be, to the extent required by Rule 16b-3, a "non-employee director" as defined in Rule 16b-3, and (b) satisfy the applicable requirements of any stock exchange or national market system on which the Common Stock may then be listed.

2.10 "**Common Stock**" means the common stock of the Company, par value \$0.01 per share.

2.11 "**Company**" means ADTRAN Holdings, Inc., a Delaware corporation, and any successor thereto.

2.12 "**Director**" means an individual who is not an employee of the Company and who is serving as a member of the Board (*i.e.*, a director of the Company), including as a director emeritus providing advisory services to the Board.

2.13 "**Disability**" means a Participant is unable to engage in any substantial gainful activity by reason of any medically-determinable physical or mental impairment which can be expected to result in death or which has lasted or can be expected to last for a continuous period of not less than twelve (12) months. A Participant shall be considered disabled only if he furnishes such proof of Disability as the Committee may reasonably require from time to time.

2.14 "**Effective Date**" means the effective date of this Plan, subject to shareholder approval as provided in Section 1.5.

2.15 "**Exchange Act**" means the Securities Exchange Act of 1934, as amended.

2.16 "**Exercise Price**" means the purchase price of the shares of Common Stock underlying an Option.

“**Fair Market Value**” of the Common Stock as of a date of determination means the following:

(a) *Stock Listed and Shares Traded.* If the Common Stock is listed and traded on a national securities exchange (as such term is defined by the Exchange Act) or on the NASDAQ National Market System on the date of determination, the Fair Market Value per share shall be the closing price of a share of the Common Stock on said national securities exchange or NASDAQ National Market System on the business day immediately preceding the date of determination. If the Common Stock is traded in the over-the-counter market, the Fair Market Value per share shall be the closing price of a share on the business day immediately preceding the date of determination.

(b) *Stock Listed But No Shares Traded.* If the Common Stock is listed on a national securities exchange or on the NASDAQ National Market System but no shares of the Common Stock are traded on the date of determination but there were shares traded on dates within a reasonable period before the date of determination, the Fair Market Value shall be the closing price of a share of the Common Stock on the most recent date before the date of determination. If the Common Stock is regularly traded in the over-the-counter market but no shares of the Common Stock are traded on the date of determination (or if records of such trades are unavailable or burdensome to obtain) but there were shares traded on dates within a reasonable period before the date of determination, the Fair Market Value shall be the average of the closing bid and asked prices of a share of the Common Stock on the most recent date before the date of determination on which trading occurred.

(c) *Stock Not Listed.* If the Common Stock is not listed on a national securities exchange or on the NASDAQ National Market System and is not regularly traded in the over-the-counter market, then the Committee shall determine the Fair Market Value of the Common Stock in a manner consistent with the requirements of Code Section 409A.

In any event, the determination of Fair Market Value shall be consistent with the requirements of Code Section 409A and, in the case of an ISO, in compliance with Code Section 422. The Committee's determination of Fair Market Value, which shall be made pursuant to the foregoing provisions, shall be final and binding for all purposes of this Plan.

2.17 “**Family Member**” means a Person who is a spouse, former spouse, child, stepchild, grandchild, parent, stepparent, grandparent, niece, nephew, mother-in-law, father-in-law, son-in-law, daughter-in-law, brother, sister, brother-in-law, or sister-in-law, including adoptive relationships, of the Participant, any Person sharing the Participant’s household (other than a tenant or employee), a trust in which any one or more of these Persons have more than fifty percent (50%) of the beneficial interest, a foundation in which any one or more of these Persons (or the Participant) control the management of assets, and any other entity in which one or more of these Persons (or the Participant) own more than fifty percent (50%) of the voting interests.

2.18 “**Merger**” means the merger on July 8, 2022 of Acorn MergeCo, Inc., a Delaware corporation and then wholly-owned direct subsidiary of the Company (“Merger Sub”), with and into ADTRAN, Inc., with ADTRAN, Inc. surviving the merger as a wholly-owned direct subsidiary of the Company, pursuant to that certain Business Combination Agreement, dated as of August 30, 2021, by and among the Company, ADTRAN, Inc., ADVA Optical Networking SE and Merger Sub.

2.19 “**Option**” means an option to purchase shares of Common Stock that is granted under Article V hereof and not an incentive stock option within the meaning of Code Section 422.

2.20 “**Participant**” means a Director who has been selected to receive an Award, or with respect to whom an Award is outstanding, under the Plan.

2.21 “**Person**” means any individual, organization, corporation, partnership, trust or other entity.

2.22 “**Plan**” means this ADTRAN Holdings, Inc. 2020 Directors Stock Plan, as amended and restated.

2.23 “**Prior Plans**” means the:

- (a) ADTRAN, Inc. 2005 Directors Stock Option Plan (expired on May 17, 2015); and
- (b) ADTRAN, Inc. 2010 Directors Stock Plan (expired on December 31, 2019).

2.24 “**Restricted Stock**” means an Award of Common Stock that is subject to such conditions, restrictions and contingencies as the Committee determines and sets forth in the applicable Award Agreement.

2.25 “**Restricted Stock Unit**” or “**RSU**” means an Award of a unit representing one share of Common Stock that, upon satisfaction of certain conditions, restrictions and contingencies as the Committee determines and sets forth in the applicable RSU Agreement, shall result in the issuance of one share of Common Stock.

2.26 “**Rule 16b-3**” means Rule 16b-3 under Section 16(b) of the Exchange Act, as then in effect or any successor provision.

2.27 “**Separation from Service**” means a termination of service by a Participant with the Company and its Affiliates; provided, that if any Award that is treated as nonqualified deferred compensation (within the meaning of Code Section 409A), or any dividend or dividend credit thereon, is to be paid or distributed upon a Separation from Service, then a Separation from Service shall not occur unless it qualifies as a “separation from service” within the meaning of Code Section 409A. Unless otherwise stated in the applicable Award Agreement, a Participant’s change in position, duties or status (e.g., from director to consultant, director to employee) shall not result in interrupted or terminated service, so long as such Participant continues to provide services to the Company or an Affiliate and a “separation from service” under Code Section 409A is not deemed to have occurred. The determination of whether an authorized leave of absence or absence for military or government service or for any other reason shall constitute a Separation from Service for purposes of any Award granted under the Plan shall be determined by the Committee and, if applicable, in accordance with Code Section 409A, which determination shall be final and conclusive.

2.28 “**Securities Act**” means the Securities Act of 1933, as amended.

2.29 “**Total Remuneration**” means the total annual compensation (including Awards under the Plan) which may be paid to a Director for a given year (running from one annual shareholders’ meeting to the next), as may be modified from time to time, excluding any additional retainer for acting in certain capacities such as committee chair or lead director, and any additional meeting fees.

ARTICLE III Administration

3.1 *General Administration.* The Plan shall be administered and interpreted by the Committee (as designated pursuant to Section 3.2). Subject to the express provisions of the Plan, the Committee shall have authority to interpret the Plan, to prescribe, amend and rescind rules and regulations relating to the Plan, to determine the terms and provisions of the Award Agreements by which Awards shall be evidenced (which shall not be inconsistent with the terms of the Plan), and to make all other determinations necessary or advisable for the administration of the Plan, all of which determinations shall be final, binding and conclusive on all Persons.

3.2 *Appointment of Committee.* The Board shall appoint the Committee from among its non-employee members to serve at the pleasure of the Board. The Board from time to time may remove members from, or add members to, the Committee and shall fill all vacancies thereon.

3.3 *Organization.* The Committee may select one of its members as its chairman and shall hold its meetings at such times and at such places as it shall deem advisable. A majority of the Committee shall constitute a quorum, and such majority shall determine its actions. The Committee shall keep minutes of its proceedings and shall report the same to the Board at least annually.

3.4 *Powers of Committee.* The Committee may make one or more Awards under the Plan. The Committee shall decide which eligible Directors shall receive an Award and when to grant an Award, the type of Award that it shall grant and the number of shares of Common Stock covered by the Award, subject to the terms of the Plan. The Committee shall also decide the terms, conditions, performance criteria, restrictions and other provisions of the Award. The Committee shall act by a majority of its then members, at a meeting of the Committee or by unanimous written consent. The Committee shall keep adequate records concerning the Plan and the Committee's proceedings and acts in such form and detail as the Committee may decide.

3.5 *Delegation by Committee.* Unless prohibited by applicable law or the applicable rules of a stock exchange, the Committee may allocate all or some of its responsibilities and powers to any one or more of its members. The Committee also may delegate some or all of its administrative duties and powers to any employee or officer of the Company or its Affiliates. The Committee hereby delegates to the Company's Corporate Secretary and the Company's executive officers the authority to document any and all Awards made by the Committee under the Plan by execution of the appropriate Award Agreements. The Committee may revoke any such allocation or delegation at any time.

3.6 *Information to be Furnished to Committee.* In order for the Committee to discharge its duties, it may require the Company, its Affiliates, Participants and other Persons entitled to benefits under the Plan to provide it with certain data and information.

3.7 *Deferral Arrangement.* The Committee may permit or require the deferral of payment of any Award, subject to such rules and procedures as it may establish and in accordance with Code Section 409A. Unless otherwise provided in an Award Agreement, any such deferral will not include provisions for the payment or crediting of interest or dividend equivalents.

3.8 *Indemnification.* In addition to such other rights of indemnification that apply to them as members of the Board or a committee thereof, the Company shall indemnify the members of the Committee (and any designees of the Committee, as permitted under Section 3.5), to the extent permitted by applicable law, against reasonable expenses (including, without limitation, attorney's fees) actually and necessarily incurred in connection with the defense of any action, suit or proceeding, or in connection with any appeal, to which they or any of them may be a party by reason of any action taken or failure to act under or in connection with the Plan or any Award awarded hereunder, and against all amounts paid by them in settlement thereof (provided such settlement is approved to the extent required by and in the manner provided by the Articles of Incorporation or the Bylaws of the Company relating to indemnification of the members of the Board) or paid by them in satisfaction of a judgment in any such action, suit or proceeding, except in relation to such matters as to which it is adjudged in such action, suit or proceeding that such Committee member or members (or their designees) did not act in good faith and in a manner reasonably believed to be in or not opposed to the best interests of the Company.

ARTICLE IV

Stock; Eligibility and Annual Grants

4.1 *Common Stock Subject to Awards.* Common Stock subject to Awards and other provisions of the Plan shall consist of the following: (a) authorized but unissued shares of Common Stock; (b) authorized and issued shares of Common Stock held by the Company in its treasury which have been reacquired by the Company; and (c) shares of Common Stock purchased by the Company in the open market.

4.2 *Authorized Shares.* Subject to adjustment in accordance with the provisions of Section 4.3, the maximum number of shares of Common Stock that may be issued under the Plan for Awards shall equal three hundred seventy three thousand (373,000) shares of Common Stock, adjusted as follows:

- (a) Each Award of stock Options, Restricted Stock or Restricted Stock Units granted under this Plan will reduce the number of authorized shares available under the Plan by one (1) share of Common Stock for each share underlying such Award.
- (b) Shares of Common Stock underlying an Award under this Plan or Prior Plans that is cancelled, terminated, expires without exercise, is forfeited, or lapses, for any reason shall again be available for issuance pursuant to Awards under this Plan.
- (c) Notwithstanding anything to the contrary herein, the following shares shall not again become available for issuance under the Plan: (1) shares of Common Stock withheld by, or otherwise remitted to, the Company as full or partial payment of the Exercise Price to the Company upon exercise of Options granted under the Plan; and (2) shares of Common Stock withheld by, or otherwise remitted to, the Company to satisfy a Participant's tax withholding obligations (if any) upon the lapse of restrictions on Restricted Stock or RSUs or upon the exercise of Stock Options or upon any other payment or issuance under the Plan.

The Committee shall establish appropriate methods for determining the number of shares available for issuance under the Plan and the number of shares that have been actually issued under the Plan at any time. In no event shall fractional shares of Common Stock be issued under the Plan.

4.3 *Effects of Changes in Capitalization.*

- (a) *Changes to Common Stock.* If the number of outstanding shares of Common Stock is increased or decreased or the shares of Common Stock are changed into or exchanged for a different number or kind of shares or other securities of the Company on account of any recapitalization, reclassification, stock split, reverse split, combination of shares, exchange of shares, stock dividend or other distribution payable in capital stock, or other increase or decrease in such shares effected without receipt of consideration by the Company occurring after the Effective Date ("**Equity Restructuring**"), the number and kinds of shares for which Awards may be granted under the Plan and/or the Exercise Price shall be adjusted proportionately and accordingly by the Committee; provided, that any such adjustment shall comply with Code Section 409A, if applicable. In addition, the number and kind of shares of Common Stock for which Awards are outstanding shall be adjusted proportionately and accordingly so that the proportionate interest of the Participant immediately following such event shall, to the extent practicable, be the same as immediately before such event. The conversion of any convertible securities of the Company shall not be treated as an increase in shares effected without receipt of consideration.
- (b) *Change of Control and Other Corporate Transactions.* In the event of a merger, consolidation, reorganization, extraordinary dividend, tender offer for Common Stock, Change of Control or other change in capital structure of the Company that is not an Equity Restructuring under subsection (a) above, the Committee may (but is not required to) make such adjustments with respect to Common Stock that may be issued pursuant to Awards and the number and/or Exercise Price of outstanding Awards and take such other action as

it deems necessary or appropriate, including, without limitation, and subject to the requirements of Code Section 409A, if applicable:

- (1) making appropriate provision for the continuation of an Award by substituting on an equitable basis for the shares of Common Stock then subject to such Award either the consideration payable with respect to the outstanding shares of Common Stock in connection with the Change of Control or securities of any successor or acquiring entity;
- (2) upon reasonable prior written notice to the Participant, providing that: (i) the Stock Options held by such Participant, to the extent then exercisable, must be exercised within a specified number of days after the date of such notice, at the end of which period the Stock Options shall terminate without payment, and/or (ii) a grant of Restricted Stock and/or RSUs Stock must be accepted (to the extent then subject to acceptance) within a specified number of days after the date of such notice, at the end of which period the offer of the Restricted Stock and/or RSUs shall terminate;
- (3) terminating an Award, whether vested or unvested, in exchange for a payment equal to (i) for Restricted Stock and RSUs, the Fair Market Value of the shares of Common Stock subject to the Award or (ii) for Stock Options, the excess of the Fair Market Value of the shares of Common Stock subject to the Award over the Exercise Price, as applicable;
- (4) providing that an Award shall become (as applicable) fully vested and exercisable, and any vesting period or restrictions shall lapse, immediately prior to the Change of Control; and/or
- (5) with respect to an Award subject to performance measures, providing that any incomplete performance periods shall end on the date of such Change of Control (or other corporate transaction described in this subsection (b)), and the Committee shall cause the Award to be settled based upon the higher of: (i) the Participant's actual attainment of performance goals for the performance period through the date of the Change of Control (or other corporate transaction described in this subsection (b)) or (ii) the performance target award.

Notwithstanding anything to the contrary, an Award having an Exercise Price equal to or greater than the Fair Market Value of the consideration to be paid per share of Common Stock in the Change of Control may be canceled without payment of consideration to the applicable Participant.

- (c) *Limits on Adjustments.* Any issuance by the Company of stock of any class other than the Common Stock, or securities convertible into shares of stock of any class, shall not affect, and no adjustment by reason thereof shall be made with respect to, the number or price of shares of the Common Stock subject to any Award, except as specifically provided otherwise in this Plan. The grant of Awards under the Plan shall not affect in any way the right or authority of the Company to make adjustments, reclassifications, reorganizations or changes of its capital or business structure or to merge, consolidate or dissolve, or to liquidate, sell or transfer all or any part of its business or assets. No fractional shares or other securities shall be issued pursuant to any such adjustment, and any fractions resulting from any such adjustment shall be eliminated in each case by rounding downward to the nearest whole share with no cash payment due therefor. If the Company issues any rights

to subscribe for additional shares pro rata to holders of outstanding shares of the class or classes of stock then set aside for the Plan, then each Participant shall be entitled to the same rights on the same basis as holders of outstanding shares with respect to such portion of the Participant's Award as is exercised on or prior to the record date for determining shareholders entitled to receive or exercise such rights. All adjustments the Committee makes under this Plan shall be final and conclusive.

4.4 *Individuals Eligible for Awards.* The individuals eligible to receive Awards hereunder shall be solely those individuals who are Directors and who are not employees of the Company or any of its Affiliates.

4.5 *Annual and Other Grants.* All Awards granted under this Section shall comply in all respects with the terms and conditions of the Plan.

(a) *Initial Grants.* Upon initially becoming a Director, an individual shall be automatically entitled to receive an Award with a Fair Market Value (in the case of Options, as such value is determined by the Board in its sole discretion) on the date of grant equal to (i) 50% of the sum of (A) the annual grant detailed below in subsection (b) for the calendar year prior to the calendar year in which the individual initially becomes a Director and (B) any discretionary grants made pursuant to subsection (c) during the period subsequent to such annual grant in clause (A) and prior to the date of such individual's initial election as a Director, or (ii) such other lesser amount as determined in the discretion of the Board. A Director who has previously served as a Director and who again becomes a Director shall not be entitled to an initial grant pursuant to this subsection (a). Only a Director who has never served as a Director shall be entitled to an initial grant pursuant to this subsection (a). An individual who receives an initial grant hereunder shall also be entitled to receive an annual grant under subsection (b) for the calendar year in which he initially becomes a Director.

(b) *Annual Grants.* As of December 31 of each calendar year in which an individual is a Director, and provided such individual is a Director on such date, such individual shall be automatically entitled to receive an Award with a Fair Market Value (in the case of Options, as such value is determined by the Board in its sole discretion) on the date of grant equal to an amount (rounded to the nearest whole share) that has been determined by the Board in its discretion; provided, however, in no event shall the Fair Market Value of an Award granted to a Director during a given year (running from one annual shareholders' meeting to the next) pursuant to this subsection (b), together with the Fair Market Value of any Awards granted to such Director during such given year pursuant to subsection (c), exceed \$250,000 in the aggregate.

(c) *Other Discretionary Grants.* The Board may, in its discretion, elect to grant to an individual who is a Director an Award with a Fair Market Value (in the case of Options, as such value is determined by the Board in its sole discretion) on the date of grant in an amount (rounded to the nearest whole share) that has been determined by the Board in its discretion; provided, however, in no event shall the Fair Market Value of any Awards granted to a Director during a given year (running from one annual shareholders' meeting to the next) pursuant to this subsection (c), together with the Fair Market Value of an Award granted to such Director during such given year pursuant to subsection (b), exceed \$250,000 in the aggregate.

(d) *Form of Grants.* All Awards shall be in the form of Restricted Stock unless the Board, upon recommendation by the Committee, determines that Awards shall be in the form of Options or Restricted Stock Units. Any determination to grant Awards in a form other than Restricted Stock shall be made, (i) in the case of initial grants under subsection (a), prior to the date the Director becomes entitled to the Award, (ii) in the case of annual grants under subsection (b), before December 31 for Awards for the

calendar year ending that December 31, and (iii) in the case of any grants under subsection (c), on or prior to the date of the Award.

ARTICLE V

Stock Options

5.1 *Award Agreement.* An Award of an Option shall be evidenced by an Award Agreement that specifies the following terms and any additional terms and conditions determined by the Committee and not inconsistent with the Plan: (a) the name of the Participant; (b) the total number of shares of Common Stock to which the Option pertains; (c) the Exercise Price of the Option; (d) the date as of which the Committee granted the Option; (e) the requirements for the Option to become exercisable, such as continuous service, time-based schedule, period and goals for performance measures to be satisfied, additional consideration, etc.; (f) the expiration date of the Option; and (g) the Beneficiary of the Participant.

5.2 *Vesting.* Unless a later date is provided in a Participant's Award Agreement, each Option shall first become exercisable (*i.e.*, vested) with respect to 100% of the shares subject to such Option as of the first anniversary of the date the Option is granted and, prior to said date, the Option shall be unexercisable in its entirety. Notwithstanding the foregoing, all Options granted to a Participant shall become immediately vested and exercisable for 100% of the number of shares subject to the Options upon the Participant's becoming Disabled or upon his or her death or upon a Change of Control. In addition, the Committee may in its discretion in connection with a Participant's Separation from Service, accelerate vesting of the Option or permit continued vesting on the vesting schedule set forth in the Participant's Award Agreement. Other than as provided in the preceding sentences, if a Participant Separates from Service, his or her rights with regard to all non-vested Options shall cease immediately.

5.3 *Exercise Price.* The Exercise Price of the shares of Common Stock underlying each Option shall be the Fair Market Value of the Common Stock on the date the Option is granted.

5.4 *Term of Options.* The terms of Options granted under the Plan shall commence on the date of grant and shall expire ten (10) years after the date the Option is granted.

5.5 *Terms of Exercise.* The exercise of an Option may be for less than the full number of shares of Common Stock subject to such Option, but such exercise shall not be made for less than (a) 100 shares or (b) the total remaining shares subject to the Option, if such total is less than 100 shares. Subject to the other restrictions on exercise set forth herein, the unexercised portion of an Option may be exercised at a later date.

5.6 *Method of Exercise.* All Options granted hereunder shall be exercised by written (or electronic) notice on a form prescribed by the Committee and directed to the Secretary of the Company at its principal place of business or to such other Person as the Committee may direct. Each notice of exercise shall identify the Option that the Participant is exercising (in whole or in part) and shall be accompanied by payment of the Exercise Price for the number of shares specified in such notice and by any documents required by Section 8.1. The Company shall make delivery of such shares (electronically or in paper form) within a reasonable period of time; provided that, 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 the shares specified in such notice before the issuance thereof, then the date of delivery of such shares shall be extended for the period necessary to take such action.

5.7 *Medium and Time of Payment.* The Participant must pay the full Exercise Price for shares of Common Stock purchased upon the exercise of any Option, and applicable withholding taxes (if any), at the time of such exercise by one of the following forms of payment:

(a) in cash or cash equivalents acceptable to the Company;

(b) delivery (on a form acceptable to the Committee) of an irrevocable direction to a licensed securities broker acceptable to the Company to sell shares of Common Stock and to deliver all or part of the sales proceeds to the Company in payment of the Exercise Price;

(c) delivery of shares of Common Stock already owned by the Participant (and for which the Participant has good title free and clear of any liens and encumbrances) having a Fair Market Value on the date of surrender equal to the aggregate Exercise Price and taxes due;

(d) with the Committee's approval, having the Company withhold shares of Common Stock that otherwise would be acquired on exercise having a Fair Market Value equal to the aggregate Exercise Price; or

(e) any combination of the above forms or any other form of payment permitted by the Committee.

5.8 *Effect of Termination of Service, Disability or Death.* Except as provided in subsections (a), (b) or (c) below or where the Committee approves an extension as described at the end of this Section, no Option shall be exercisable following a Participant's Separation from Service.

(a) *Termination of Service.* In the event a Participant Separates from Service for any reason other than death or Disability, any Option or unexercised portion thereof granted to him or her shall terminate on and shall not be exercisable after the earliest to occur of the following: (1) the expiration date of the Option; (2) three months after the date the Participant Separates from Service (except as provided in subsection (c)); or (3) the date on which the Company gives notice to such Participant of termination of his or her service as a Director if service is terminated by the Company's shareholders for Cause (a Participant's resignation in anticipation of termination of service by the Company or by its shareholders for Cause shall constitute a notice of termination by the Company). Notwithstanding the foregoing, in the event that a Participant Separates from Service for a reason other than death or Disability, Cause or voluntary resignation at any time after a Change of Control, the term of all Options of that Participant shall be extended through the maximum term as described in Section 5.5 above. Prior to the earlier of the dates specified in the preceding sentences of this subsection (a), the Option shall be exercisable only in accordance with its terms and only for the number of shares exercisable on the date of such Separation from Service.

(b) *Disability.* Upon the Participant's Separation from Service due to Disability, any Option or unexercised portion thereof granted to him or her which is otherwise exercisable shall terminate on and shall not be exercisable after the earlier to occur of the following: (1) the expiration date of such Option; or (2) one year after the date on which such Participant Separates from Service due to Disability (except as provided in subsection (c)). Prior to the earlier of such dates, such Option shall be exercisable only in accordance with its terms and only for the number of shares exercisable on the date such Participant Separates from Service due to Disability.

(c) *Death.* In the event of the death of the Participant (1) while he or she is a Director, (2) within three months after the date of the Participant's Separation from Service (for a reason other than Cause) as provided in subsection (a) above, or (3) within one year after the date of the Participant's Separation from Service due to his or her Disability, any Option or unexercised portion thereof granted to him or her which is otherwise exercisable may be exercised by the Participant's Beneficiary at any time prior to the

expiration of one year from the date of death of such Participant, but in no event later than the date of expiration of the Option. Such exercise shall be effected pursuant to the terms of this Section as if such Beneficiary is the named Participant.

Notwithstanding the foregoing, the Committee may, in its discretion, in connection with a Participant's Separation from Service, permit an Award to remain exercisable for the full exercise period set forth in the Award Agreement or the maximum term as described in Section 5.5 above, so long as such extension does not violate Code Section 409A or other applicable laws.

5.9 *Restrictions on Transfer and Exercise of Options.* No Option shall be assignable or transferable by the Participant except by transfer to a Beneficiary upon the death of the Participant, and any purported transfer (other than as excepted above) shall be null and void. After the death of a Participant and upon the death of the Participant's Beneficiary, an Option shall be transferable only by will or by the laws of descent and distribution. During the lifetime of a Participant, the Option shall be exercisable only by him; provided, however, that in the event the Participant is incapacitated and unable to exercise Options, such Options may be exercised by such Participant's legal guardian, legal representative, fiduciary or other representative whom the Committee deems appropriate based on applicable facts and circumstances.

5.10 *Rights as a Shareholder.* A Participant shall have no rights as a shareholder with respect to shares covered by his or her Option until date of the issuance of the shares to him or her and only after the Exercise Price of such shares is fully paid. Unless specified in Article VII, no adjustment will be made for dividends or other rights for which the record date is prior to the date of such issuance.

5.11 *No Obligation to Exercise Option.* The granting of an Option shall impose no obligation upon the Participant to exercise such Option.

ARTICLE VI Restricted Stock and Restricted Stock Units

6.1 *Award Agreement.* When the Committee awards Restricted Stock or Restricted Stock Units under the Plan, it shall prepare (or cause to be prepared) an Award Agreement, effective as of the date of grant, that shall specify the number of Shares subject to the Award, any vesting or other restrictions that apply to the Award, and such other provisions as the Committee may determine, which are not inconsistent with the terms and provisions of the Plan.

6.2 *Vesting.* Unless otherwise provided in a Participant's Award Agreement, each Award of Restricted Stock or Restricted Stock Units shall become vested (*i.e.*, all restrictions shall lapse) on the first anniversary of the date of grant; provided that if the Participant incurs a Separation from Service, his rights with regard to all non-vested Restricted Stock or Restricted Stock Units shall cease immediately. Notwithstanding the foregoing, Restricted Stock or Restricted Stock Units subject to time-based vesting shall become 100% vested immediately upon the death or Disability of the Participant or upon a Change of Control of the Company. In addition, the Committee may in its discretion in connection with a Participant's Separation from Service, accelerate vesting of Restricted Stock or Restricted Stock Units or permit continued vesting on the vesting schedule set forth in the Participant's Award Agreement; *provided, however*, that any such extension must comply with Code Section 409A and the delay period (as defined in Section 10.13) for specified employees.

6.3 *Delivery of Restricted Stock.*

(a) *Issuance.* The Company shall issue the shares of Restricted Stock within a reasonable period of time after approval of the Award Agreement; provided that 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

before the issuance thereof, then the date of delivery of the shares shall be extended for the period necessary to take such action. As long as any restrictions apply to the Restricted Stock, the shares of Restricted Stock shall be held by the Committee in uncertificated form in a restricted account.

(b) *Legend.* Unless the certificate representing shares of the Restricted Stock is deposited with a custodian (as described in this Section), each certificate shall bear the following legend (in addition to any other legend required by law):

“The transferability of this certificate and the shares represented hereby are subject to the restrictions, terms and conditions (including forfeiture and restrictions against transfer) contained in the ADTRAN Holdings, Inc. 2020 Director Stock Plan and an Award Agreement dated _____, _____, between _____ and ADTRAN Holdings, Inc. The Plan and the Award Agreement are on file in the office of the Corporate Secretary of ADTRAN Holdings, Inc.”

Such legend shall be removed or canceled from any certificate evidencing shares of Restricted Stock as of the date that such shares become nonforfeitable.

(c) *Deposit with Custodian.* As an alternative to delivering a stock certificate to the Participant, the Committee may deposit or transfer such shares electronically with a custodian designated by the Committee. The Committee shall cause the custodian to issue a receipt for the shares to the Participant for any Restricted Stock so deposited. The custodian shall hold the shares and deliver the same to the Participant in whose name the Restricted Stock evidenced thereby is registered only after such shares become nonforfeitable.

6.4 *Restrictions on Transfer.* No Restricted Stock or Restricted Stock Unit shall be assignable or transferable by the Participant except by transfer to a Beneficiary upon the death of the Participant, and any purported transfer (other than as excepted above) shall be null and void. After the death of a Participant and upon the death of the Participant's Beneficiary, the Restricted Stock or Restricted Stock Unit (as applicable) shall be transferable only by will or by the laws of descent and distribution.

6.5 *Settlement of RSUs.* Except as otherwise provided in the Award Agreement and in accordance with Code Section 409A, RSUs shall generally be settled in shares of Common Stock immediately following the date they vest; *provided* that the Committee may specify in the applicable Award Agreement that settlement shall be in cash or in a combination of Common Stock and cash.

6.6 *Shareholder Rights.* No shareholder rights shall inure to a Participant who has been awarded Restricted Stock or Restricted Stock Units until the restrictions on the Restricted Stock lapse or actual shares of Common Stock are issued upon settlement of the Restricted Stock Units, as applicable.

6.7 *Dividend Credits.* Unless otherwise provided in the Participant's Award Agreement, (a) any cash dividends paid on Common Stock underlying the Participant's Restricted Stock or Restricted Stock Units during the period of restriction shall be credited to a bookkeeping account which shall be hypothetically invested in whole shares of Common Stock; and (b) upon the lapse of restrictions on the Restricted Stock or Restricted Stock Units, the Company will immediately pay the Participant the accumulated value of the bookkeeping account in the form of whole shares of Common Stock, plus any remaining cash.

ARTICLE VII Adjustments

7.1 *Recapitalization.* In the event that the outstanding shares of the Common Stock of the Company are hereafter increased or decreased or changed into or exchanged for a different number or kind of shares or other securities of the Company by reason of a recapitalization, reclassification, stock split, combination of shares or dividend payable in shares of the Common Stock, the following rules shall apply:

(a) The Committee shall make an appropriate adjustment in the number and kind of shares available for the granting of Awards under the Plan and in the number and kind of shares granted as part of the annual grants.

(b) The Committee also shall make an appropriate adjustment in the number and kind of shares underlying outstanding Awards, or portions thereof, that remain unexercised or subject to restriction; any such adjustment in any outstanding Options shall be made without change in the total price applicable to the unexercised portion of such Option and with a corresponding adjustment in the Exercise Price per share. No fractional shares shall be issued or optioned in making the foregoing adjustments, and the number of shares available under the Plan or the number of shares subject to any outstanding Awards shall be the next lower number of shares, rounding all fractions downward.

(c) If any rights or warrants to subscribe for additional shares are given *pro rata* to holders of outstanding shares of the class or classes of stock then set aside for the Plan, each Participant shall be entitled to the same rights or warrants on the same basis as holders of the outstanding shares with respect to such portion of his Award for which shares have not yet been issued in his or her name on or prior to the record date or which portion is otherwise not included in the determination of shareholders entitled to receive or exercise such rights or warrants.

7.2 *Reorganization.* Subject to any required action by the shareholders, if the Company shall be a party to any reorganization involving merger, consolidation, acquisition of the stock or acquisition of the assets of the Company which does not constitute a Change of Control, and if the agreement memorializing such reorganization so provides, any outstanding Award granted under the Plan shall pertain to and apply, with appropriate adjustment as determined by the Committee, to the securities of the resulting corporation to which a holder of the number of shares of the Common Stock subject to such Award would have been entitled. If such agreement does not so provide: (a) any or all Options granted hereunder shall become immediately nonforfeitable and fully exercisable or vested (to the extent permitted under federal or state securities laws) and are to be terminated after giving at least 30 days' notice to the Participants to whom such Options have been granted and (b) any or all unvested Awards of Restricted Stock or Restricted Stock Units hereunder shall become immediately fully vested, nonforfeitable and/or payable.

7.3 *Dissolution and Liquidation.* If the Board adopts a plan of dissolution and liquidation that is approved by the shareholders of the Company, the Committee shall give each Participant written notice of such event at least ten (10) days prior to its effective date, and the rights of all Participants shall become immediately nonforfeitable and fully exercisable or vested (to the extent permitted under federal or state securities laws).

7.4 *Limits on Adjustments.* Any issuance by the Company of stock of any class, or securities convertible into shares of stock of any class, shall not affect, and no adjustment by reason thereof shall be made with respect to, the number or price of shares of the Common Stock subject to any Award, except as specifically provided otherwise in this Article. The grant of Awards pursuant to the Plan shall not affect in any way the right or power of the Company to make adjustments, reclassifications, reorganizations or changes of its capital or business structure or to merge, consolidate or dissolve, or to liquidate, sell or transfer all or any part of its business or assets. All adjustments the Committee makes under this Article shall be conclusive.

7.5 *No Cashouts or Repricings.* Except in connection with a corporate transaction involving the Company (including, without limitation, any stock dividend, stock split, extraordinary cash dividend, recapitalization, reorganization, merger, consolidation, split-up, spin-off, combination, or exchange of shares), the terms of outstanding Awards may not be amended to reduce the Exercise Price of outstanding Options or cancel outstanding Options in exchange for cash, other Awards or Options with an Exercise Price that is less than the Exercise Price of the original Options without stockholder approval.

ARTICLE VIII

Agreement by Participant and Securities Registration

8.1 *Agreement.* If, in the opinion of counsel to the Company, such action is necessary or desirable, no Award shall be granted to any Participant and no Option shall be exercisable by a Participant unless, at the time of grant or exercise, as applicable, such Participant (a) represents and warrants that he or she will acquire the Common Stock for investment only and not for purposes of resale or distribution, and (b) makes such further representations and warranties as are deemed necessary or desirable by counsel to the Company with regard to holding and resale of the Common Stock. The Participant shall, upon the request of the Committee, execute and deliver to the Company an agreement or affidavit to such effect. Should the Committee have reasonable cause to believe that such Participant did not execute such agreement or affidavit in good faith, the Company shall not be bound by the grant of the Award or by the exercise of an Option. All certificates representing shares of Common Stock issued pursuant to the Plan shall be marked with the following restrictive legend or similar legend, if such marking, in the opinion of counsel to the Company, is necessary or desirable:

The shares represented by this certificate have not been registered under the Securities Act of 1933, as amended, or the securities laws of any state and are held by an "affiliate" (as such term is defined in Rule 144 promulgated by the Securities and Exchange Commission under the Securities Act of 1933, as amended) of the Company. Accordingly, these shares may not be sold, hypothecated, pledged or otherwise transferred except (i) pursuant to an effective registration statement under the Securities Act of 1933, as amended, and any applicable securities laws or regulations of any state with respect to such shares, (ii) in accordance with Securities and Exchange Commission Rule 144, or (iii) upon the issuance to the Company of a favorable opinion of counsel or the submission to the Company of such other evidence as may be satisfactory to the Company that such proposed sale, assignment, encumbrance or other transfer will not be in violation of the Securities Act of 1933, as amended, or any applicable securities laws of any state or any rules or regulations thereunder. Any attempted transfer of this certificate or the shares represented hereby which is in violation of the preceding restrictions will not be recognized by the Company, nor will any transferee be recognized as the owner thereof by the Company.

If the Common Stock is (A) held by a Participant who ceases to be an "affiliate," as that term is defined in Rule 144 of the Securities Act, or (B) registered under the Securities Act and all applicable state securities laws and regulations as provided in Section 8.2, the Committee, in its discretion and with the advice of counsel, may dispense with or authorize the removal of the restrictive legend set forth above or the portion thereof which is inapplicable.

8.2 *Registration.* In the event that the Company in its sole discretion shall deem it necessary or advisable to register, under the Securities Act or any state securities laws or regulations, any shares with respect to which Awards have been granted hereunder, then the Company shall take such action at its own expense before delivery of the certificates representing such shares to a Participant. In such event, and if the shares of Common Stock of the Company shall be listed on any national securities exchange (as such term is defined by the Exchange Act) or on the NASDAQ National Market System at the time of the removal of restrictions from an Award or exercise of any Option, the Company shall make prompt application at its own expense for the listing on such stock exchange or the NASDAQ National Market System of the shares of Common Stock to be issued.

ARTICLE IX
Amendment and Termination

9.1 *Amendment and Termination By the Board.* Subject to Code Section 409A and Section 9.2 below, the Board shall have the power at any time to add to, amend, modify or repeal any of the provisions of the Plan, to suspend the operation of the entire Plan or any of its provisions for any period or periods or to terminate the Plan in whole or in part. In the event of any such action, to the extent it determines necessary to administer the Plan, the Committee shall prepare written procedures which, when approved by the Board, shall govern the administration of the Plan resulting from such addition, amendment, modification, repeal, suspension or termination. No Award Agreement may be amended to reprice or constructively reprice any Award.

9.2 *Restrictions on Amendment and Termination.* Notwithstanding the provisions of Section 9.1 above, the following restrictions shall apply to the Board's authority under Section 9.1 above:

(a) *Prohibition Against Adverse Effects on Outstanding Awards.* No addition, amendment, modification, repeal, suspension or termination shall adversely affect, in any way, the rights of a Participant who has an outstanding Award without the consent of such Participant. The Committee shall not amend any Award Agreement that it previously has authorized under the Plan that adversely affects the Participant's rights or benefits under an Award without the written (or electronic) consent of the Participant holding such Award.

(b) *Shareholder Approval Required for Certain Modifications.* No modification or amendment of the Plan may be made without the prior approval of the shareholders of the Company if such approval is necessary with respect to tax, securities or other applicable laws or the applicable rules or regulations of any stock exchange or the NASDAQ National Market System.

ARTICLE X
Miscellaneous Provisions

10.1 *Beneficiary.* Upon a Participant's death, the Participant's Beneficiary shall be determined as follows:

(a) *Designation of Beneficiary.* A Participant's Beneficiary shall be the Person who is last designated in writing by the Participant as such Participant's Beneficiary hereunder. A Participant shall designate his or her original Beneficiary in writing (on paper or electronically) on the form provided by the Committee. Any subsequent modification of the Participant's Beneficiary shall be on the form provided by the Committee. A designation of Beneficiary shall be effective when the properly completed form is received *and* accepted by the Committee (or its designee), as determined in the Committee's (or its delegate's) sole discretion.

(b) *No Designated Beneficiary.* If no Beneficiary has been validly designated by a Participant, or the Beneficiary designated by the Participant is no longer living or in existence at the time of the Participant's death, then the Participant's Beneficiary shall be deemed to be the Participant's legal spouse under applicable state law, or if none, the Participant's estate.

(c) *Designation of Multiple Beneficiaries.* A Participant may, consistent with subsection (a) above, designate more than one Person as a Beneficiary if, for each such Beneficiary, the Participant also designates a percentage of the Participant's Award to be transferred to such Beneficiary upon the Participant's death. Unless otherwise specified by the Participant, any designation by the Participant of multiple Beneficiaries shall be interpreted as a designation by the Participant that each such Beneficiary (to the extent such Beneficiary is alive or in existence as of the Participant's date of death) should be entitled to an equal percentage of the Participant's Award. Each Beneficiary shall have complete and non-

joint rights with respect to the portion of a Participant's Award to be transferred to such Beneficiary upon the Participant's death.

(d) *Contingent Beneficiaries.* A Participant may designate one or more contingent Beneficiaries to receive all or a portion of the Participant's Award in the event that all of the Participant's original Beneficiaries should predecease the Participant. In the event that one or more original Beneficiaries predeceases the Participant, then the remaining original Beneficiaries specified above shall be entitled to the share of such deceased Beneficiary in direct proportion to their designated shares.

10.2 *Application of Funds.* The proceeds received by the Company from the sale of the Common Stock subject to the Options granted hereunder will be used for general corporate purposes.

10.3 *Notices.* In order for a Participant or other individual to give notice or other communication to the Committee, the notice or other communication shall be in the form specified by the Committee and delivered to the location designated by the Committee in its sole discretion.

10.4 *Compliance with Rule 16b-3.* This Plan is intended to be in compliance with the requirements of Rule 16b-3 as promulgated under Section 16 of the Exchange Act.

10.5 *Governing Law.* The Plan shall be governed by and shall be construed in accordance with the laws of the State of Alabama, without regard to any choice of law principles thereof or of any other jurisdiction.

10.6 *Additional Provisions By Committee.* The Award Agreements authorized under the Plan may contain such other provisions as the Committee shall deem advisable.

10.7 *Plan Document Controls.* In the event of any conflict between the provisions of an Award Agreement and the Plan, the Plan shall control.

10.8 *Gender and Number.* Wherever applicable, the masculine pronoun shall include the feminine pronoun, and the singular shall include the plural.

10.9 *Headings.* The titles in this Plan are inserted for convenience of reference; they constitute no part of the Plan and are not to be considered in the construction hereof.

10.10 *Legal References.* Any reference in this Plan to a provision of law which is later revised, modified, finalized or redesignated, shall automatically be considered a reference to such revised, modified, finalized or redesignated provision of law.

10.11 *No Rights to Perform Services.* Nothing contained in the Plan, or any modification thereof, shall be construed to give any individual any rights to perform services for the Company or any of its Affiliates.

10.12 *Unfunded Arrangement.* The Plan shall not be funded, and except for reserving a sufficient number of authorized shares to the extent required by law to meet the requirements of the Plan, the Company shall not be required to establish any special or separate fund or to make any other segregation of assets to assure the payment of any grant under the Plan.

10.13 *Clawback/Recovery.* Subject to Section 409A, all Awards granted under the Plan will be subject to clawback, recovery, or recoupment, as determined by the Committee in its sole discretion, including but not limited to a reacquisition right with respect to previously granted Restricted Stock or other cash or property, (a) as provided in the Company's forfeiture policy implemented by the Company from time to time and applicable to all officers and Directors of the Company on the same terms and conditions, including without limitation, any such policy adopted to comply with the requirements of applicable law or the rules and regulations of any stock

exchange applicable to the Company, (b) as is required by the Dodd-Frank Wall Street Reform and Consumer Protection Act, or other applicable law, (c) as provided in the applicable Award Agreement, and/or (d) to the extent that the Committee determines that the Participant has been involved in the altering, inflating, and/or inappropriate manipulation of performance/financial results or any other infraction of recognized ethical business standards, or that the Participant has willfully engaged in any activity injurious to the Company, or the Participant's Separation from Service with the Company or its Affiliates is for Cause. *Compliance with Section 409A of the Code.* Unless otherwise expressly provided for in an Award Agreement, the Plan and Award Agreements will be interpreted to the greatest extent possible in a manner that makes the Plan and the Awards granted hereunder exempt from Section 409A of the Code, and, to the extent not so exempt, compliant with Section 409A of the Code. If the Committee determines that any Award granted hereunder is not exempt from and is therefore subject to Section 409A of the Code, the Award Agreement evidencing such Award will incorporate the terms and conditions necessary to avoid the consequences specified in Section 409A(a)(1) of the Code, and to the extent an Award Agreement is silent on terms necessary for compliance, such terms are hereby incorporated by reference into the Award Agreement. Notwithstanding anything to the contrary in this Plan (and unless the Award Agreement specifically provides otherwise), if a Participant holding an Award that constitutes "deferred compensation" under Section 409A of the Code is a "specified employee" for purposes of Section 409A of the Code, no distribution or payment of any amount that is due because of a "separation from service" (as defined in Section 409A of the Code without regard to alternative definitions thereunder) will be issued or paid before the date that is six (6) months following the date of such Participant's "separation from service" (as defined in Section 409A of the Code without regard to alternative definitions thereunder) or, if earlier, the date of the Participant's death, unless such distribution or payment can be made in a manner that complies with Section 409A of the Code, and any amounts so deferred will be paid in a lump sum on the day after such six (6) month period elapses, with the balance paid thereafter on the original schedule.

ADOPTED BY BOARD OF DIRECTORS ON MARCH 6, 2020,
EFFECTIVE AS OF MAY 13, 2020,
AMENDED AND RESTATED EFFECTIVE JANUARY 24, 2023

Exhibit 21**SUBSIDIARIES OF ADTRAN HOLDINGS, INC.**

December 31, 2022

<u>Name of Subsidiary</u>	<u>Country or State of Incorporation</u>
ADTRAN Networks Pty. Ltd	Australia
ADTRAN Networks Comunicações Ltda.	Brazil
ADTRAN Canada, Inc.	Canada
ADTRAN d.o.o.	Croatia
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 K.K.	Japan
ADTRAN Networks Sdn Bhd	Malaysia
ADTRAN Networks S.A. de C.V.	Mexico
ADTRAN Networks & Services, S. de R.L. de C.V.	Mexico
ADTRAN Peru S.R.L.	Peru
ADTRAN Sp. z.o.o.	Poland
ADTRAN, Unipessoal Lda.	Portugal
ADTRAN International, Inc. - Saudi Arabia branch	Saudi Arabia
ADTRAN s.r.o.	Slovakia
ADTRAN Proprietary Ltd.	South Africa
ADTRAN Switzerland GmbH	Switzerland
ADTRAN GmbH (Tunisia Permanent Establishment Branch Office)	Tunisia
ADTRAN SARL	Tunisia
ADTRAN Europe Limited	United Kingdom
ADTRAN Networks and Services Egypt, LLC	Egypt
ADTRAN Networks New Zealand Ltd.	New Zealand
ADVA Optical Networking, SE	Germany
ADVA Optical Networking North America, Inc.	State of Georgia
ADVA Optical Networking Ltd.	United Kingdom
Oscilloquartz SA	Switzerland
ADVA Optical Networking sp. z o.o.	Poland
ADVA Optical Networking Israel Ltd.	Israel
ADVA Optical Networking (Shenzhen) Ltd.	China
Oscilloquartz Finland Oy	Finland
ADVA IT Solutions Pvt. Ltd.	India
ADVA Optical Networking Trading (Shenzhen) Ltd.	China
ADVA Optical Networking Singapore Pte. Ltd.	Singapore
ADVA Optical Networking Hong Kong Ltd.	China
ADVA Optical Networking (India) Private Ltd.	India
ADVA Optical Networking Serviços Brazil Ltda.	Brazil
ADVA Optical Networking Corp.	Japan
ADVA Optical Networking AB	Sweden
ADVA NA Holdings Inc.	State of Georgia
ADVA Optical Networking Pty Ltd.	Australia
ADVA Optical Networking B.V.	Netherlands
ADVA 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 (No. 268998) and Form S-8 (Nos. 333-266089 and 333-266091) of ADTRAN Holdings, Inc. of our report dated March 1, 2023 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 1, 2023

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 Michael Foliano, 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, 2022 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 1st day of March, 2023.

/s/ Johanna Hey

Johanna Hey
Director

/s/ H. Fenwick Huss

H. Fenwick Huss
Director

/s/ Gregory McCray

Gregory McCray
Director

/s/ Balan Nair

Balan Nair
Director

/s/ Brian Protiva

Brian Protiva
Director

/s/Jacqueline H. Rice

Jacqueline H. Rice
Director

/s/ Nikos Theodosopoulos

Nikos Theodosopoulos
Director

/s/Kathryn A. Walker

Kathryn A. Walker
Director

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 1, 2023

/s/ Thomas R. Stanton

Thomas R. Stanton

Chief Executive Officer and Chairman of the Board

I, Michael Foliano, 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 1, 2023

/s/ Michael Foliano

Michael Foliano
Senior Vice President of Finance and
Chief Financial Officer
(Principal Accounting Officer)

**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, 2022 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 1, 2023

**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, 2022 as filed with the Securities and Exchange Commission on the date hereof (the “Report”), I, Michael Foliano, Senior Vice President of Finance and 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/ Michael Foliano

Michael Foliano

Senior Vice President of Finance and

Chief Financial Officer

(Principal Accounting Officer)

Date: March 1, 2023

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**Corporate
Headquarters**

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USA

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